Summaries of the Selected Articles

Pranab Bardhan, "External Economies, Economic Development and the Theory of Protection", *Oxford Economic Papers*, March 1964.

The importance of external economies, now widely accepted in the early stages of industrialization in underdeveloped countries, is not adequately reflected in the literature of international trade theory. Most of the trade theorists dealing with the concept treated the matter as a possible but not important aberration. This paper attempts to integrate into trade theory some aspects of the concept which are important in the development process. The analysis is carried on first in terms of horizontal and then of vertical external economies.

Horizontal external economies analysed in this paper are those arising out of the interdependence of production functions at the same stage of production and which are of particular importance in the early stages of development. These economies are mostly irreversible, *i.e.*, they appear with an expansion of output, but do not disappear with subsequent contraction. A protection-induced movement along the transformation curve towards more production of importables may bring about an irreversible shift outwards of the curve itself, and this outer curve may conceivably lie totally outside the existing open-economy availability frontier, creating a situation where even no trade can be potentially better than some trade. Such shifts are brought about by external economies connected with on-the-job training of labour, basic research knowledge, and experience accumulating over time.

In all cases where no infant can learn without simultaneously teaching others, free, the traditional infant industry argument coincides with irreversible external economies argument. But the former argument stretches beyond the latter, since even when the economies can be successfully internalized, the infant industry argument may be invoked on the consideration that economically justifiable projects from the social point may not be found so by the private entrepreneurs because they suffer from inertia, have too short a horizon, and discount the future at a higher rate than the society would.

The introduction of irreversible external economies alters some of the accepted theorems in the literature on protection theory. A theorem on the effects of tariffs on the terms of trade states, under certain assumptions, that the terms of trade of a protecting country will improve or deteriorate according

as the country's price elasticity of demand for imports is greater or less than the marginal propensity to consume importables of whoever spends the tariff revenue. But if an infant industry tariff induces an irreversible shift in production conditions in the importable industry, the consequent change in the output and consumption of importables, might easily produce a negative excess demand for importables, even when the marginal propensity to consume importables of whoever spends the tariff revenue happens to be greater than the country's price elasticity of demand for imports: terms of trade will improve. Similarly, the Marshall-Lerner theorem on the symmetry of import and export taxes may not hold.

Vertical external economies arise out of the effects of expansion of one industry on the profitability of other industries, higher up or lower down in the production structure. They may be operative in a number of ways. Sheltered production of one industry, say steel, may lead to the establishment of another industry, say extracting of domestic iron ore. Again, protection-induced expansion of one industry may reduce expansion in a supplementary industry where the latter may have its costs reduced, and this in turn might increase the profitability of the protected industry. In the third and empirically more important case, the protected expansion of an industry may take its input providing industry over the 'hump' to reap internal economies, enhancing by turn the profitability of the protected industry. In a realistic environment of imperfect knowledge and insufficient communication of information, current prices are a poor signal of these future profitabilities. Besides, uncertainty about other people's action inhibits entrepreneurial decisions. Hence centralized intervention in the decision making process becomes necessary.

Next some criticisms of arguments based on claims of external economies are examined. It is often asserted that potential economies (external or internal) may be largely offset by rising factor costs, as industries are not only complementary they are also, in most cases, competing for factors of production. In so far as this argument is based on a static assumption of full-employment, it is not valid in the case of developing countries having unemployment and idle resources where, besides, endogenous productivity changes induced, as in this analysis, by protection itself and exogenously growing labour force and a positive net investment have to be taken into account. Also there are no *a priori* assumptions that a co-ordinated programme which realizes external economies will utilize more of any factor than the alternative investments that would take place without co-ordination.

Some other questions asked about the argument of external economies are how to choose between different complexes of activities and why the argument should apply only to industries devoted to import substitution. As a matter of fact, vertical external-economy relationships between the export base and industries subsidiary to exports can be present, though this was not so in the case of primary export sector of many underdeveloped countries. This failure of the export sector of underdeveloped countries to serve as a propulsive sector may partly be due to the fact that export enclaves economically belonged to the metropolitan country, partly due to market imperfections and institutional rigidities, but to a significant extent it may have been due to the small 'linkage' effects of primary production.

Industries in which external economies will be important have to be determined empirically. Chenery produces weighty evidence regarding economies of scale in machinery, transport equipment, metals, and some other intermediate goods used in manufacturing operations. Once economies of scale can be traced in the input providing industries, the structural linkages may give a very rough idea as to the extent of their transmission into the rest of the economy.

The case for central intervention to realize external economies has certain aspect which may be emphasized, in conclusion. The factors giving rise to vertical external economies, which are not adequately reflected in the market because of imperfect foresight and information on the part of private entrepreneurs, are visualized by central planners, not because they are so many supermen but because of their better information deriving from the simultaneity of the interrelated decisions they make. Therefore, protection by tinkering with the price mechanism may not be enough. The exigencies of planning might necessitate more direct controls and positive steps in the foreign trade sector rather than the negative method of protection.

(A.H.M. NURUDDIN CHOWDHURY)

Donald J. Bogue "The Demographic Breakthrough: From Projection to Control", *Population Index*, Vol. 30, No. 4, October 1964.

The years 1963—64 were marked by much progress in social science research. Researchers in fertility control have established that "planned intervention" could induce a downward trend in the birth rate in high fertility areas. The experiences in Taiwan, Ceylon, and Korea point to the above-mentioned trend.

The governments of many countries have also started working on the idea that a slowing-down of population growth is one of their aims of economic planning. Korea, Turkey, Ceylon, Thailand, Malaya, Egypt, and China figure prominently in this respect.

These initial successes have not yet shown their full impact; there is lot more to come. Once the basic principles of successful population control are learnt, progress and refinement will follow rapidly.

Successful family planning programmes have six fundamental ingredients:—

i) Awareness of Possibilities and Benefits: Within a population there is a variation in readiness to accept family planning knowledge. A population may be divided into four categories of readiness: unaware; aware and neutral; aware and positive; and negative. The proportion of "unaware" or "aware and neutral" should be reduced.

ii) Knowledge of How to Implement Family Planning: Those who are aware and positive in their reactions must know where to go, whom to see, what to ask for and how to use what they are given.

iii) Massive Impersonalization and Public Attention: The strategy of action should be to bring fertility control into the scope of public attention. Feelings of shyness and shame should be removed.

iv) Legitimation and Social Reinforcement: This comes about when medical and religious authorities as well as high-status persons endorse the programme. But the adoption of this programme by a respected colleague (of the users of the family planning methods) is also essential. In this way, the users don't get a feeling of being alone or unnatural.

v) Self Involvement: Informed persons with a positive attitude must apply what they know to their own life situations.

vi) Convenient Provision of Supplies: Those who adopt family planning need a certain amount of help to get started. Clinics should be well located and supplies well dispersed. Users' right of privacy should be respected.

There are great many ways of applying these six principles. Enough is already known to launch an effective programme. Bringing about an elimination of the population problem is now a matter of combining research with administrative skill.

(IMTIAZUDDIN HUSAIN)

Helen C. Farnsworth, "Determinants of French Grain Production, Past and Prospective", *Food Research Institute Studies*, Vol. IV, No. 3, 1964.

The author, in this article, has attempted an analysis of the factors which reflect upon French grain production, past and prospective. Grain policies of the European Economic Community (EEC) put emphasis on control of grain prices as a tool for achieving major agricultural economic goals. This raises important questions about the prospective effects of the Community's planned harmonization of agricultural prices on grain and livestock production in member countries. The case of France is singularly important because she has the lowest grain prices, the largest expanse of convertible pasture and unused farm land, and a past record of growing grain surpluses.

As in most other Western European countries, the farmers in France have used a declining amount of land for agriculture. For the present study, the long decline and recent stabilization and upturn in the arable area are of particular interest, since grain has continued to claim more arable land than any other crop. Many writers have interpreted the decline in arable land in France up to the 1950's as evidence that French farm land was being used less intensively because of inadequate remuneration of French farmers.

It is difficult to determine whether the trends in crop patterns prior to and after the World War II represented intensification or extensification of French agricultural production. In both periods, there was persisting expansion of the area under green fodder crops and/or permanent pasture, with a net gain in the two combined.

Pertinent for the present study is the implication of Klatzmann's coefficients: that green fodder crops absorb roughly the same amount of resource inputs per hectare as grain and that the resource inputs for pasture and grazing range from 40 to almost 90 per cent of the amount utilized for grain, with the national average something like 67 per cent.

The substantial changes in patterns of land use during 1922-38 appear to have moved French agriculture in the direction of greater intensity of land utilization. Among the striking features of the period were reduction of the area devoted to fallow, expansion of permanent grassland, increase of green fodder crops and roots on former grain land, and negligible change in the total area of harvested arable crops. During World War II French agriculture suffered a serious, if only temporary, setback. Subsequent changes, however, moved French crop patterns back toward and perhaps beyond the highest levels of intensity previously reached.

National changes in land use tell only part of the story. Without supplementary information on regional crop patterns and their changes, the national coefficients of intensity here used could be misleading. Like earlier trends in French land-use patterns, those of 1956-62 were reflected in some degree in almost every sizable region. In all but one of the eleven regions represented the areas under grain and green fodder crops either increased or remained essentially the same between 1956 and 1962, and everywhere permanent pasture contracted or increased very slightly.

The land-use adjustments of 1956-62 represented a reversal of prewar trends that had forced grain areas down and permanent pasture up; the same basic regional patterns and relative regional tendencies remained. As in earlier years, the adjustments tended to increase the degree of regional crop specialization, bringing relatively greater concentration of green fodder (including temporary pasture) where grass had long a relative economic advantage.

Changes since 1882 in two major forms of capital investment in French agriculture and in the number of male workers engaged in farming, fishing, and, forestry are noteworthy. The most remarkable increases in both fertilizers and farm machinery have come since the end of World War II. Until about 1950 French agriculture had depended more heavily on animal manure than on artificial fertilizers for nitrogen and potassium, but remarkable subsequent increase in artificial fertilizers gradually reversed this relationship.

For agricultural machinery, a postwar technical revolution has brought a ten-fold increase in the number of tractors and a five-fold increase in electric motors. The quality of the farm machinery was simultaneously improved; and automobiles and trucks became increasingly important. The new machinery and transport facilities greatly reduced the need for farm labour, particularly in the production of crops, and made farm living conditions more attractive. It also permitted better and more timely preparation of seed beds and faster harvesting of ripened crops, thus increasing yields per hectare and reducing losses in fields and in storage. Expenditure on the development and utilization of improved varieties of seed have also contributed much to postwar advances in crop yields per hectare.

Finally, in agriculture as well as industry, postwar government efforts to promote modernization and productivity acted as an added stimulus to change, and relatively high agricultural prices and subsidies, together with the outlook for an expanding common European market for high-priced farm products, favoured long-term investments in agriculture.

Now the question arises regarding the effect of grain prices (as compared with other factors) in influencing long-term trends and changes over several years in the volume and composition of French grain production. In general, the available evidence is merely suggestive and not conclusive as to the role which prices have played in inducing changes in the level and trend of the total grain area of France. It seems clear that other factors, not fully reflected in the prices of grain and animal products, have been of considerable impoitance in some periods. Amcng these, large variations in national economic conditions, rapid technological advance, and spread of knowledge appear to have been most significant.

In substantial degree, however, direct price effects have been prevented since about 1930 through government intervention aimed at maintaining officially desired prices for selected farm products.

In a period of rapid technological progress and government price controls, changes in the prices of farm products may be a less important determinant of land use and output than changes in production costs. There remains another important question as to the effect of grain prices upon yields per hectare. Neither economic reasoning nor the nature of the available data encourages expectations of finding illuminating statistical correlations between prices and yields. Yet it is obvious that higher grain prices, lower fertilizer prices, or any improvement that raises the yield response of grain to fertilizer applications necessarily makes heavier applications more profitable.

In conclusion, it may be said that the preceding analysis demonstrates that French grain prices have functioned as one important element in a complex set of determinants of the volume and composition of French grain production. Looking to the future, it seems clear that marked technological and agricultural advances of many types will continue to be witnessed both in France and in other countries of the European Community.

(N. H. NIZAMI)

———

Martin S. Feldstein, "The Social Time Preference Discount Rate in Cost Benefit Analysis", *The Economic Journal,* June 1964.

The choice between alternative time-streams of social benefits and costs is an important problem in public investment decision-making and the purpose of discount rate calculations is to determine the present values of those benefit

streams. Two types of discount rates have been advocated: social time prefer-
ence and social opportunity cost. The former assigns current values to future
income stream while the latter is a measure of the earnings from the next best
alternative. The author argues that since in the absence of perfect competition
no single interest rate can fully measure the social opportunity cost of funds
it is best to allow for that by placing a shadow price on the funds to be used
in the project and to make all inter-temporal time preference comparisons on
the basis of a social time preference rate or function. The author, however,
indicates that it is futile to look for a perfect formula specifying a social time
preference rate; it must reflect public policy and social ethics as well as judge-
ment about future economic conditions all of which are indeterminate.

It is argued that although a perfect market interest rate could guide private
investors to maximize their welfare over time, it would not produce socially
optimum investment decisions. A perfect market would only equate the private
investment demand schedule showing the investors' internal rate of return with
the saving supply schedule. But to produce socially optimal investment decisions
it is necessary to equilibrate the social investment demand schedule showing the
social rate of return with a politically determined saving supply schedule. The
social rate of return on investment is, however, likely to be much larger than
the investor's internal rate of return as investment enhances the productivity of
existing inputs thereby increasing their incomes and for the society as a whole,
such increased factor incomes should be treated as a gain. Thus in public invest-
ment decisions one may justifiably choose to replace the evaluation of future
income stream on the basis of market rates by a social time preference function.

The author then uses Irving Fisher's indifference curve analysis to define
the social time preference function and the social time preference rate as well as
to state the relationship between the two. He lists three factors which determine
the social time preference function: the social utility-consumption function,
population changes, and the pure time discount. Given these, the slope of such
an indifference curve is then stated to indicate the society's marginal rate of
substitution of the present for the future goods, *i.e.*, the social time preference
rate.

The author also indicates that the social time preference rate may not
remain constant through time and would change given changes in consumption
level and consumption growth rates, the population growth rate, and the pure
time discount rate. The possibility of a zero social time preference rate or of its
being a positive function of time has also been considered.

In conclusion, the author reiterates the need for not confusing the social time preference rate with the social opportunity cost of capital. Public investment decisions can best reflect the social opportunity cost of capital by using a shadow price which reflects both social time preference and the productivity of funds in private investment.

(HASAN IMAM)

Yujiro Hayami, "Demand of Fertilizer in the Course of Japanese Agricultural Development", *Journal of Farm Economics,* Vol. 46, No. 4, November 1964.

In this paper the causes of the tremendous increase in fertilizer input, which played a major role in Japanese agricultural development, are identified; and their contributions during the period 1883-1937 (in terms of shifts in agriculture's production function and the decline in fertilizer price relative to the price of farm products) are measured statistically. Measured in terms of 1934-36 prices, the annual level of aggregate fertilizer input (including commercial and self-supplied fertilizers) tripled, increasing from 212 million yen in 1883-87 to 591 million yen in 1933-37. During the same period the input of commercial fertilizer increased 11 times from 23.5 million yen to 264 million yen. One distinctive feature of Japanese agricultural development during this period is that it did not accompany any major structural changes in the production pattern. The overall improvement of Japanese agriculture is attributable to the complementary effects of three factors: increase in fertilizer use, use of better and improved seeds, and land improvement (including better irrigation and drainage facility).

Over the period 1883-1937, the price of commercial fertilizers declined relative to the price of farm products due to the rapid adoption of innovations in its production and marketing processes while the price of self-supplied fertilizers rose, as no significant cost-reducing innovations occurred. Overall, the aggregate price level of commercial and self-supplied fertilizer relative to farm product prices remained at about the same level. Substitution between the various fertilizers took place according to their relative prices. Hence, as cheaper fertilizers substituted for more expensive ones, the aggregate price level of commercial fertilizers declined.

The hypothesis of this paper is that the demand for fertilizer is derived from the demand for farm products. Changes in the quantity of fertilizer demanded will, therefore, be explained by the shifting of the agricultural production function and changes in fertilizer prices relative to the prices of farm products. It is

observed that the increase in commercial fertilizer input accompanies the decline in its relative price, whereas the increase in total fertilizer does not.

Statistical findings show that the demand curves for total and commercial fertilizers were of equal slope and that there was no difference in farmers' price response for total and commercial fertilizers. This implies that peasant farmers were rational in evaluating their own labour.

During the period 1883-1937, the commercial fertilizer input per unit of cultivated land grew at a quinquennial rate of about 26 per cent, of which 19 per cent is attributable to the upward shift of the fertilizer demand function and 7 per cent is attributable to the decline in its price relative to the price of farm products. During the same period the price level of 'total' fertilizer rose relative to that of farm products, though very moderate. Hence, the price effect worked to reduce the input of total fertilizer. Offsetting this adverse price effect upward shifts of the total fertilizer demand schedule led to its input per unit of cultivated land rising on the average by 8 per cent per quinquennium.

Nearly 100 per cent of the variations in fertilizer input per unit of cultivated land is explained by *technical progress in agriculture* (which resulted in a continuous shift of the fertilizer demand schedule) and by *technical progress in the fertilizer* industry (which lowered the price of fertilizer relative to the price of farm products). Over the period 1883-1937, 70 per cent of the increase in commercial fertilizer input is explained by the former influence and the remaining 30 per cent is explained by the latter.

These findings help to clarify the roles of technological innovations and of interindustry division of labour in economic development.

This Japanese experience should provide some guide to today's emerging nations on their resource allocation problem, *i.e.*, how to allocate their limited funds for such purposes as research, extension, and water control in order to shift the agricultural production function or for the development of agricultural supply industries to reduce the cost of production factors like fertilizers and machinery.

(A. Q. ZIAUDDIN)

Harry G. Johnson, "Tariffs and Economic Development: Some Theoretical Issues", *Journal of Development Studies*, October 1964.

The rise of the economic nationalism in the European countries in the 1930's and the pressing problem of unemployment during the great depression revived the interests of the economists in the commercial policy as a means of economic development. The arguments for tariff were renovated in the post-war period in the context of the problems of underdeveloped countries. The article reviews, *vis-a-vis* a general theoretical framework, the important arguments for tariff which were developed during the past thirty-five years.

Contemporary arguments for tariffs are divided into three groups: economic arguments, non-economic arguments, and non-arguments. The economic arguments for tariffs as a means of increasing real income are based on the infant industry and the optimum tariff theories, on the one hand, and on the dual economy theories, on the other. But excepting the optimum tariff argument, all other arguments are really arguments for subsidies. Insofar as there is a divergence between private and social marginal costs or benefits in the foreign trade sector tariffs can correct them. But the distortions in the sectors of the domestic economy should be corrected by subsidies in the specific sectors. The existence of external economies in manufacturing or the disequilibrium in the labour market or the infant industry argument which is really based on the fact that the social rate of return or discount does not equal the private rate of return or discount— all these call for subsidies in the appropriate field. The effects of the application of tariffs to correct distortions in these areas cannot be ascertained *a priori*; tariffs may even cause a decrease in real income.

The non-economic arguments for tariffs recommend tariffs for achieving two objectives: increased domestic production and increased self-sufficiency. Since tariffs impose a loss of consumer's surplus in addition to excess production cost, they contribute nothing to the achievement of the objective of increased domestic value. But the tariff is the most efficient method of securing a reduction in imports because it involves less sacrifice of real income than alternative fiscal measures.

However, if a country is determined to increase the output of a group of industries, a "second-best optimum tariff structure" can be found to achieve the desired effects on the production structure at minimum loss of real income. Usually, on the assumption that the cost of protection is the excess of the cost of protected production over the world price, a low uniform rate is prescribed for a wide range of commodities since it minimizes the total excess cost of import-saving by equating the marginal costs. But this analysis does not

take account of the distortions in the domestic economy and ignores the consumption cost as well. The "second-best tariff structure", therefore, should be determined by the magnitudes of the slopes of the demand and supply curves for various commodities. But if the objective is self-sufficiency, the uniform tariff rate applied to all importable goods will be an efficient measure because it involves minimum total excess cost of import-saving.

Imposition of tariffs on both the finished goods and the intermediate goods may offer a different degree of protection to the finished goods than is implied by the tariff rates on them. The implicit rate of protection on a particular productive process will be higher than, equal to, or lower than the explicit rate of protection on the commodity it produces if the weighted average tariff rate on inputs is lower than, equal to, or higher than the tariff rate on the final commodity. The protection accorded to the finished goods may, thus, be cancelled out by the protection accorded to the inputs which are used in their production. The subsidies to the export industries and agriculture may be more than offset by the costs of protected inputs. Advanced countries resorting to a differentiated tariff structure where tariff rates rise with the stage of production create a bias towards confining world trade to raw materials and semi-finished goods and deprive underdeveloped countries of access to large markets necessary for the efficient use of their cheap labour. Again, underdeveloped countries trying to follow the tariff pattern of the developed ones may incur heavier excess cost of domestic production of the finished goods than is indicated in the tariffs on those commodities.

The economic policy of import substitution implemented by tariffs encourages the establishment of foreign enterprises because it does not reduce the comparative disadvantage of local as contrasted with the foreign entrepreneurship and thus gives rise to the political problems of foreign domination of the economy, and economic problems regarding duplication of market structure and the marketing methods of the advanced countries, adoption of techniques inappropriate to the relative factor availability in the domestic economy, etc. Yet the policy of import substitution may be justified on two grounds: it attracts substantial amounts of direct foreign investment and it gives the domestic entrepreneur access to the knowledge of the technical progress of the developed countries. But the reduction in the cost of currently produced import substitutes may be more than eliminated by the consequent further replacement of imports by higher-cost domestic substitutes. The situation becomes worse with a policy of progressive import substitution.

(MATI LAL PAL)

A.M. Khusro, "Returns to Scale in Indian Agriculture", *Indian Journal of Agricultural Economics*, July-December, 1964.

In spite of very substantial dissimilarities in cropping pattern and resource availabilities, remarkable similarities about the relations between farm size and farm efficiency have been revealed by the studies in the economics of farm management collected during the 1950's. This paper analyses the size efficiency relationship in Indian agriculture on the basis of the following definitions of costs and returns.

Total cost (C) = paid-out cost (C_p) *plus* retained cost (C_r)

Gross output (O) *minus* paid-out cost (C_p) inclusive of depreciation
$$= \text{net farm business income (Y)}$$

Net farm business income (Y) *minus* retained cost (C_r)
$$= \text{net profit (P)}.$$

Least-square regression lines fitted to the data for each of the seven States (selected in the farm management studies) separately reveal that farm size (acreage) varies *i*) inversely with gross output (O) per acre; *ii*) inversely with farm business income (Y) per acre; *iii*) directly with net profit (P) per acre. Although a number of explanations of the relationships *i*) and *ii*) have been given by many observers, the behaviour of farm business income per acre has not been analyzed earlier. It is the contention of the paper that the behaviour of farm business income per acre is a true index of returns which the farmers will seek to maximize.

The above estimates of returns and costs per acre are based on unstandardized acreage with no correction for fertility differential. A plausible hypothesis about the relationship *i*) and *ii*) seems to be that the quality of land deteriorates with increases in farm size. Land revenue in India may be taken as an indicator of *fertility differences* between farms of the same region. It is almost universal that land revenue per acre declines as farm size expands. Acreage in successive size groups may be corrected or standardized by multiplying mean acreage in each size groups by an index of efficiency based on land revenue per acre. The behaviour of returns per *corrected acre* (A_c) shows that gross output and farm business income generally remain constant with changes in farm size. Net profit per corrected acre generally increases with an expansion of farm size. Regression equations for each State seem to indicate that gross output (O) and net farm business income (Y) per corrected acre remain constant as farm size changes. A constancy of O/A_c and Y/A_c by size of farm means a constancy of C_p/A_c as C_p is the difference between O and Y.

An alternative study of the size-efficiency relationship, with efficiency measured by average paid out cost per unit of output (C_p/O), reveals a remarkable constancy of C_p/O as output changes. One explanation for such constancy in C_p/O may be that as farm size increases the wage component of paid-out cost increases, but the rent component and bullock component decreases relative to output. It seems that if either A_c or O is assumed to represent the scale of operation and C_p (paid-out cost) is taken to represent cost of production then constant returns to scale seems to be the rule in Indian agriculture.

(ABDUL GHAFUR)

_____

T.N. Krishnan, "Demand for Mill Cloth in India—A Study of the Interrelationship between Industry and Agriculture", *Artha Vijnana,* December 1964.

In India agriculture accounted for almost half of the Indian national output in 1950-51. But since then its share is declining despite the rise in the agricultural production index. Evidently, this is due to a steep fall in agricultural prices. Under the circumstances it is worthwhile investigating how such a fall in agricultural prices affected the demand for manufactured goods in India. To analyse the nature of the problem the cotton textile industry has been taken as a case study, since it is very difficult to include the entire industrial sector. The reason for choosing the cotton textile industry as a representative is its overwhelming importance in the industrial sector. According to 1958 Census of Manufacturing it employs 38.90 per cent of the total industrial labour adds 29.19 per cent to the gross value of the industrial output. The proportion of capital in it forms 22.6 per cent of total industrial capital. Moreover, according to the fourth round of the NSS[1], expenditure on clothing formed 8.68 per cent of that of the rural people; that means expenditure on clothing forms one of the largest single item in the non-food groups.

In this study behaviour of cloth sales by the organised mill sector of the Indian textile industry is related to the fluctuations in agricultural income as reflected in the foodgrain price. As the price elasticity of agricultural products is less than unity, the foodgrains price is used here as a proxy for agricultural income. The study employs quarterly as well as annual sales data. Before using any econometric model the data were first plotted on a graph; it showed that fluctuations in the production of mill-cloth were negligible. But quarterly average of inventories of cloth with the mills showed wide fluctuations. It also showed that inventory movements and movements in cereal price indices were in the same direction but with some time lag in the case of the former.

_____

[1]This abbreviation presumably refers to the National Sample Survey. It is not explained in the text of the original article.

of about 3. At a given time 76 per cent of families are reproductive. The average age at marriage for all religions is 12 to 13 years for females and 20 for males. The Hindu women were reported to be less fertile than the Muslims. Among the women of 30 years marital experience the average number of pregnancies is 6, and the number of living children 3.3, implying an almost 50 per cent conception wastage for all periods. It was found that 65 per cent of the couples of all ages do not wish to have more children than they have, of which 82 per cent cited "difficult to maintain" as the reason for not wanting more children. On the question of religious beliefs it was observed that nearly 66 per cent of the men and 92 per cent of the women reportedly would practise measures of birth control.

ii) *The Character and Findings of the Action Programme:* The programme is based on the hypothesis that family planning is a problem of modernization; it was started in six villages in 1961 and now covers about 60 villages.

a) The age and fertility characteristics of the participating families differ from their village averages (females were 4 to 10 years younger and therefore, more fertile, and have a greater number of living children).

b) The participation is greater (58 per cent) among resident non-members than among members of the co-operative societies.

c) The drop-out rate is high during the first 3 to 4 months, low for the next 9 to 12 months, again tend to pick up from 1 year to 15 months of the programme. The drop-outs are less due to pregnancy than other causes.

d) Over a longer period condoms are preferred to the foam tablets.

iii) *Observations and Implications:* These results lead to the following observations and implications:

a) There is a high degree of awareness and desire among the rural people to limit family size. Moreover, there has been a gradual shift in values from the large to small family ideals. These seems to be motivated primarily by economic deprivation.

b) Desire to limit the family size seems motivated by a desire of maintaining the *status quo* but not improving the quality of life. In half the cases women also reasoned child-bearing bring "unnecessary troubles" due to a very high rate of mortality.

c) Rural people are very likely to adopt programmes of modernization.

d) Improved agricultural practices alone seem to decrease their interest in family planning (as observed to date).

(A. D. BHATTI)

Gianni G. Zandano, "Economic Development, Terms of Trade, and Tax Policy", *Indian Economic Journal,* July-September 1964.

The paper presents a model dealing with the effects of economic expansion due to technical progress on the terms of trade, with special reference to under-developed countries.

Empirical evidence on the long-run tendency for the terms of trade to deteriorate against primary products was first provided by the United Nations Economic Commission for Latin America (ECLA) in 1949. The evidence has been criticised, and is yet controversial and inconclusive.

Professor H. G. Johnson's previous theoretical contributions on the subject are adapted into a simple model to compare the classical view with the kind of thesis expressed in the ECLA literature. The basic assumptions of the model are: *i*) two countries (Mancunia and Agraria) each having two sectors with partial specialisation; *ii*) Mancunia exports manufactured goods, while Agraria exports foodstuffs. The income elasticity of demand for manufactured goods is greater than unity and for agricultural goods less than unity; *iii*) increasing costs of production in both countries; *vi*) immobile capital, labour and technology internationally; *v*) factor-neutral technological progress, and *vi*) full employment in markets for goods and factors of production.

With incomplete specialisation, the rate of change of demand for imports is a function of the difference between changes in total demand for and domestic supply of import substitutes as determined by the respective elasticities with regard to income changes. Economic expansion will increase the total demand, but at the same time it will increase the domestic supply. As a net result, expansion may reduce, increase or leave unchanged a country's imports. If it increases imports, the terms of trade will turn against the country, because additional goods demanded can only be produced at increasing cost and prices.

The long-run tendencies in the movements of the terms of trade can be seen by concentrating simply on the values of income elasticity of total demand for "importables" and output elasticity of domestic supply of "importables". The fundamental condition for equilibrium to be maintained without any need of variations in the terms of trade is that the income elasticity of demand for importable goods must be less than the output elasticity of production of import substitutes.

Thus, on the demand side, the effect of economic expansion is termed pro-trade biased, neutral, or anti-trade biased depending on whether the expansion will increase the demand for importables in greater, equal or lesser proportion

than it increases the demand for exportables. On the production side, an expansion of output is defined as pro-trade biased, neutral, or anti-trade biased according to whether it increases the supply of importables in lesser, equal, or greater proportion than the supply of exportable goods.

When expansion takes place in Mancunia, on the consumption side it will be anti-trade biased as the income elasticity of demand for food is less than unity. On the supply side, the effects will depend on the source of expansion. Assuming the same pace of technological progress in both lines of production, expansion will make the country less dependent on international trade and improve the terms of trade when the income elasticity of demand for importables is less than the ratio of domestic production to total consumption of importables.

In case the expansion takes place in Agraria with no progress in Mancunia, rising income will be spent more on manufactured goods. Therefore, expansion is pro-trade biased on the consumption side. In the case of neutral technical progress in Agraria, expansion will tend to be, on balance, pro-trade biased and the terms of trade will deteriorate.

The classical economists took the view that comparatively technical improvements in agriculture would be of negligible importance in the long-run. Thus Agraria's demand for imports of manufactured goods would decrease with expansion. Since industrial output would increase more than proportionately to output, the output elasticity of domestic supply of importables will exceed the income elasticity of demand for importables and make expansion anti-trade biased on balance. Mancunia will be more dependent on international trade since income elasticity of demand for food is positive, though small. Thus international trade becomes the mechanism by which underdeveloped countries could get their share of the benefits of technical progress in industrial countries. However, the classical view has not proved to be valid historically.

On the other hand, the Prebisch-Singer thesis about long-run deterioration of the terms of trade for underdeveloped countries assumes the income elasticity of demand for importables to be less than unity for developed countries and greater than unity for underdeveloped countries, and faster technical progress in industry than in primary production. Thus for any prediction, quantitative estimates of the income elasticity of demand for and output elasticity of production of importables are essential.

When prices do not reflect relative trends in productivity, however, the pace of technical progress is irrelevant, as the market remains no longer perfect. It is

shown that when the ratio of income elasticity of demand to output elasticity of production of importables exceeds ratio of domestic production to total consumption, there will be a permanent tendency to imbalance resulting in the deterioration of the terms of trade. Moreover, if in addition to Engle's law it is assumed that all increases in productivity result in higher incomes in industrial countries due to the presence of full employment and monopoly power, and in underdeveloped countries increases in productivity result in lower selling prices, the industrial countries get the benefit of their own technical progress as well as that of underdeveloped countries.

The various policy measures to correct the long-run tendency of deterioration in the terms of trade could be export duties, diversification of primary products, and industrialization.

(SYED MUSHTAQ HUSSAIN)