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AGRICULTURE AND THE POLITICAL SCIENTIST

WHATEVER motives are followed or interests served, human action in agricultural policy, as in any other fields of social action, is subject to four main constraints: technological, economic, social and political.

1. *Technological* constraint comes about in answer to the question 'Can it be done at all?' Is a certain action *possible* under conditions of existing knowledge and resources accumulated in the natural sciences? Can the available means achieve the desired ends?

2. *Economic* constraint poses the question 'Does it pay?' To what extent is one action *preferable* to another in the cost–benefit line.

3. *Social* constraint puts a brake on action with the question 'Is it acceptable for the survival of the social environment in which the action is taking place?' since no action can in fact take place in a social vacuum.

4. *Political* constraint deals with the question 'Is the action agreeable to those in control of political power in a society?' i.e. How will it affect the power structure? Will it strengthen or weaken it?

The technological questions must be answered by the natural scientists and technologists, with their ever-expanding field of action. The economic questions are handled by economists who optimize benefits. Social action is covered by all those who pose problems of values: ideological, religious, legal or philosophical, contracting or expanding the field of social action. The political questions fall to the political scientists who explore the power structure and how human relations are affected by it.

The order of these constraints, their magnitude, direction and acuteness may vary, but it is their combined effects that are felt. Natural scientists, economists, sociologists and political scientists may all study the intermixing of influences, the extent they substitute for, conflict with, overlap or complement each other. Their subject matter is the same, but their intentionality in research depends on the laws and principles of their respective disciplines and therefore gives

rise to different conclusions. Whose task is it to integrate these conclusions, and provide the best answer? It is our opinion that no solution is scientific enough to justify actions which go beyond the consensus of what is acceptable to those fellow men who work and have to bear the ultimate risk and carry the burden of such actions. In the dilemma between the ideological imposition of a Cause and the democratic consensus of the People, we opt for the latter.

Our particular task in this paper is to explore the special role the political scientist can play and the useful function he can perform in contributing to the improvement of the position of those active in agriculture in the rapidly changing world of today.

I

Political science is comparatively new as an academic discipline. Studies of political behaviour go far back into human history. A body of political doctrine, based on generalized experience, was established long ago. But only recently has political science developed as a separate social science, building a consistent system, searching for general laws of political behaviour, assessing the scales for weighing rational expectations against probable risks in prediction and attempting to measure complex political activities by quantitative methods.[1] It deals with subjects such as structure and distribution of power over men in societies, the social and economic bases of such power which conditions long-term political action, long and short term changes in location, the strength and tension of such power. It explores operational ways and means for guiding political decisions and influencing their causes and consequences.[2]

[1] Some recent books dealing with general political theory which we consulted are: R. Bendix and M. S. Lipset (ed.), *Class, Status and Power*; B. de Jouvenel, *The Pure Theory of Politics*; D. Lerner and H. D. Laswell, *The Policy Sciences*; Bert F. Hoselitz (ed.), *A Reader's Guide to the Social Sciences*; R. A. Dahl and Charles E. Lindblom, *Politics, Economics and Welfare*, New York, 1959; Carl Friedrich, *Man and his Government*, McGraw-Hill, 1963, New York.

Soviet sources on political theory are based on the works of Marx, Engels and Lenin and for the former period of Stalin. A short survey can be found in any textbook on political economy, e.g. N. A. Tsagolov, *Kurs politicheskoy ekonomii*, Moscow, 1963.

For a more systematic presentation see L. F. Ilytchev, *Osnovy politicheskyh znanij*, 3rd ed., Izdatelstvo polytitcheskoj literatury, Moscow, 1959; A. M. Birman, *Nekotory problemy nauki upravleniji narodnim hozjajztvom*, 2nd ed., Izdavltelstvo ekonomika, Moscow, 1965.

For Yugoslavia see the periodical *Politička misao*, Zagreb, Faculty of Political Sciences, 1964.

[2] 'Power consists in the probability of preserving the inner structure of one of the systems in a clash with little or no relevant modification, at the price of bringing about relatively

On the one hand we are dealing specially with Agriculture, on the other, in explaining power relations, we are limiting ourselves to *Public* power as a potential for determinative action, or as a determinative action itself exercised by Public Authorities which have an unconditional monopoly of such power. These authorities have the capability of affecting the actions of people engaged in agriculture, using the threat of severe deprivations for non-conformity with the policies intended.[1,2] Thus the actor *exerting* the influence on agriculturists is the general government, and the actors *subjected* to such influence are the agriculturists. In other terms we are examining what changes in agriculture, occurring at what time, induce the government to act in favour of agriculture, and what changes in society cause the government to take measures which impose certain non-intended behaviour upon agricultural producers.

We have developed our explorations along four ideal types of agricultural development, which it seemed to us could be singled out, isolated and explained, from among the great variety of types of agriculture in different countries at various levels of development and under different social and economic systems (see synoptic Table 1). We are aware of the shortcomings of these generalizations, but we will be content if, through them, some light is thrown on to the problems of interdisciplinary research in economics, demography, sociology and political science.

We have explored the position of these four types of agriculture along the lines of social interdependence as expressed in agricultural policies seeking life parity, price parity, income parity and technical parity. We found the determinants of such policies first in changes of relative and absolute numbers in agricultural population, taken as independent variables: when agricultural population increases fast in absolute numbers and slowly in relative figures; when there is almost absolute stagnation in absolute population, and great changes in relative population (the population turning-point); when such

large modifications in the structure of the systems which clash with it. . . . Politics . . . consist of such production, use, and distribution of power as will prove compatible with social inclusiveness and growth beyond the power field alone. That social group or structure has most strength . . . which can undergo the widest range of changes without losing its cohesion in a few essentials, so as to be able to include other patterns and structure within itself without losing its identity or its continued capacity for growth.' Karl Deutsch, *Nationalism and Social Communication*, M.I.T. Press, 2nd ed., Cambridge, 1966, pp. 73, 74.

[1] Laswell Kaplan, *Power and Society*, Yale University Press, 1950.

[2] R. A. Dahl, 'The Concept of Power', *The Behavioral Science*, 1957, vol. 2.

populations begin to decline absolutely and relatively; and when the decrease is fast in absolute figures and slow in relative.

We have called the four types of agriculture subsistence agriculture, marketing agriculture, entrepreneurial agriculture and contract or planned agriculture. The first maximizes production per hectare, the second production per sale, the third that of the production unit

TABLE 1. *Types of agriculture (Synoptic table)*

Agricultural policies	*Life parity*	*Price parity*	*Income parity*	*Technical parity*
Agricultural population changes	Fast absolute increase	Absolute stagnation	Absolute decline	Fast absolute decline
	Relative decline	Fast relative decline	Relative decline	Slow relative decline
Type of agriculture	*Subsistence agriculture*	*Marketing agriculture*	*Entrepreneurial agriculture*	*Contract and planned agriculture*
Maximization of production	Per ha.	Per sale	Per unit	Per man
Main role of agricultural operator	Livelihood provider	Commercial dealer	Capitalist entrepreneur	Technical manager
Main risk	Natural risk	Commercial risk	Financial risk	Innovation risk
Optimalization method	Cost-effectiveness	Cost-price	Cost-benefit	Cost-efficiency
Lower critical policy line	Hunger line	Just price line	Poverty line	Technical obsolescence line
Upper critical policy line	Waste line	Maximum price line	Opulence line	Technical prodigality line
Main instrument of taxation	Poll tax Land tax	Turnover tax, excise, customs duties	Income tax	Corporation tax

as such and the fourth production per man occupied in agriculture. The corresponding roles of the head of the agricultural production unit are those of family livelihood provider; commercial dealer in agricultural produce; agricultural entrepreneur; and technical manager. The first has mainly to fight natural risks, the second the whims of the market, the third the pitfalls of investment and the fourth the intricacies of technical progress.

We shall describe in greater detail the differences accruing from various methods, and how differently gains are assessed in our four types of agriculture. After that government measures will be explored along the corresponding critical upper and lower lines of agricultural policies.

II

In recent years reasonably great advances have been made in attempts to use more exact methods in decision making policy instead of mere 'political intuition', stirred by emotion or 'sound judgement' based on a limited amount of facts or even mature experience of past procedures (see Appendix). Advice to policy decision makers is most necessary concerning this new field of policy analysis, since the new methods use procedures which require special technical knowledge of the factors influencing, and elements forming, the connexions and interrelations upon which modern decision making rests. This is the particular field of research for a special type of highly qualified political scientist. Agriculture is not debarred from using this opportunity, and the people interested could reap good profit from using quantitative methods to measure gains and losses from agricultural policies.[1] This is of particular importance in countries at a lower level of development where the danger of voluntarism and arbitrariness is especially great, because of the limited interdependence of agricultural activities and of lack of political information among decision makers.[2]

Cost-benefit or operations research methods could be applied reasonably well to our four types of agricultural policy. There is quite a family of such methods. We will distinguish four according to the degree of measurability, the directness of the stream of costs

[1] Programming systems have as their objective 'to sort out all the myriad programs and activities of the defense establishment, and regroup them into meaningful program elements, i.e. integrated combinations of men, equipment and installations whose effectiveness could be related to one . . . objective. These are the basic building blocks as well as the decision making levels of the programming process. . . . Whenever possible program elements are measured in physical terms . . . as well as in financial terms thus including both "inputs and outputs", costs and benefits', C. Hitch, *Economics for Defense*, University of California Press, 1966, p. 32. Forget all about 'defense' and read instead 'agricultural policy', and you will realize that a complex activity such as agricultural policy faces a similar situation. Indeed the Department of Agriculture is among the twenty-two U.S. Federal Government agencies to which the cost-benefit analysis methods will have to be applied.

[2] 'In less developed economies the information problem is of capital importance because of the price inadequacy . . . the lack of knowledge of resources, of expert surveys, of technical know-how, of the difficulties of assessing economies of scale, and of consumer preferences at higher or variant income distributions, further inhibit the practical use of opportunity costs', M. Kaser, 'Analysis of Costs and Benefits in Social Programmes', UN *Problems and Methods of Social Planning*, 1964, p. 52. Under these handicaps action cannot be rationalized, but remains full of political voluntarism ending in dictatorships to correct other people's voluntarism by their own supreme voluntarism—until the mutual checks and counterchecks of each others' voluntarism in the self-interest of survival opens the way towards democracy.

encountering benefits and the intentionality of the relationship.[1,2] These four are cost-effectiveness, cost-price, cost-benefit, cost-efficiency.

We propose to use the cost-effectiveness method when we analyse the life parity policy. Here we have a case where it is least possible to reduce the measurement to a common denominator. The object given is to secure means of subsistence for the family. It is an objective that is so overwhelming that the measurement of cost is not relevant in money terms. Performance is stated only in natural effect. The objective is measured by how well subsistence is provided for how many members of the family, and how the family is kept together.—Cost-price analysis belongs to the marketing type of agriculture, which is the classical type of market relation reduced to market prices and costs in money terms. Money is the common denominator and gain is calculated as profit, i.e. difference between cost and price. Nevertheless one must emphasize that the relationship is linear, and profit is calculated by aggregating commodity relationship. Prices and cost are reduced to the *present value* at the market under conditions of imperfect competition. Social costs and social gains are not taken into account.—The method for what we call entrepreneurial agriculture is cost-benefit analysis. It embraces the total stream of tangible and intangible benefits, gains and advantages against the total costs of achieving them, private and social. Both are evalued in money terms expressed explicitly or imputed when natural, non-moneyed elements are concerned. The performance is looked at as a whole with intangible and secondary effects and side-effects added. The choices of alternative uses and mixes of capital are decided taking into account their lifetime operating costs.—The most suitable method for contract agriculture is the cost-efficiency analysis. The efficiency method

[1] 'Government services are not usually sold. Sales and market prices are not good measures of benefits . . . The Benefit-Cost analysis provides a systematic way of thinking about allocation problems in government. It makes explicit assumptions which underlie budget figures, determines what activities might be more efficiently performed by private enterprise and what more appropriately carried out by the government. This analysis is most persuasive where the cause-effect relations are clean and the benefit-cost relations measurable. It has the purpose to inform the policy makers of efforts and effects to be considered, thus serves as a tool to aid in policy and budget decisions', Lester, *Manpower Planning in a Free Society*, Princeton University Press, 1966.

[2] For special application of the system in government policy in the U.S.A. consider the PPB (Planning, Programming, Budgeting System) introduced first in the Department of Defense and now spreading gradually to all other U.S. government departments, for which great merit goes to former Assistant-Director of the Bureau of the Budget, Henry S. Rowen. I am indebted to Mr. Rowen for information regarding the general use of these methods and the indication of bibliographical sources.

takes into account natural and money indicators measured in a scientific manner (e.g. money cost per calory unit, fat content of milk, animal proteins in food, capital coefficient of investment, etc.). It implies the maximum use of specified resources at minimum cost, and economies achieved must not affect the implementation of objectives. These increases in efficiency form the main basis for the agriculturists' income.

III

How do changes in the politically exogenous environment of agriculture affect, penetrate or permeate the political sphere of the power structure? We are restricting ourselves to the study of the application of public power or general government as it affects agriculture. In this field we shall study the following three questions: (*a*) who are the *actors* administering the application of power in agriculture? (*b*) what are the *means* by which this application takes place? (*c*) what are the *ends* which make the government intervene so that the levelling mechanism[1] and the parity policy are put into action? This parity policy is on the borderline between specific agricultural and 'general social' (non-agricultural) interests.

In the context of this paper agricultural policy implies no other motivation than that of the use of power for making deliberate changes in agriculture in order to preserve an existing social and political system. We are not dealing with other motives of social action affecting the redistribution of agricultural goods and services such as aid, transfers in the form of gifts or religious alms, moral charity, humanitarian equality or national and class solidarity, etc. We are leaving aside also the effects of 'spontaneous' market relations striving towards maximum returns to buyers and sellers of commodities. Nor are we considering such targets as full employment through the firm mechanism conditioned by the observance of technical norms (coefficients).

Our specific concern is the government redistributive system as it affects agricultural goods and services, natural resources and capital income and produce, human labour and technical know-how.

[1] 'Levelling mechanisms are ways of forcing the expenditure of accumulated resources or capital into channels that are not necessarily economic or productive. Every society has some form of levelling mechanism, but in primitive and peasant economies levelling mechanisms play a crucial role in inhibiting aggrandizement by individuals or by special social groups', Manning Nash, *Primitive and Peasant Economic Systems*, Chandler Publishing Co., San Francisco, 1966, p. 35. For a description of some such mechanisms, cf. pp. 72–80.

1. *Actors*

Actors in the government redistributive system are politicians and government agency officials on the one hand, and on the other, people engaged in agricultural activities, and those whose wants are being satisfied by agricultural products. (*a*) These actors are in an assymetric position, the former using power to influence the actions of the others, the latter accepting the redistribution when it is in their favour, fighting against it when it causes them loss and setting in motion counteracting powers. (*b*) The specific character of this use of power in agriculture is that the government embodies a concentrated number of actors having a monopoly of power, while on the agricultural side the number of actors is very large and spread over a vast space, therefore their power is diffuse. (*c*) Power applied in agricultural policy has to pass through several levels of concentration which gives ample chance for deviation and distortions on the cost-benefit line. (*d*) A government redistributive system presupposes a certain centre of action which takes goods and commands services from one social group and gives to another (while keeping the lion's share for itself). In a monocentric system, based on a monopoly of power this centre operates without much control in the form of checking its redistributive effectiveness. Moreover waste can be presented disguised as efficiency if there is monopoly of information in the hands of the monocentre.[1] A polycentric system can be more effective in that it can counterbalance the action of one centre by the actions of other centres and integrate auto-regulative and auto-organizing systems to redress the upset equilibrium. In fact, instead of simple mechanical equilibrium we are proposing to strive towards a homeostatic equilibrium. It is our experience that integration by planning is more effective and less wasteful than centralization by command. Centralization does not necessarily equal rationalization.[2] Thus there are limits

[1] 'An actor is subject to a constraint when a state (use of goods or satisfaction) which he effectively desires, is made impossible or prevented from existing', F. Perroux, *Economie et Société. Contrainte—Echange—Don*, Presses Universitaires de France, Paris, 1960, pp. 134 ff. Perroux distinguishes the constraints of obstacles, of adversaries and of public authorities who have the monopoly of unconditional constraint. This constraint is limited, as with all monopolies, by potential rivals (in a democracy there are potential rivals who have a chance to replace the ruling group) and checking and mutual counterchecking of more than one centre of decision.

[2] There are two apparently conflicting views as to what the function of the centre is. 'A redistributive system of exchange is a form of reciprocity with political or economic centricity. Some central agency collects goods or commands services and then distributes them among the social units and persons who have proferred them. . . . Redistributive exchange rests on social differentiation along some axis of prestige and power in equality,

to the effectiveness of government redistributive systems. In fact, government redistribution is a sign of ineffectiveness in distribution by other mechanisms.[1]

2. *The Means*

The method used by the government redistributive system is command instead of demand, and requests to comply instead of supply, i.e. to comply with government orders where supply does not match the claims to satisfy demands as recognized by the government.

This system of redistribution operates under the principle of no equivalence of valuables exchanged, which affects the concept of parity. On the other hand there are no unilateral transfers (in the technical sense) as is often presented, but a reciprocity of interests, often more implicit than explicit. Government action in borderline cases of parities takes the role of equilibrator giving to some what was taken from others. Its gain is in the preservation of the power relationship, and the maintenance of the political structure. The pre-supposition is that the government is the representative of the interests of society. The measurability of effect on both sides is different. On the government side there is a much more easily measurable effect which can be expressed in terms of money. For the other side, since the gain from such action has its effect in physical dimensions, it is much more difficult to ascertain. This means that the burden of the cost and benefit of the gain is blurred.

but operates to minimize that gap, to constrain the use of power differentials in the society and to make status gaps more honorific and ceremonial than economic and political', Manning Nash, *Primitive and Peasant Economic Systems*, Chandler Publishing Co., San Francisco, 1966, pp. 32, 33.

The other view is given by Perroux. 'The preferences of the actors can be combined into a social order without the necessity to establish a dictatorship conceived as an order of preferences of a *Centrale*, in opposition to the preferences of a plurality of actors. By these two aspects the total order, the economic order of the global society of all actors, and all variables which characterize their choice, allows theoretically to determine the justified constraints and the requested constraints', F. Perroux, *Economie et Société*, pp. 142–3.

Our views about the role of the centre and polycentricity are expressed in *Problems of Planning East and West*, Institute of Social Studies, The Hague, Series Maior, vol. xv, Mouton, The Hague, 1966, pp. 82–100. See also 'Socialism in a Developed Country', *Foreign Affairs*, New York, July 1966, pp. 647–8.

[1] 'In developed societies spontaneous actions and reactions of social groups conveniently managed and transformed into collective habits, spare the Public Authorities an enormous effort of constraint. When the consumers vigorously and intelligently resist unjustified increases in prices, when the producers compete intensely with one another, when workers and employers agree to a certain formula to attach the wages to productivity, the State can intervene discreetly', Perroux, op. cit., p. 140.

3. *The Ends*

There are two lines of parity which determine the upper and lower limits of government intervention in agriculture by the redistributive system. The lower line is that where the government intervenes by using state power in order to transfer goods and command services from other sectors in favour of agriculture. Agriculture thus gains goods and services at present values in exchange for the expectations of the government of both survival and gain in the future. The upper line of parity is that where the government orders resources and services to be transferred from agriculturists in order to be distributed to the non-agricultural sectors.

Thus there are two critical lines of parity.[1] We call them critical on the lower level because they require government intervention to redress the upset balance where there is no strength in the agricultural system itself to return back to 'normal', i.e. where the limits of elasticity in the physical sense are approached. This happens, e.g. when hunger threatens the population with physical extermination; or when the price scissors are so unfavourable to agriculture that production needed by the non-agricultural population is seriously hampered; or when income in agriculture is so unfavourable that the agricultural population (the best part of it) leaves agriculture; or when technical efficiency reaches a stage where work in agriculture is so inefficient and so little productive that it cannot stand comparison in costs with other sectors and countries.

The *upper* line of parity is established on the subsistence level when there is hunger or deficiency among the non-agricultural population, or when prices of agricultural produce increase to such a level that they threaten to reduce the purchasing power of the non-agricultural population, or when non-agricultural incomes fall at the same time that opulence is reached by the reduced number of agricultural producers, sending the bulk of their produce to the monopolistic market. The technical prodigality line demonstrates that agricultural investments have reached a stage where they are stimulated by other than economic motives, such as status symbols, individual or collective, political favouritism or monopoly of power.

It is comparatively easier to establish a lower parity line assessed

[1] For different definitions of standards and levels of living see UN *Report on International Definitions and Measurements of Standards and Levels of Living*, March 1954, New York, p. 2.

by objective standards, and to find a common yardstick of measurement. But this cannot be said for fixing the upper parity line. Here political decision-making has a wider field of action, reaching from economic necessity to political party arbitrariness and division of the spoils. Naturally lines of parity change over time corresponding to changed situations and level of development. Changes vary with the change of political power too. Many methods have been devised in order to determine parity lines. The requirements set are that such lines should represent certain values adopted and assured to be the same for all individuals, agricultural as well as non-agricultural, or which differ in a known way within limits of the political system. These values should be able to be commonly accepted,[1] or at least not made unworkable by an upset of the existing power relations. They may be set by political factors, or accepted by them even though set by others (political party, ideology, national ideal, church, class struggle, etc.). Thus they have to be explicitly or implicitly socially recognized.

Parity lines should mobilize sufficient political support ('general social support' as the quoted UN Report calls it), to pull the victims of the upset economic balance back to equilibrium on the old or some new level through the use of political force.[2] There must be agreed standards of behaviour enabling social adjustment processes of beliefs, customs and accepted values to support such action of power.[3] Finally the degree of tension must be within the breaking-point of elasticity which kept the flexible balance of push-in and push-out, pull-in and pull-out factors in continuous check.[4]

The no return situation in some variables has to be counterbalanced by dynamic equilibrium in the stream of variables of a global balance. In fact we can recognize in the game three systems whose elements have to be put into equilibrium: on one hand is the internal system of power relations, and on the other two external systems, one of them is the agricultural equilibrium matching agricultural resources and requirements—the other is the non-agricultural system balancing the supply of agricultural resources to their non-agricultural require-

[1] UN *Report on . . . Standards and Levels of Living*, pp. 5–8, 45, 47.

[2] 'When social continuity becomes a conscious goal of most members of a society we may assume the society and culture are under attack from some overwhelmingly threatening other society and culture . . . an acculturation situation.'

[3] FAO, *Essentials of Rural Welfare*, 1949.

[4] R. N. Dixey (ed.), *International Exploration of Agricultural Economics*, 1964, Iowa State University Press, pp. 20–21.

ments. In the system of redistribution by government action, the government takes the role of the equilibrator of both external systems, transferring agricultural resources to the non-agricultural sector, or goods and services from the latter to agriculture. Such redistribution aims at putting the external system into equilibrium in cases when their own auto-regulative system and other systems of distribution such as the market, the contract or the planning, the village or the tribal mechanisms cease to operate effectively.

The study of such tensions and their discovery and measurement is the object of the research of the political scientist. His role is to locate the field of conflict, to shape the tools of analysis, to find the limits of tolerance of auto-regulation and the breaking-points of resistance to deformations, the connectedness of agricultural interrelations, the effectiveness of the economy and limitations to the use of power.

IV

1. *Policy of life-parity*

In this ideal type of agriculture, change is dominated by a considerable increase of agricultural population in absolute numbers, which is of greater rate than its relative decrease in comparison to the total population. The cause may be a demographic explosion, concurrent with lack of outlet in employment in non-agricultural occupations at home or emigration to other areas. There is also shortage of land and capital. This is the well-known and much discussed case of agriculture in most underdeveloped countries.

Agricultural production is carried out within the framework of a subsistence economy due also to a poorly developed infra-structure. It makes the peasant producer little resistant to the pressure of the big landowner whose interests dominate agricultural policy, but these are not considered to be critical any longer from a political power relations point of view. Land is the main factor of production to which labour is subordinated. Yield is so low that the fluctuation in the harvest over years makes a very high percentage of the average harvest. This minimizes efforts to capital intensification and favours extensive cultivation by cheap and dependent labour.

The main worry of the agricultural producer is to provide food and means of subsistence for his family. The greatest threat to this task comes from the blind forces of nature, and his fear of natural risk predominates over all rational considerations. Therefore he values

his performance, contrary to all advice and propaganda of agricultural experts, along the lines of cost-effectiveness and not cost-price relationship. He measures his efforts both in terms of natural outlay and monetary expenditure. But he evaluates his gains in terms of his performance expressed in the natural dimension, that of how he manages to keep himself and his family alive. The struggle for survival in physical terms is overwhelming.

The predominant multi-dimensional cost-effectiveness reasoning controls relations with the outside world. The meagre, marginal, market mechanism, with an imperfect price formation, on the brink of natural and moneyed sectors, gives ample opportunity for the greatest exploitation of the peasant. His relationship with the State in terms of taxes and other government services bears a similar character.

This situation determines the power relationship in the field of politics. The basic concern for the survival of the existing power structure is to maintain in existence the social structure based on subsistence economy, and in particular not let it fall below the lower critical point. This breaking-point is reached where the subsistence economy ceases to operate, and the whole social structure based on it blazes up into hunger riots, mob explosions, instinctive and uncontrollable mass movements, peasant revolt. Agricultural policy is dominated by the same factor: the priority goal is to increase food production for the auto-consumption of the agricultural producers themselves. Maximization of such production per hectare is the main policy target.

We propose giving such a policy the name of a *life-parity policy*, because it is based on the idea that the State is obliged to provide a minimum level of subsistence, and not to let anyone starve. If this threatens the agricultural population of an area, the non-agricultural and agricultural population from other areas have to provide means to assure the minimum parity level of subsistence. The measures to keep the agricultural producer above the hunger line are varied. They range from government distribution of free grain and other food to the needy agricultural population to the establishment of emergency village food baskets, regional and national food stock-piling, foreign aid in case of disaster,[1] the UN Food Emergency Fund, etc. Homestead laws, exemption from seizure of minimum

[1] e.g. imposition of food rationing in non-hunger stricken areas in order to help the hungry ones suffering from natural disaster (India).

areas under cultivation for debt or tax and poor laws[1] are all instances of legislation to preserve the peasant above the hunger line. So, too, are the organization of agricultural consumer personal credit, on the basis of government-sponsored mutual aid co-operatives; social, pensions and sickness benefits for agricultural population, public insurance against hail, fire, flood and animal diseases. Land tax or poll tax are the forms of taxation considered to be adequate for this situation and level of development.

The policy of expansion of the areas for extensive subsistence agriculture finds its natural or financial limits, and the main emphasis then turns to problems of land redistribution. Removal of the feudal obstacles to individual land inheritance and to commerce in land, and the strengthening of the mobility of landed property by creation of mortgage credit organization are the respective measures of land policy. Above all comes the policy of land reform, both as abolition of rent in labour, cash and kind, and in the form of real distribution of land,[2] which is an outward sign of the changed power structure where big landowners have lost their dominance.

We called the critical upper limit the *waste line*, in opposition to the hunger line. Waste takes place in a subsistence economy when agricultural products are wasted, i.e. used in a less economical way than they would be in the non-agricultural sector, when the latter is threatened with hunger, destitution or food deficiency, and when the market and other mechanisms of supply break down. Government measures taken to meet this situation are those of requisition of agricultural products in case of war, taxation in kind and compulsory deliveries to government agencies—at below real production cost price in some socialist countries, etc. The main concern of those in power is to extract surpluses from the subsistence economy to support the social overhead. The same kind of products are redistributed by the government as are required by the peasants for their subsistence, and stimulation goes to increase the quantity, i.e. surpluses over and above the limits of the needs of the agricultural population. The

[1] Allocation of land by land reform laws to submarginal smallholders or agricultural labourers.

[2] Many a learned foreign adviser or domestic expert, opposing distribution of large estates, has utterly failed when advocating a policy of cost-benefit optimizing of capital investment where cost-effectiveness of physical survival was at stake at a critical point for the existing power structure. These experts talked a language which was rational, but in another co-ordination system of rationality than the survival of the agricultural population. Their logic was out of place unless other than agricultural sources of income were created for the surplus population.

definition of such 'surpluses' is often very arbitrary. They are extracted either through the intermediary of the market, or the money-lending mechanism, or, when these fail, direct fiscal pressure is used, often acting in collusion with the market.

Maximization of the size of agricultural holdings and land reforms by real distribution are measures to extend the area under cultivation, when there is no more land available. Land above a certain level is considered as wasted surplus—when more than an area necessary for the maintenance of the family is in the hands of the big landowners or rich peasants while the remaining agricultural peasant population cannot exist on their meagre land on the level of subsistence, and where at the same time there is no opportunity for other employment or for emigration.[1]

2. *Policy of price parity*

The situation where a policy of price parity is required is reached when the agricultural population stops increasing in absolute numbers, stagnates, and begins to decrease. Therefore we call this stage the turning-point of agricultural population. The agricultural population continues to decline in relative terms at an accelerated pace. This is the same as saying that an increasing demand is being created for agricultural products by an increase in the percentages of non-agricultural population. The demand is threefold: need for food for the urban population, demand for agricultural raw materials for manufacturing and processing industries and requirements for export in order to meet the demand for import of consumer and capital goods, fuel and raw materials. Subsistence agriculture cannot provide an adequate supply for these purposes either in quantity or in kind. Instead of selling surpluses to producers' own consumption, production specially for the market has to be developed.[2]

Increased demand requires a specific stimulation for production for the market which develops to meet such new requirements. The

[1] The land reforms in Yugoslavia show how this upper limit of the critical parity line changes. Consecutive land reforms set the maximum size of agricultural holdings after 1918 at 600–1,200 ha., in 1946 at 25–35 ha. of agricultural land and in 1953 to 10 ha. of cultivated land. Land given to the beneficiaries of the reform amounted after 1918 to 0·5 ha. per member of the household, and in 1948 to 1·5–2 ha. per household.

[2] Most of the East European countries experienced a land reform after the First World War, which had to secure, by real division of land, subsistence to millions of peasant families of the region. During the Great Crisis of the Thirties the main problem of the agrarian policy was the problem of the 'price scissors' between agricultural and industrial prices of goods. The same problem seems to be one of the guiding topics of discussion at the UN Conference on Trade and Development in Geneva in 1964.

line of supply and demand now moves along the cost-price axis. The demand is effective in monetary terms of available purchasing power. Supply also has to be effective on the market, which means that the time dimension is reduced to the present value of actual exchange through the market mechanism.[1] Thus the producers' market performance depends on the continuity of his flow returns which secure not only his means of livelihood but also his ability to produce which depends on the inflow of production goods. Thus to the natural risks of production, risks of marketability are added. They provide the lower critical point of operations of the market mechanism.

The agricultural producers' main role becomes that of a commercial dealer in agricultural produce. What his product-mix should be in order to maximize his cost-price differential depends on his personal ability. Maximization of sales for profit becomes uppermost. The price scissors between the product bought and sold by him are the indicators of the producers' performance.[2]

The power structure thus depends to a larger extent on agriculture on three areas which communicate through the market mechanism. If the flow of food to concentrations of urban population is upset, serious political problems might arise. Even a reduced flow will manifest itself in an increase of the cost of living, will cause workers' strikes and discontinuity in non-agricultural production, which then brings about unemployment. Exports would seem to be the most adaptable if it were not for the inelastic local demand for imported goods, capital and know-how, which have to be paid for by agricultural exports. Therefore they have a critical influence on the foreign balance of payments. Thus agricultural policy is mainly preoccupied with problems of price parity with the aim of stimulating agricultural production for the market. It also has to act as a countervailing force in order to keep the flow of domestic agricultural production

[1] The production process is conceived as an isochronic and equivalent process, i.e. the market mechanism is not interested in the time dimension (how long it takes to produce the goods, and how long capital invested will last, etc.), it is equivalent in the sense that all goods at the market are supposed to have the same price whatever the expenses incurred.

[2] The price parity was defined first in 1933 in the U.S., 'to re-establish prices to farmers at a level that will give agricultural commodities a purchasing power with respect to articles that farmers buy equivalent to the purchasing power of agricultural commodities in the base period'.

It is very interesting to follow the subtleties of the changes in the definitions of the price parity in the U.S. from 1933 onwards. Cf. O. V. Wells, 'Parity prices and parity income formulas 1933–57' (U.S. Congress, *Policy for Commercial Agriculture, its relation to economic growth and stability*, Joint Economic Committee, November 1957).

increasing in spite of any adverse tendency in price relationship on external or internal markets.

This is the lower critical point. The upper one develops when the prices can no longer ensure increase of agricultural production and structural changes become necessary for survival.

3. *Income parity*

When the agricultural population continues to decline in relative terms and also begins to decline in absolute numbers the stage of income parity is reached. The pull-out forces away from agriculture towards other activities become stronger than the pull-in forces, and rural exodus takes proportions which depletes agriculture of labour. Optimalization of production *per unit* (farm, estate) now becomes the main issue in agriculture. Capital investment is the chief factor in the search for greater benefits; and the accelerated process of substitution of labour by capital, and to a larger extent the substitution of capital of lower productivity by that of superior productivity takes place.[1] To the market dimension another important dimension is joined, that of time. The question of the longevity of the capital-mix and the quality of capital (technical progress) play a predominant role. The main function of the agricultural operator becomes that of a capitalist entrepreneur securing the right capital-mix in order to optimalize his income. Thus to the lessening influence of the natural risk and the extended risk of market relations an ever-increasing financial risk of capital investment is added. The decision-making process involves so many decisions a day among so many variants that only a person living on the spot, used to making decisions and guided by a knowledge of his personal interests, can carry it out.

Capital for investment is available to agriculture in general terms like capital investment in all other sectors.

Capital investment becomes so large that the burden cannot any

[1] There is a marked difference between the income parity and price parity. Poor farmers who sell little to the market would not be protected by the policy of price parity. Therefore suggestions were made to accept an income parity, which was defined in the U.S. by the Agricultural Act as 'gross income from agriculture which will provide the farm operator and his family with a standard of living equivalent to those afforded persons dependent upon other gainful occupations'. And commenting on it, O. V. Wells said: 'The determination of equivalent standards of living involves much more than equivalent dollar incomes. A family's well-being depends not only on income but also on other factors such as the accumulation of assets and consumer goods over the years, the availability of adequate health and educational facilities, and such intangible factors as are involved in evaluating country versus city life.' (U.S. Congress, *Policy for Commercial Agriculture*, p. 520.)

longer be successfully carried by the producer alone and he increasingly becomes more a technical manager and less an entrepreneur. In a capital intensive agriculture to counteract the long term risk of the market, contract economy and economic planning increasingly come into use.

Specialization and fast technical progress mean that less capital is necessary per production unit, and productivity in agriculture becomes higher and rises faster than in many industrial activities.

The bi-dimensional cost-price relationship is expanded into a multidimensional cost-benefit relationship, where the differences between a stream of cost and a complex concept of benefit are optimalized.

Power relations are affected by this in many ways. On the one hand the number of agricultural voters is declining fast. The ever-increasing need for capital investment per man puts a brake on the entrance into agriculture of all those who are short of capital. This would lead to further social differentiation of agriculture into capitalist agriculture and proletarians if the 'pull' forces outside agriculture were not to attract the latter at a faster rate than they were proletarianized. Thus the agricultural proletariat is reduced just at the time when entry into agriculture has become difficult.

Agriculture is no longer a sector outside the business sector run according to exceptional economic considerations. It has become part of the general entrepreneurial economic system. In this situation an income-parity policy becomes the main preoccupation of government policy[1] with triple purpose: to paralyse the influence of rural exodus, to assure an adequate rate of general interest for the capital invested in agriculture and to offset the effects of monopolistic and monopsonistic power over agricultural production in an integration process.

A parity policy finds its lower critical point at the income level of the *poverty line*.[2] This line can be described in absolute terms as income per family of agricultural producers of a certain level (say

[1] The dominant trend in agricultural policy in European socialist countries in the 1960s became ever more the problem of income parity. The policy manifests itself in measures to increase the incomes of the kolkhozniks, and to secure them by regular payments, social insurance and pensions, e.g. in the U.S.S.R. in 1966. Cf. R. Bićanić, 'Problems of socialist agriculture', *Indian Journal of Agricultural Economies*, Bombay, July–December 1964.

[2] In the U.S. the povery income line was defined as income of all those families which is below $3,000 a year. The Social Security Administration defined a poverty income standard taking into account family size, composition and place of residence. Of all farm households 30 per cent. were classified as being under the poverty line (*Economic Report of the President*, 1966; p. 113).

$3,000 p.a.).[1] Or it can be more adequately expressed as the income which still keeps the agricultural farmer on land together with the members of his family. The line can be differentiated according to the income differentials in various countries, and regions within the country. As there is no question of earning a rate of profit for invested capital but of survival on land as owner of a distinct production unit, it is necessary to introduce into the parity comparison also all items measurable in money and in kind as well as non-measurable elements of the standard of living, such as cost of health and educational services, opportunity costs for employment, leisure time, recreation, etc., and other elements which in a comparison of town and country life might act in favour of the peasant leaving the land in search of a better level of living.

Thus instead of a relatively simple cost-price line, or cost-profit relation an overall cost-benefit is required to define the poverty line.

Therefore other elements are added to mere agricultural economic policy of production, marketing and of subsidies and tax exemptions, such as educational and health facilities for farmers' children, special agricultural or overall national health service including the agriculturists, youth clubs, community development centres, etc.

The top critical line of income points is that of *opulence*, by which is meant an income level which, when overstepped, puts in motion redistributive action by the government for reasons of adequate sharing of the burden of the social overhead, or social equity, or political pressure against unearned incomes. The main instrument of such redistribution today is the progressive income tax and progressive inheritance tax (death duties). In socialist countries it is the capital tax, profit sharing between socialist agricultural estates and the government, etc. Some measures of legislation in favour of agricultural labour can be put into the same category in redistributing parts of the opulence income to those who laboured for it. Nationalization of landed estates is the most radical measure to end the opulence of some.

4. *Technical parity policy*

This type of agriculture develops when the decline in agricultural population slows down in relative terms, i.e. when the division of

[1] The problem of poverty is widely treated in the U.S.A. in Reports of the President. 'Poverty is the inability to satisfy minimum needs. The poor are those whose resources—their income from all resources, together with their asset holdings—are inadequate', *Report*, 1964, p. 62.

labour has reached stagnating level, but the absolute number of agricultural population declines rapidly.

Replacement of labour by capital is no longer a matter of profitableness but an absolute necessity since there is simply no labour available for agricultural work at any price. Abundance of capital in the country makes heavy capital investment possible in agriculture, and spectacular technical progress reduces the capital–output ratio in agriculture as elsewhere. Therefore less capital per unit of product is required.

Personal abilities are less demanded of the farm operator and his risks reduced by contracts in marketing, by technical services and various forms of insurance. His main risk is the risk taken for capital investment in innovations. Personal abilities are greatly supplemented by extension services, education and government production research (farming by recipe!). Integration relieves the farmer of threefold heavy risks, natural, commercial and financial, but he has to pay for this by a considerable reduction of his independence.[1] This is so because combinations of production factors are no longer so dependent on farmers' personal skill and experience as before, but more on research, and development of formulae for production factors. Capital remains the main factor of production and a common denominator of success. Therefore economies of scale can operate optimally and concentration of farms into bigger units dominate. Rewards for resources used are similar in all farms in function of capital invested, thus depending on accumulation and indivisibility of capital. Prices are also similar in all agricultural enterprises and consequently the differential pay-off depends on the managerial skill of the farm operator; technical management becomes his main function.[2] Cost-efficiency becomes the leading criterion of performance.

[1] In America the idea of the freedom of the farmer is linked to the minimum of government intervention. Arguments put forward in favour of this are: that freedom to decide the use of one's resources is a basic value essential to the fullest development of the individual; farm income and efficiency will be greater if farmers are free to work out their own decisions; government intervention involves cost to taxpayers and is an inconvenience to farmers. U.S. Congress, *Policy for Commercial Agriculture*, p. 505.

[2] D. R. Kaldor (Iowa State College) set the following requirements of economists for efficient farm industry: 1. The output of each farm product would be produced at minimum cost. This would mean that all producers would be using the best practices and the lowest cost combinations of land, labour and capital. 2. The composition of farm output—the relative amount of each product—would be geared to the pattern of demand for agricultural commodities. This would imply that the rewards for resources would be similar in all

In such type of agriculture the bottom line of parity is the technical *obsolescence* line. Competition subordinated to the predominance of technical progress simply cannot let the farmer operate below a certain technical level. Neither can this be in the interest of the national economy as a whole. The gap between technical possibilities and actual performance reaches the lower critical point in receptive capabilities of agriculturists, in comparison to non-agricultural occupations. The discrepancy between hard labour in the fields and ever softer labour in factories and in town further creates pressure for technical progress. Vocational and managerial training, general education up to college level, government agricultural extension services, expansion of research and development facilities, are the measures of government policy. Technical aid is the outward recognition of such endeavours both in national and international fields in order to bring about technical parity and spread minimum technical knowledge in international comparisons.

Some more coercive redistributive measures have been taken in connexion with technical parities. Such are laws (e.g. in the U.K. and Yugoslavia) ordering private owners to work their lands according to some minimum technological standards under threat that land might be taken from them and rented to more able managers; obligation to work one's own land, etc. Use of technical norms prescribed by law in socialist agriculture is another example of such minimum technical lines.

The upper critical line of technological parity is what we call the technical *prodigality line*. This is the level of technical work above which the government redistributive mechanism is set into operation, because of application of technical progress beyond economic reasoning (e.g. what is technically possible but economically does not pay or cannot be permitted in terms of the social values accepted by the society).

This is the case of over-capitalization in agriculture which some government measures try to reduce, and of conspicuous production (e.g. use of some means of production as a status symbol). Government measures restricting production and paying premiums for not using available capital can be put into the same category of technical prodigality, like the production restrictions in the U.S.A. (soil bank,

farm enterprises. 3. The total output of farm products would be adjusted to the total demand to give a level of prices that would be similar in all farm enterprises.

D. R. Kaldor, 'Farm policy objectives: A setting for the parity question', U.S. Congress, *Policy for Commercial Agriculture*, November 1957, p. 505.

subsidies, etc.). Government prescribed standards of production can also be classified in a similar category.

V

Having established the existence of constraints to social action, and examined the types of agriculture from the point of view of their social recognition by government action in *parity* relation to other interests in society, we ask ourselves what role the political scientist can play in making and implementing agricultural policy. We emphasize that we are not talking about politicians, men of action, but about political scientists, men of science. Our purpose is not to determine the field of action and poles of attraction of politocrats, who make choices of final decisions and pass value judgements. We are opposed to the idea that such choices should be made by bureaucrats, people who run government affairs from offices by rules and regulations, or by technocrats, who think they know all the answers and therefore have the divine function to run human affairs.

We believe that politics, including agricultural politics, is too serious a business to be left either to the technicians or the economists alone, nor should it be left unconditionally to the politicians. Each of these has a specific role and acts under specific constraints in the complex game of policy-making.

We agree that politics and economics have a common basic ground, and that 'politics is the concentration of economics' (Lenin). When an economic situation becomes so 'thick' that it requires government action then it becomes a political question. On the other hand we recognize the danger (expressed by Max Weber) of giving advice without bearing the responsibility. In this mixture of various roles it is not only useful and advisable, but imperative that all those engaged in formulating agricultural policies or implementing political measures in agriculture be trained in essential matters of political science. Reliance on experience and common sense in politics, justified as it is neither in agricultural technology nor agricultural economics, is no longer enough in view of the increasing complexity and improvements in scientific knowledge.[1]

[1] Here is the advice given by a prominent American scholar to the famous Mexican National School of Agriculture at Champingo: 'We need to know more about institutions of law and government and to find how they can be better employed in agricultural development. . . . Political sciences and law have never directly been considered part of the rural social sciences in the U.S. probably because so many of our agricultural colleges are part of universities that emphasize law and government in other faculties. Yet these

What then is the specific role of the political scientist in agricultural policy? In our opinion his main task is to rationalize the process of decision-making and implementation. It is for him to prepare the logistics of decision-making, and to find functional relationships in the political game. The political scientist can perform his role in different capacities such as:

(*a*) He can act as an *expert*, a research scholar, engaged in finding facts and exploring their relationships; (*b*) he can act as *adviser* giving his opinion on alternatives presented and exposing the consequences of alternative decisions to be taken; (*c*) he can be employed as an *apologetic lobbyist*, presenting, advocating or defending those agricultural interests which hired him; (*d*) he can also act as an *arbiter* weighing arguments and counter arguments in a conflict of interests and find whose ends are best served by what means.

There are various approaches to political conflicts which the political scientists have to explore. Among many theories we consider that special attention should be given to the Dahl-Harsanyi theory of political games. Dahl[1] found the following elements of power relations: (*a*) the *base* of power, that is the resources that the actor can use in order to influence other people's behaviour, such as facts about the number of voters and their class structure, the weight of economic interests, the existing legal situation and institutional framework, etc.; (*b*) the *means* of power, i.e. the tools of action by which resources can be applied to influence the opposite opinions; such as public meetings, publicity, speeches in parliament; (*c*) the *scope* of power, which represents a set of actions undertaken as a whole, covering the purported ends; (*d*) the *amount* of power set in motion compared to the tasks to be performed, that is the probability of actually performing the desired action; (*e*) the set of individuals over whom power is exercised by the actor.

To these, in our opinion, another important element should be added, that is the number of actors taking an active part in the action and forming the power structure of a society.

Harsanyi[2] has added two important dimensions to Dahl's elements

subjects may well be part of an adequate social sciences program under your conditions', Bryant E. Kearl, *Agricultural Development Council Papers*, New York, May 1966, p. 5.

[1] R. A. Dahl, 'The Concept of Power', *Behavioral Science*, 1957, p. 2, no. 2, pp. 201–15.

[2] John Harsanyi, 'Measurement of Social Power, Opportunity, Costs, and the Theory of Two Person Bargaining Games', *Behavioral Science*, no. 1, 1962, pp. 67–80. 'In more precise words the costs of A's power over B will be defined as the expected value of the costs of his attempt to influence B. It will be a weighted average of the net total

of power. His main contribution is the effort to measure the gain from the political game. His elements are: (*a*) the costs to the actor of attempting to influence the opponent's behaviour; (*b*) the strength the actor has to apply in order to make his opponent yield to his influence in the game.

By these methods experts in political game theory can quantify to a considerable degree of probability some gains and losses from political action which may be useful for all concerned to know.

APPENDIX

There is considerable difference of opinion[1] as to the definition, methods and objectives of the cost-benefit analysis, which is the most popular name for a family of concepts and overlapping methods dealing with the choice of alternative uses of means for intended ends.[2] Some authors talk of cost-benefit, others of cost-utility and still others of cost-effectiveness, of operational research, and of system analysis, etc. A stage has been reached when some efforts at systemization would be useful.

All authors dealing with these methods have in common the extension of the computation over and above micro-economic costs by book-keeping methods, to total social or external costs and gains, in order to maximize the ratio of achievements to costs. To quote a few examples of differences of approach: Alan Dean[3] defines cost-*benefit* analysis as an effort to measure tangible and intangible benefits against the costs of achieving those benefits. Cost-*effectiveness* for him is 'selection of alternative approaches to the achievement of a benefit already determined to be worth achieving'. Cost-*utility* analysis is defined by him as 'a specialized technique of operations research utilizing advanced mathematical techniques, particularly

costs that A would incur if his attempts were successful and if the net total costs that A would incur if his attempts were unsuccessful.'

[1] Robert Dorfman (ed.), *Measuring Benefits of Government Investments*, The Brookings Institution, Washington, 1966, Introduction, esp. p. 7.

[2] The most systematic presentation, including an ample bibliography of the cost-benefit method is given by R. A. Prest. Survey in the *Economic Journal*, London, December 1965 which is reprinted in the *Surveys of Economic Theory*, vol. iii, issued by the American Economic Association and the Royal Economic Society, Macmillan, London, 1965. See also an excellent report to the Canadian Conference of the *Resources for Tomorrow* by W. R. D. Sewell, *et alia*, *Guide to Benefit-Cost Analysis*, Roger Duhamel, Queen's Printer, Ottowa, 1965.

[3] As quoted in David Novick (ed.), *Program Budgeting*, Harvard University Press, 1965, p. 311.

model building, as an aid to decision making'. G. Steiner[1] defines the various methods differently. Cost-*benefit* analysis is a method to 'measure the benefits, gains or advantages for achieving the objectives by each alternative means chosen for examination . . . requiring calculation of all major costs and benefits that make comparisons relevant . . . alternatives from measurement of a common denominator, usually money'. And he defines cost-*utility* as the 'most objective evaluation possible of the cost of alternative programs in relations to their values . . . measuring the advantages of achieving an objective by the use of dollar expenditure in one way versus another'.

Of special interest to us is the distinction between cost-effectiveness and cost-efficiency methods, both of which we used in our paper. Both are of the same linguistic origin (*ex facere* = work out). The *Shorter Oxford English Dictionary* makes the following distinction. Efficiency can be taken as actual production of an effect: a result. But the following distinction might be made.[2] Effectiveness can be taken as actual production of an effect; a result as the function of working out an intentional accomplishment. Efficiency means action resulting from the exercise of energy or skill; action adequate to intended result. While the term effectiveness is correlated to the cause and effect relationship, efficiency is the antonym of wastefulness. The former could be described as a result produced irrespective of magnitude of effort, while the latter is connected with the idea of producing results adequate in relation to the energy, action or power used. Most authors warn against the arbitrary use of either term. Some, nevertheless, e.g., Arthur Smithies, make a clear distinction between effectiveness and efficiency.[3] Effectiveness in a programme relates the programme to the achievement of its objectives, while efficiency is concerned with the action which is carried out. The distinction depends on the possibility of measurement which is smaller when dealing with effectiveness. Efficiency implies measures taken to achieve economies which will not affect the attainment of the objectives of the programme. McKean reserves the method of cost-effectiveness to tests of a maximum effect for a *given* budget, or to a specified effectiveness at *minimum* cost. For this latter we would prefer to use the term efficiency.

[1] G. Steiner, *Problems in Implementing Program Budgeting*, Novick, op. cit., pp. 310 ff.

[2] Based on definition given in the *Shorter Oxford English Dictionary* and *Webster's Dictionary of Synonyms*.

[3] Arthur Smithies, 'Conceptual Framework for the Program Budget' (D. Novick, op. cit., pp. 48–51).

Cost-benefit and similar methods first found widespread and ample use in water resources projects (including agricultural use), in defence, in preservation and use of natural resources,[1] in road and railway building, in project evaluation, in educational and health research, and also in estimating effects of government services, especially the PPB (Planning, Programming, Budgeting Method). Its use in agricultural policies provides ample opportunities for further development.

[1] Advocating the creation of an Office of Secretary of Resources in the U.S.A., R. McKean and M. Anshen propose a comprehensive programme. This hypothetical natural resources programme would include a package of measures including agriculture, water supply and use, forests, outdoor recreation facilities and grazing.

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