PART III

National Income as a Determinant of International Policy

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This paper was written early in 1944. Thus many of the statements on policy require extensive revision in the light of subsequent events. Since the purpose of the paper was to discuss theoretical issues rather than to attempt solutions of practical problems I have left it as it was originally written.

The settlement of Lend-Lease obligations, the UNRRA agreement, and reparations all involve national income considerations explicitly or implicitly. Explicit use of the national income concept would introduce into policy formation quantitative considerations that have hitherto been sadly lacking. The need is so urgent that they should not be postponed until the statistician has perfected his techniques. I am therefore concerned with expedients rather than ideal solutions; that is, with the best use that can be made of the concept of national income in its present state. I am not concerned with the deficiencies of official statistics for various countries; I assume, rather, that the authorities collect all the information they can reasonably be expected to collect under the institutional set-up in which they operate.

Three questions of policy are discussed:

1) How to determine national contributions to international organizations on the principle of equal sacrifice. An example has recently occurred in the fixing of contributions to UNRRA. As the UNRRA deliberations are a convenient vehicle for the discussion of comparability of national incomes, they occupy a larger part of this paper than national contributions of this kind would otherwise warrant.

2) Determining the relative contributions of various countries to the war from the viewpoint of the settlement of Lend-Lease obligations is essentially different. Impact ratios, or the ratio of war expenditure to some national income concept, have already been discussed by economists in this connection. Can these ratios be used in determining international obligations on the principle of equal sacrifice or any other principle?

3) Capacity to pay reparations necessarily depends to a large extent on national income. Presumably the question of equity is far outside the scope of the economist. What degree of economic control must be exercised to obtain a given proportion of the national income of, say, Germany for reparations? The political experts must reconcile collecting reparations with getting the desired type of political organization in the defeated countries.

My effort to confine the discussion as far as possible to national income may make some of my statements on matters extraneous to the main theme seem dogmatic. However, they should be regarded as assumptions rather than as expressions of profound conviction. Furthermore, some crucial questions are largely ignored; for instance, the transfer problem in connection with reparations.

1 National Contributions—UNRRA

At the recent UNRRA conference it was proposed initially that each contributing country should make available to UNRRA a lump sum amounting to 1 percent of its national income for the fiscal year 1943; i.e., the contribution of each country was to be fixed in terms of its local currency. The contribution that should be made available in free exchange was then treated separately. Initially there was no attempt to measure relative national incomes, thereby basing contributions on capacity to pay. This proposal met with the opposition to be expected from the poorer countries who felt that some graduated basis for contribution should be worked out. It was proposed that per capita income be taken into account and that countries be divided into broad groups according to general notions about their capacity to pay. After much discussion, the unsatisfactory conclusion was reached that the 1 percent rule should be adhered to in general but that relief should be given in hardship cases at the discretion of the Director General. Thus the UNRRA deliberations indicate the inadequacy of a simple equal proportion formula and the great difficulties, involving all the problems of international income comparisons, in the way of finding an acceptable alternative.

a) *Difficulties associated with personal differences*

If we assume that there are no obstacles to comparison other than personal differences, the question becomes: Can individuals' incomes in different countries be compared in the same way as individuals' incomes in the same country? If they can, we would have a basis for an international progressive taxation system analogous to a domestic income tax system.

First, let us consider for a moment the arguments for progressive taxation within a country. I know of no method of showing that as between two individuals with different incomes, equality of sacrifice will require a higher rate of taxation on the higher income, provided the tax does not deprive the lower-income taxpayer of necessaries of life whose marginal utility approaches infinity. The most that can be done is to investigate the rate of change in the marginal utility of income for the two individuals,[1] but this will furnish no adequate basis for judging the relative sacrifices involved in giving up part of one's income. For such a judgment information is needed on the height of the utility curves; and knowledge of the behavior of their slopes will not provide this. I know of no authorities who argue that more can be done and of some who argue that even this is impossible.

The argument for progressive taxation must, I think, be based upon the assumption that:

1) capacity for satisfaction is in general independent of the income level;
2) the marginal utility of individual income diminishes as income increases;
3) the various income groups are large.

Under these assumptions it can be argued that it is more probable that progressive taxation will minimize the sacrifice entailed in raising a given revenue (assuming, of course, that income before taxes is unaffected by the fiscal operations of the government).

L. G. Melville's argument, that progressive taxation is preferable to nonprogressive, does not furnish any guide to the optimum degree of progressiveness. On that the economist cannot be of assistance so far as measuring relative sacrifices is concerned.

"In a homogeneous population we know that measurable characteristics are distributed in much the same way in any two large groups. For example, if two large groups of equal numbers are selected at random we find about the same number in each group of any particular height, or chest measurement, or head breadth or physical prowess. As far as we can measure mental characteristics by examinations or intelligence tests, the same kind of distribution is found. There is therefore a good reason to expect that the same kind of distribution of capacity to enjoy expenditure would be found in any two groups selected at random. For all practical purposes, groups selected by differences in income are selected at random as far as this characteristic is concerned. We may therefore expect to find in each of any two such groups of equal numbers the same number of people of any particular capacity to enjoy expenditure. It is true that as an individual grows richer, experience and education may improve his innate capacity for enjoyment, but observa-

[1] See Ragnar Frisch, *New Methods of Measuring Marginal Utility* (Tübingen, 1932).

tion and introspection allow us to assume that this improvement is not sufficient to prevent the marginal utility of money from falling. We may imagine the two groups to be paired and units of money transferred from individuals in the richer group to individuals of the same innate capacity to enjoy expenditure in the poorer. Each such transfer will bring a greater gain of utility to the member of the poorer group than the loss of utility suffered by the member of the richer group. Thus the whole transfer may be said to increase economic welfare."[2]

If we attempt to apply this argument internationally, the difficulties are obvious. It cannot be argued that a million Americans have the same capacity for enjoyment in general as a million Chinese. Even where cultural differences are not extreme, comparisons may well be invalid. For example, between World War I and II the proportions of disposable income saved in the United States and Germany were very much the same. Judged by any objective criteria, per capita income in Germany was much lower than in the United States and, according to Colin Clark, income was somewhat more evenly distributed in Germany.[3] If the capacity to enjoy both present income and the anticipation of future income were the same for Americans and Germans, one would expect a higher rate of saving in the United States. The fact that the proportions saved were approximately the same indicates that the satisfaction derived from a given income is not the same.

The conclusion one finally reaches about international comparability must, of course, rest on individual judgment rather than objective proof. My own judgment is that conditions are not sufficiently similar for Melville's argument to be applied internationally.

What then? If contributions are to be made, and we reject the possibility of taxation based on capacity to pay, are we to fall back on an equi-proportional tax just because we can think of nothing else? To me, the best solution seems to be the equi-proportional tax and some argument can be given in support of it. Although we are ruling out international comparisons of satisfaction, each country can, I assume, calculate the proportion of the satisfaction it foregoes by paying a given taxation. Assume, then, that the degrees of sacrifice so calculated arising from an equi-proportional tax are normally distributed. It can

[2] *Economic Journal*, Sept. 1939, p. 552.
[3] *Conditions of Economic Progress* (Macmillan, London, 1940), p. 424.

be shown that an unequal tax system applied at random will probably increase the dispersion of degrees of sacrifice. If each country makes these same assumptions with respect to the degrees of sacrifice of other countries, it will feel itself cheated if it pays a relatively high proportional tax. Therefore, on the assumption of ignorance as to actual relative satisfactions, international dissatisfaction would be minimized by an equi-proportional tax.

So far, an equi-proportional tax seems the most adequate solution, but we have not yet finished the story.

b) *Difficulties associated with the operating costs of the economy*

The classic problem of what should be regarded as final and what as intermediate products becomes of particular significance in international comparisons. A proper recognition of what should be regarded as operating costs of the economy may remove, at least conceptually, some of the major difficulties in the way of finding a base for international contributions.

Does the fact that a cold country devotes some of its energy to heating its buildings mean that its capacity to contribute is greater than that of a hot country? But what of two cold countries, one of which keeps its inhabitants heated by central systems and another whose inhabitants shiver over smoldering coal fires? Do the subsistence incomes of the masses in oriental countries provide any satisfactions at all? Considerations such as these, as numerous as they are obvious, lead to the conclusion that in assessing incomes for purposes of international contributions there should be deductions analogous to those permitted by domestic income tax systems, but different in that they vary as between countries to allow for differing conditions such as temperature and urbanization. The deduction should be enough in each country to assure minimum living standards.

Such a proposal can be useful and meaningful only if it is possible to give some statistical content to the notion of minimum standards. But first we must decide whether minimum standards mean the same physical standards for various countries. For instance, should the deduction for the United States be some estimate of the cost of providing the population with a Chinese standard or should minimum standards for the United

States be decided by taking into account what the United States itself considers its minimum requirements? At the risk of seeming to make invidious distinctions in favor of the well-to-do countries, the foregoing arguments all lead to the latter alternative. The uniform deductions of the domestic income tax can be justified on the basis of large numbers in the same way as the legitimacy of income comparisons was established. But our conclusion that incomes should not be compared internationally leads to the conclusion that the deductions should be appropriate to each country, not set by objective standards.

What my suggestion comes to is that national income should be computed by adding to net investment, *net* consumption, determined by deducting from total consumption a minimum requirements deduction. Further, this minimum requirement should not be based on what is necessary merely to sustain life; but more realistically should follow Ricardo in recognizing a 'standard of comfort'. This suggestion is based on the proposition that the satisfaction derived from national consumption is zero where nothing more than conventional standards are maintained, and that satisfaction from the national income is derived from consumption in excess of these minimum standards. This does not mean to imply that all satisfactions are zero at the minimum consumption level, but merely those that are derived from the measurable national income.

How can a minimum standard be determined statistically? Two approaches suggest themselves. One is to compute directly the goods and services conventionally regarded as necessary. The other approach is indirect: to investigate consumers' behavior. The method chosen will depend on the statistical information available and on the type of country. For China and India, the first method commends itself since the majority of the inhabitants are close to the subsistence level of income, and also as a matter of statistical necessity, as well as for other reasons discussed later. For industrial countries where the masses are above the subsistence level and the problem is one of determining what is conventionally necessary, the indirect method seems preferable.

In industrial countries, at what levels of national income are net savings zero? It seems not unreasonable to suppose that if no net saving is made at a certain level, that level is necessary to maintain minimum living standards. Unfortunately at present statistics are so fragmentary that it is impossible to test adequately the working of this formula. However, from what information we have, chiefly in Colin Clark's *Conditions of Economic Progress,* the following generalizations are suggested.

Two general tendencies affect the proportions of income at which zero saving occurs: (a) the behavior of the distribution of income and (b) a possible secular trend to adjust consumption standards upward, as ideas of nutritional requirements, etc., advance. On the first point Colin Clark states (p. 430): "In the United States, Britain and Germany, taking the long view, we can see in each a tendency first towards increasing inequality of income, which reaches a climax and then is followed by a period where the trend is towards greater equality of income. In Great Britain and Germany the turning point came in 1913 and in the United States in 1929, while in Japan it does not appear yet to have been reached." One may venture the suggestion that the tendency toward greater inequality is succeeded by an opposite tendency when social reform takes its place in the later stages of capitalistic development. The second tendency, toward higher consumption standards, which is independent of the distribution of income, may explain the remarkable stability during the last 50 years of the proportion of income saved indicated by Simon Kuznets in Uses of National Income in Peace and War.[4]

These considerations suggest that our formula would be more favorable to countries in the earlier and later stages of capitalistic development, and would be less favorable to countries in the most vigorous stages of their growth. It would be unfavorable also to countries which by totalitarian methods resisted the tendency to higher consumption standards. If a country reached the blessed condition of John Stuart Mill's 'stationary state', it would be rewarded by exemption from international taxation.

Assuming that our principle is accepted, how can the level of national income that corresponds to zero saving be measured? The most satisfactory method of course is to analyze con-

[4] National Bureau *Occasional Paper 6* (March 1942).

sumption and income statistics for a sufficient period and to establish a relation between consumption income and time. From this relation the level of income at which consumption is equal to national income could be determined. For such countries as the United States, United Kingdom, Germany, and Australia, for which data exist for the decade of the 30's, reasonably good estimates can be made, especially since in the depths of the great depression income in some countries actually reached or at any rate approached the zero savings level.

For the 'subsistence' countries the zero savings method is not only impossible for want of adequate data, but owing to extreme dispersion in the distribution of wealth and the absence of relief measures it may give these countries a low exemption rather than the high one obviously required. It is not unreasonable to suppose that Indian potentates are sufficiently wealthy to save, however low India's national income. Furthermore, dissaving devices for the benefit of the masses seem to be few in India; that is, a famine contracts incomes and consumption of the masses *pari passu.* This situation could be radically altered only if the government had large reserve stocks of foodstuffs for distribution in time of famine or imported large quantities for relief purposes. These considerations suggest that the zero savings level of income for India may be very low or for practical purposes nonexistent. Therefore, the direct method of estimating minimum requirements for these countries should be adopted. Since over 60 percent of the Indian national income is spent on food it seems likely that the deduction for minimum subsistence needs would amount to well over 70 percent of the Indian national income. For China the fact that agricultural production accounts for some 79 percent of the national income suggests also a very high percentage deduction.

Acceptance or rejection of a minimum deduction on the lines suggested must depend not only on the general considerations set forth here but also on statistical investigation of its effects. In the absence of such an investigation I conclude merely that such a deduction commends itself in principle as a method of introducing the well accepted notions of exemptions because of need and of progressiveness of taxation where surplus income is available for taxation. Further, although I readily admit that the method is open to many criticisms I can only argue that the difficulties it avoids are greater than those it creates. Without this method I am afraid the sole solution may be to leave it to the Director General.

c) *Difficulties arising from institutional differences between countries*

Hitherto I have assumed that there are no differences between countries other than those already referred to and also that a uniform concept of national income is applicable to all countries. In this section these assumptions are examined with particular reference to the role played by government in the economic life of various countries. This is a minor aspect of what will unquestionably be the major international economic problem of the future—a problem consistently shunned by economists in private enterprise countries because our economic education has not given us the tools to handle it.

1) *Differences in economic objectives.* If national income is to measure economic satisfaction, the concept should presumably reflect the economic objectives the country tends to pursue, and should exclude those it regards as of no importance. This raises some interesting questions. If all the textbooks of a country proclaim that consumption is the sole end of economic activity, should we follow Irving Fisher and include only expenditures on current consumption in its national income? Or if a country proclaims that its objective is to build up its industrial and military power, should its national income include only military goods and additions to capital equipment? Further, if the Russian official statisticians exclude services from their concept of national income, should we conclude that Russians derive no satisfaction from their consumption? If Germany excludes the services of policemen from their catalog of final products while the United States includes them, are we to conclude that Germany derives no satisfaction from being policed, while the United States enjoys it? Clearly unreined speculation along these lines is the surest way to sabotage our efforts to deal with a problem we think should be solved, however imperfectly. I know of no way of dealing with policemen that is not arbitrary, but for consumption as a whole the methods of the preceding section are of some help.

If satisfactory methods can be devised for determining minimun consumption standards based on individual behavior, consumption above this minimum should be included, official pronouncements and practices to the contrary notwithstanding. If a country does in fact devote all its energies to capital formation, its whole consumption will automatically be excluded from its 'taxable national income'. On the question of capital formation, I do not propose to revive the hoary controversy. Suffice it to say that no country alleges that its net capital formation is not part of its national income, and that every country has the choice of consuming or accumulating. Discussions of whether net capital formation should be taxed seem to belong to a future where an international organization will regulate national behavior by incentive taxation. The inclusion of military expenditures is another subject I do not propose to debate. Although I think the cost of keeping up with the Joneses may have something to do with determining minimum consumption standards, one may be allowed to hope that the world of the future will not be one where military expenditures are a lawful deduction for purposes of international taxation. Differences in economic objectives, therefore, need offer no insuperable barriers to international income comparisons.

2) *Differences arising from monopoly and government pricing in capitalist countries.* The existence of monopolistically determined prices in one or more of the countries in question is a serious obstacle to direct international comparisons of real income, and also to our more limited objective—to determine equal ('adjusted') percentages of each country's national income. In the case of direct comparisons, if goods that enter into international trade are more competitively priced than those that do not, a country's national income will tend to be overstated if market exchange rates are used to convert it into the currency of a country all of whose goods are competitively priced; and vice versa (this assumes, of course, that there are no other objections to using the exchange rate for this purpose). The one way out of this difficulty I know of is to adopt the practice frequently followed by Colin Clark: apply a standard set of prices to the goods of the countries to be compared. Since this method is open to obvious objections if the quantities con-

sumed are not the same, which almost necessarily will be the case, I am not sure that it would not create more difficulties than it avoids.

The effect of monopoly on the real value of national contributions will depend on the goods on which the contributions are to be spent within the country or the extent to which they are to be provided in free exchange. If the contribution is spent on relatively monopolized commodities, less than the desired percentage of the real national income will be contributed, while if the contribution is provided in free exchange, the contribution will be overstated if domestic production is relatively monopolized. Difficulties of this kind can be satisfactorily avoided only when the relation between monopoly and competitive price is the same in all the countries concerned.

The existence of government enterprises in a capitalist economy is a particular case of the general monopoly issue. The government may set the prices at which it sells the goods and services it produces either higher than their 'true' economic value, in order to raise revenue, or lower, in order to provide subsidized services to the community. To the extent that it does either, it creates difficulties for the statistician analogous to those arising from the coexistence of competitive and monopoly prices.

Closely allied with these difficulties is the treatment of indirect taxes and subsidies in the computation of national income. Since the economist wants national income at factor cost, does exclusion or inclusion of subsidies and/or indirect taxes give the best approximation? (This question is independent of the other controversial question—whether indirect taxes are spent on final or intermediate products.)

The questions raised in these paragraphs still are or should be matters for continuing debate with respect to the purely domestic problem of national income. I am raising them here, not because I have a solution to offer but merely to emphasize that whatever conclusions are reached from the domestic standpoint should be reexamined if the figures are to be used internationally.

3) *Differences between private enterprise and government-controlled economies.* If the domestic pricing systems of both

types of country were based, as the economist would argue they should be, on marginal costs—that is, if all prices were proportional to marginal costs—it would be unnecessary even to raise the question. As it is, all the difficulties propounded above arise in more acute form. Profits in Russia, for instance, are necessarily not payments to factors of production, but are determined by the needs of government for current revenue or for funds for capital expansion. In view of such obvious differences between capitalist and socialist countries, it would be dangerous to assume that the marginal cost condition is fulfilled and that the internal price systems of capitalist and socialist states mean the same thing.

In consequence of the incomparability of domestic price systems, if for no other reason, the official exchange rate fixed by a socialist state must necessarily fail to reflect the relative purchasing powers of the currencies concerned. Nor can it be assumed that the exchange rates are fixed to reflect the 'true' relative values of commodities in the different countries; that is, the relative values that would exist were the domestic price systems comparable and exchange rates freed. Furthermore, the device of applying a capitalist set of prices to the commodities produced in a socialist state must be regarded as highly artificial unless it can be assumed that the capitalist prices are themselves proportional to marginal costs and the pattern of production in the two countries is approximately the same.

These difficulties cast serious doubts on any attempts at direct comparison of real incomes; but they are less serious if the proportions of national income to be made available within the respective countries are based on national income. In that case the difficulties need be no greater than those due to the differences between capitalist countries discussed in the preceding section. Of course, if part of the contribution is to be provided in free exchange, the problem of fixing an exchange rate still remains.

d) *Difficulties ignored in this discussion*

1) *Exchange rates.* The formula proposed deals solely with providing resources within the country for international purposes. How to make part of the contribution available in free

exchange has not been dealt with from the viewpoint of either the quantitative determination of the amount or the capacity of the country to make international transfers of funds. Further, even though resources are made available within the contributing countries, a country's balance of payments may be affected if the contribution deprives it of exports or renders more imports necessary. As was found in the UNRRA discussions, any contribution formula must be modified to take into account capacity to make international payments.

2) *Employment.* A question for policy decision rather than for economic analysis is whether contributions should be based on the national income that would exist if high levels of employment were maintained or whether a country's contribution should be reduced when unemployment is great. To answer would be simpler if it could be assumed that every country could prevent unemployment by domestic measures.

3) *Fiscal capacity.* I have ignored the fiscal problems that might confront a country in raising its contribution. It is again a policy question whether fiscal capacity should be taken into account in fixing contributions, or whether it should be ignored on the ground that any country can construct the essential fiscal machinery.

In summarizing this somewhat discursive argument, we must admit we have reached much the same conclusion as the practical negotiators of UNRRA, except that we have suggested a formula to cover what was there left to administrative discretion. We have also reached the same negative conclusion; namely, that in assessing contributions direct real income comparisons should not be attempted. Those who prepared for the UNRRA conference did not exclude the possibility of real income comparisons through inadvertence. I am not suggesting that UNRRA should have adopted my solution as a practical matter. In fact, I think that if statistical deficiencies did not preclude it, the argument is too sophisticated for use at present. Any usefulness it may have lies in pointing up some of the difficulties inherent in international comparisons of national income for the purposes considered here and suggesting a solution that may be practicable when discussion of the subject has progressed further.

2 Measurement of Relative Contributions to the War—Lend-Lease

The Lend-Lease Act of March 27, 1941, passed while the United States was neutral, authorized the President "to sell, transfer title to, exchange, lease, lend, or otherwise dispose of . . . any defense article . . . to the Government of any country whose defense the President deems vital to the defense of the United States". The consideration for such transfers should be such as the President deemed satisfactory, "and the benefit to the United States may be payment or repayment in kind or property or any other direct or indirect benefit". Since the United States entered the war, the Lend-Lease Act has remained the ultimate legal authority for transfers to other members of the United Nations; but the immediate authority is the Master Agreements negotiated with our allies which provide, in addition, for reciprocal aid to the United States. On the question of ultimate settlement the Agreements provide:

a) That defense articles supplied by the United States that survive the war shall be returned if, as, and when the United States wants them.

b) In the final settlement full cognizance shall be taken "of all property, services, information, facilities or other benefits or considerations" furnished the United States by the other signatory.

c) By Article VII, the terms and conditions of such settlement "shall be such as not to burden commerce between the two countries, but to promote mutually advantageous economic relations between them and the betterment of world-wide economic relations".

Thus a sharp distinction is drawn between surviving and expended goods. The former will be the subject of complicated negotiations on a high political plane. They are not discussed here, as I am concerned solely with possible methods of settling obligations in respect of expended goods. There is a clear implication in the foregoing provisions that in respect of these the slate should not *automatically* be wiped clean. On the other hand, there is no implication that the slate should not be wiped clean if that is deemed the best solution under the broad provisions of Article VII. This interpretation is confirmed by recent Letters of Transmittal of Lend-Lease reports by the President to Congress. The letter of January 6, 1944 transmitting the Thirteenth Report contains the following:

"Each of the United Nations is giving what it can to the accomplishment of our objectives—in fighting manpower and in war production. Some countries, like the United States and Canada, located away from the fighting theaters of war, are able to make available to other United Nations large quantities of food and manufactured arms. Others, like the Soviet Union and China, require virtually everything they can raise and produce in order to fight the enemy on their own soil. And still others, like the United Kingdom and Australia, can make available substantial quantities of war material to their allies but must necessarily retain most of their war supplies and food for their own forces.

Whether food and war supplies should be transferred by one of the United Nations to another or retained for its own forces depends on the strategic military necessities of war.

Our common objective is that all the planes and all the tanks and all the food and other equipment that all the United Nations together can produce should be used as effectively as possible by our combined forces to hasten the defeat of the enemy.

The cost of the war to us, and to our allies, is high in any terms. The more fully we can now mobilize our manpower, our supplies, and our other resources for the decisive tasks ahead, the earlier will victory be ours and the lower the final cost—in lives and in material wealth."

These paragraphs surely imply that since the war is a common effort, settlement of Lend-Lease obligations after the war should reflect the same community of purpose.

Are ratios of war expenditure to national income in the various countries measures of relative contributions to the war on which a settlement can be based if it is decided that Lend-Lease obligations should be disposed of in this way? For instance, if the percentages of national income devoted to war production by two countries were the same, would there be economic grounds for saying that Lend-Lease obligations between them should be extinguished?

Can the principle of contributions based on equality of sacrifice be applied to a war economy? There seem to be compelling reasons why it cannot. In the first place, whatever sacrifices are made in contributing goods are incomparable with contributions in human life and suffering. Any attempt to combine the two by attaching economic value to the lives that are lost merits no consideration. The most that can be said is that if other sacrifices are equal, the country making the greater sacrifice in terms of goods is making the greater total sacrifice. But the very notion of any sacrifice seems singularly inapplicable so far as a country provides resources for war by putting men and other productive resources to work that before the war were involuntarily unemployed. The argument of the preceding section was based on the tacit assumption that the national income of a contributing country would be unaffected by its contribution. Where, as in this country, real consumption expenditures reached record levels under the stimulus of the war program, the notion that the proportion of national income devoted to the war is a measure of sacrifice is obviously untenable.

Not only is our measure of sacrifice largely inapplicable; it is doubtful that a measure of sacrifice is what is wanted for present purposes. In the second quotation above the President says "our common objective is that all the planes and all the tanks and all the food and other equipment that all the United Nations can produce should be used as effectively as possible". This is not the same thing as saying that all the countries should make maximum or even equal sacrifices. It seems to me that what the statistician should attempt to measure is whether the various countries are producing all they can.

The concepts 'maximum production' and 'maximum sacrifice' would be equivalent only if national income remained constant during the war. In that case a country might be said to be maximizing its war effort if consumption were reduced to the minimum standards defined above; e.g., in the United States consumers' expenditures would be say $50 billion per year instead of the present $90 billion. I shall not argue that $90 billion consumption is the precise figure necessary to achieve the present rate of war production, or that war production could not be increased if consumption were lower. I am prepared to argue, however, that if consumption were cut to $50 billion, war production would not be as great as it now is. From the over-all point of view, the problem, so far as the United States is concerned, has been how to achieve the maximum expansion of production and to ensure that as much as possible of the expansion should be devoted to the war, rather than to tighten the prewar belt of the country. This is amply attested by the fact that war expenditures alone are now about as large as the entire national income in 1939.

The difficulties of applying the notion of sacrifice to a war economy can be further illustrated by considering whether the savings of individuals and businesses accumulated during the war should be taken into account in determining sacrifice. Of course, the textbooks would record an indignant negative, since the savings represent claims to goods, not goods themselves. But this is still another case where the textbooks may need revision. For if people choose to spend their savings in the post-transitional period when shortages are no longer acute, it seems probable that they will stimulate production that would not otherwise have occurred. In this way wartime shortages can be compensated not only from the individual but from the collective point of view. This conclusion will be invalidated only if the government adopts a postwar policy that requires determination of the size of the national income at some desired level.

In view of these considerations it seems that the sole statistical measure of economic sacrifice that would be valid for the United States would be the depletion of permanent productive resources, such as exhaustible domestic resources and foreign assets.

In countries not blessed with the expansible economy of the United States the notions of maximum sacrifice and maximum war production are more closely applicable; but in all the major belligerents the expansion of total production has played an important role. The situation of the United States itself, however, is enough to rule out attempts to measure relative degrees of economic sacrifice. From the viewpoint of both the stated objectives of policy and what it is possible for the economist to measure, therefore, our inquiry should be directed toward determining the extent to which various countries are maximizing their economic contribution to the war.

The most direct approach would be to examine qualitatively the policies followed in the various countries and to determine the extent to which they have been directed to the objective of maximum production and have indeed achieved that end.

For instance, it would be necessary to determine whether the real rate of remuneration of production factors had been such as to achieve maximum output and efficiency, whether further attempts to reduce consumption would have caused administrative difficulties that might have impaired the productive effort; whether the burden of control was properly distributed between fiscal and direct control measures. These questions will doubtless evoke an endless stream of monographs and PhD theses after the war, but it is doubtful that they should find their place on the agenda of a conference to wind up the Lend-Lease accounts.

However, the economic statistician may be able to help. The considerations of the preceding paragraph affect the proportion of the national product that can usefully be devoted to the war, and suggest that *for any country aggregate war output will be maximized when a certain proportion of domestic production is devoted to war.* In other words, if a country attempts to increase its proportion beyond this limit, the economy may become less efficient and total war output may decline.

I do not propose to discuss any of the technical questions involved in the calculation of impact ratios. That has been exhaustively done by R. W. Goldsmith in his paper before the Income Conference last year and by those who discussed his paper. I accept his conclusion that the significant impact ratio for present purposes is the ratio of total domestic war expenditures to gross national product. On *a priori* grounds one might expect that the impact ratio that would maximize war output would differ widely among countries, but the statistical studies that have been possible, and which unfortunately I am unable to quote, indicate rather a remarkable uniformity. Let me quote Mr. Goldsmith who is more qualified to speak on this subject than I:[5]

"If present plans are carried out, the current impact ratio for 1943 should be around 50 per cent; in addition we should expect for the first time a not inconsiderable capital impact. We shall then be near the upper limit of the ratio hitherto observed abroad,* but will still be left with a sizable margin because of our higher real income and real wealth per head. Where the upper limit lies is difficult to estimate with any degree of accuracy for the United States or for the other major

[5] *Studies in Income and Wealth,* Vol. Six, p. 82.

belligerents. The guess may, however, be ventured that a current impact ratio of between 50 and 60 per cent represents the maximum that can be sustained for long and that for most countries the maximum will be lower than this.† The United States should be able to support such a load, corresponding at present prices to current armament expenditures of between $100 and $120 billion a year, longer and with less serious sacrifice of economic welfare than any of the other major belligerents.

*By 1943 the impact ratio for most of the other belligerents will, of course, also have risen above the 1942 figures discussed in the text. However, it is unlikely that the current impact ratio will exceed 50 per cent in 1943 in any foreign country except Germany proper. By that time, as a matter of fact, the differences between the current impact ratios in the five countries discussed should have become relatively small.

†The armament effort can, of course, be supplemented for some time by a draft on capital and by booty. The scope of such a supplementation is relatively limited for the United States because of the practical impossibility of either drawing on foreign assets or of borrowing abroad on a substantial scale."

Unfortunately for economic analysis, it seems unlikely that there will be an adequate test of whether the critical ratio is higher for the United States than for other countries. I would qualify Goldsmith's guess that it is higher by saying that although the United States has a larger real income per head according to objective criteria, it has also higher minimum consumption standards, and the latter may contribute materially to the productivity of the American population. Consequently, an attempt to raise the United States impact ratio to say 70 percent might well cause war output to decline. For this reason, and also because wide differences in living standards exist between the other four countries compared, while their critical impact ratios are roughly the same, I am inclined to conclude that the critical ratio for the United States is 50-60 percent.

If more exhaustive statistical work confirms these conclusions, it seems legitimate to say that a country that is devoting 50-60 percent of its gross national product to war output is currently making its maximum economic contribution to the war. And in the light of the declarations of policy quoted above, these figures should be relevant data in discussions of the settlement of Lend-Lease obligations. The statistician may be able to provide useful information also on other relevant matters, such as capital consumption and depletion. But that is outside the scope of this paper.

3 Reparations[6]

The use of national income statistics in determining reparations dates from the settlement following World War I. Had income statistics been available in 1870 it seems not unlikely that the French indemnity would have been greater. The Versailles Treaty made Germany responsible for all property damage caused by the war; but since it was impossible to evaluate the damage, fixed an arbitrary amount pending final settlement. It provided further that when and if the tax burden of any Allied country exceeded the German contribution, reparations should be increased. A subcommittee of the Versailles Conference decided that the measure of the tax burden should be the proportion taxes bore to national income. This provision is of merely historical interest since the circumstances that would have made it operative never arose.

During the Dawes negotiations the practicability of making reparations payments depend on national income was discussed. In view of the ambiguity of the statistics it was decided to vary reparations payments according to a fantastically hybrid 'prosperity index', constructed by combining indexes of total exports and imports, revenues and expenditures of the federal and the chief state governments, tonnage carried by the railroads, consumption of sugar, tobacco, beer and liquor, population, and the per capita consumption of coal. The chief effect of this plan was that German fiscal policy was determined with much more than half an eye on its influence on the index. The index was abandoned by the Young Plan.

Nevertheless, under the Young Plan, national income played a significant role. Some well informed critics held that the German government deliberately pursued policies that would keep national income low, in order to avoid claims for increased reparations based on greater capacity to pay. And, on the ground that if its national income increased, its balance of payments position would be weakened, and its capacity to make international transfers reduced, it is known that some Allied representatives held that Germany should pursue a deflationary policy. Thus, for widely differing reasons it seems that there

[6] For the factual information in this section, I am indebted to Gerhard Colm. The whole paper has benefited by discussions with him.

may have been general agreement that Germany should not pursue policies designed to increase its national income. Future reparations policy should obviously differ in some major respects from the past.

National income will as inevitably affect decisions concerning reparations after this war as it did after World War I, and, because more statistical material is now available, the relation between reparations payments and national income will almost certainly be taken into account more explicitly. Again the two major questions will be capacity to pay and to transfer. The discussion will be confined to the following problems connected with capacity to pay: (a) national income as an initial determinant of reparations payments and (b) whether provision should be made for varying annual payments if national income fluctuates.

a) As in the case of Lend-Lease, reparations do not seem to measure, directly at any rate, the sacrifice that should be imposed on Germany as a matter of equity. As in 1918, it will presumably be decided that no reparations payments can compensate for its crime; so that total reparations must be based on other criteria. As a starting point we may ask: since Germany is now devoting say one-half of its gross national product to war production, should it not devote the same proportion to reparations and reconstruction? The answer will depend on judgments about several complicated administrative and political questions. Is the external threat of military defeat required to make an impact ratio of 50 percent feasible? Or, in terms of the argument of the preceding section, assuming that a 50 percent ratio maximizes war output, will that ratio maximize also reparations output? In any case, it is inconceivable that Germany will maximize its impact ratio or its reparations output unless its economy is subjected to direct foreign control. This raises the question of the relation of reparations policy to the type of political organization it is hoped will eventually emerge in Germany. If the United Nations were to maintain the control over the German economy that would be necessary to get 50 percent of its gross product for reparations, the chances of democratic government in Germany would unquestionably be affected; whether they would be increased or decreased is not a matter I propose to discuss here. To summarize, somewhat pedantically: there is one impact ratio that will maximize reparations and another that will maximize the chances of democratic government in Germany. It is the task of those formulating reparations policy to devise a compromise that will give due weight to each objective.

Another major question will be the extent to which Germany is to be permitted to devote resources to reparations on the one hand and to restoring its own economy and increasing its national income on the other. This question is intimately bound up with the political problem and also with the reparations Germany can pay. If the objective is to get reparations rather than to inflict punishment, it may be desirable to allow Germany to restore its capital equipment before exposing it to the full burden of reparations payments.

In determining capacity to pay, capacity to transfer cannot be ignored since the real income (including reparations) of the country will be lessened so far as reparations adversely affect German exports or increase German demand for imports. The total collectible will depend on the extent to which German international trade is not affected.

The foregoing considerations raise the further question whether the settlement should be in terms of specific deliveries of goods or of general purchasing power either to be spent in Germany or to be provided in free exchange. The critical factor again is what degree of external control is necesssary to obtain a given flow of reparations. If as much as one-half of Germany's gross product is wanted, the experience of the war economies leaves little doubt that the general purchasing power method will not do. If, to take the opposite extreme, reparations are to be only 10 percent, they would probably be forthcoming if both methods were applied, provided Germany were willing to cooperate. I am inclined to believe, however, that to assume this willingness is somewhat optimistic. If so, it seems likely that even though the general purchasing power method were formally adopted, it would be necessary to institute further controls—which would make the two methods come to pretty much the same thing. In that event, it would probably be better to adopt the specific delivery method from the outset.

There seem also to be good reasons for preferring specific deliveries to the provision of free exchange, since a planned program for specific deliveries could probably be worked out that would cause less disturbance to international trade than attempts to transfer large amounts of free exchange. But no practicable system avoids transfer difficulties. Indeed they could be avoided entirely only if reparations left international trade completely unaffected. My tentative conclusion therefore is that, while impact ratios should play an essential part in determining total reparations, the actual contract should consist, in the main, of undertaking to make specific deliveries.

b) The experience with reparations after World War I does not lead to optimism about a flexible formula that would make reparations payments currently depend on German national income. For, even though such a formula did not give Germany an incentive to keep her national income low, it would certainly not give her an incentive to keep her national income high. Furthermore, there would be strong temptations to national income statisticians to descend from the high plane of integrity on which they customarily operate.

From the viewpoint of incentives to Germany, it would be more logical to increase reparations payments when national income fell. Such a scheme would provide not only an incentive but also a public works scheme to assist the country out of depressions. Unfortunately, however, as in the past, such a scheme would give Germany's creditors an incentive to adopt policies that would prevent an increase in its national income.

Such schemes, however appealing to the incentive economist, would probably cause more trouble than they are worth. From the viewpoint of the current operation of the German economy, definite commitments to make specific deliveries which, once fixed, are independent of national income seem preferable. From the viewpoint of incentives also, definite commitments have most to offer. Vague and flexible commitments met with no success after World War I. That experience suggests that this time the incentive of a clear-cut goal should be tried.

Though annual commitments are fixed, should they be constant from year to year or depend on expected future real income? For instance, if it is assumed that productivity in German industry will increase at say 2 percent per year on the average, should reparations deliveries increase at that rate or should they remain constant; in both cases, adding up to the same total for the entire period of reparations? As already suggested, it may be desirable to keep deliveries below their maximum for the reconstruction period during which German productivity is being restored. Beyond that period I am inclined to favor constant or even decreasing deliveries. Then if productivity did increase as expected, reparations would be a progressively diminishing proportion of national income. In this way Germany would be given an incentive to step up her productive efficiency; and reparations would play a diminishing role in the German economy, thereby easing the transition to the post-reparations economy.