THE MEASUREMENT OF AGRICULTURAL PROTECTION

Interim Report of Study Group

A. Introduction

1. The Group has met in Geneva in the week beginning 3 October 1960, being composed of the following five experts:

   Mr. J. Kirk (Chairman)
   Mr. L. Jeanrenaud
   Mr. C. Johansen
   Mr. D. McKay
   Mr. J. Richter

serving in their individual capacities and not as representatives of their countries. One member (Mr. Haefner) was unable to participate. The Group was assisted by the joint GATT/FAO secretariats.

2. In accordance with its terms of reference the Group of Experts has addressed itself to two questions: (a) whether or not it would seem technically possible, on professionally acceptable concepts and standards of workmanship, to calculate degrees of agricultural protection for individual countries and commodities; and (b) if so, what would be the most satisfactory method for such calculations. In principle, the Group considers that there should be a two-pronged approach, which would try to state degrees of protection with regard to individual commodities as well as degrees of protection for agriculture as a whole, country by country. Having regard to its terms of reference, the study has been confined to the measurement of agricultural protection, and has not been extended to the appraisal of policies of protection. But a country's estimate of its need for protection, insofar as it can be expressed quantitatively, is also relevant, and can fairly be stated along with the degree of protection actually given.

3. It is generally recognized that the measurement of protection is extremely complex. Were this not so, such measurement would have been made many years ago. Some of the difficulties that arise have been explored in papers already submitted in Committee II by Switzerland, the United States, Canada, and the Federal Republic of Germany, as well as in a paper by the GATT/FAO secretariats. These papers are annexed. The chief practical difficulties arise from the large variety of agricultural products to which protection is given, the many differences of type, grade and quality of those products, and the variety of forms which protection may take. There are also practical limitations in regard to the availability and the reliability of the needed statistics.

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4. Some of the difficulties are those of detailed statistical investigation, but others are difficulties of concept and principle. For instance, the only theoretically correct procedure is to compare a given situation with that which would exist in the absence of the protection that is to be measured. This comparison cannot in fact be made because of the obvious impossibility of experimentation and the lack of comparable historical circumstances that could take the place of experimentation. The assumption of absence of protection would imply many consequential changes inside and outside the country concerned, which are not susceptible of evaluation.

5. Again, comparisons of domestic prices in importing countries with landed prices are open to serious criticism for a number of commodities. As noted in the Haberler Report and by the International Wheat Council, international prices, in particular for wheat, are largely determined administratively rather than by market forces. International prices in general are greatly influenced, and to an extent which cannot be determined, by support measures in certain exporting and importing countries, by export subsidies, and by various special arrangements between exporting and importing countries. Although the support measures and subsidies will be reflected in the calculations, their existence nevertheless distorts the basis of the comparison. In the case of sugar, the greater part of world trade falls under various bilateral or multilateral arrangements, and only the remnant enters the free market. For milk, the maintenance of more than one price level within countries and the possibilities of switching from one milk product to another preclude any simple forms of comparison. In a number of cases, therefore, somewhat arbitrary methods of estimating the degree of protection have had to be recommended. Yet another problem arises from the over- or under-valuation of some national currencies. These can be minimized by suitable procedures but cannot be entirely eliminated.

6. It could not in these circumstances be expected that the Group would be able to recommend any method or combination of methods for which successful application could be confidently predicted. The Group has, however, outlined procedures which, in present circumstances, it believes give the best promise of success. It recommends that they should be tested out in pilot studies, the results of which should be confidential until after final expert review. The theoretical and statistical difficulties that may arise cannot all be foreseen, and many may not emerge until after the pilot studies are completed. As in all economic research, a certain flexibility of approach must be permitted. Therefore, the Group could not lay down a complete set of rules. The results of the pilot studies would need to be assessed before the work can be carried further.

7. The Group suggests that pilot studies be undertaken for two countries. Subject to their agreement, the two countries might be the United States and one or two Western European countries. These studies should be carried out by the secretariats of GATT and FAO, with the collaboration of experts from these two countries, to be completed by February/March 1961. If the pilot studies confirm the feasibility of such calculations, countries might be asked to undertake the required study for their own agriculture and to entrust a professional expert inside or outside of government with this task.
8. What is here called the standard method is in principle applicable to most agricultural commodities. Studies that have been carried out in the past by GATT and FAO, however, have shown that the maximum coverage likely to be achieved in any country cannot be expected to be greater than 80 per cent of its agricultural output. Some commodities, for example fresh fruit and vegetables, are too variable in quality to lend themselves to anything more than a statement of tariff protection. The complexities of the milk and dairy products industries are such that special methods will be necessary. In any event, the estimates will require a well-developed system of agricultural statistics.

9. The significance of measurements of agricultural protection will depend a good deal on the coverage which can be achieved. At the one extreme, an acceptable, although limited, result would be to establish the degree of protection being applied to a number of the more important individual commodities entering into international trade, such as grain, sugar, cotton, wool, etc. Even a small number of such measurements for individual commodities may have some value.

10. To express virtually the whole of each country's agricultural protection in one single figure would be a more difficult task, not only because this requires the greatest possible coverage of commodities, but also because there are substantial statistical difficulties in combining commodities into a single measure, and in relating that combined result to the size of the country's agricultural industry.

11. The commodity coverage found possible, the extent of agreement on the assumptions made (many are bound to be arbitrary) and the general acceptance of the reasonableness of the results will be an indication of the suitability of the standard method here recommended. At the same time these criteria should also make it possible to draw conclusions about the likely margins of error and the degree of comparability between countries. The method will thus be tested in the pilot studies. It is understood, of course, that the degree of success (of the method) may vary as between countries.

12. The standard method should, in principle, be applicable to all countries and most commodities. There are, however, obvious limitations to the usefulness of comparisons between countries in the tropical and temperate zones. The standard method has been so devised as to suit exporting as well as importing situations.

B. The standard method

13. The Group suggests that the contribution to farm income arising from governmental action or authority be assessed on the basis of the sum total of the difference between farm prices and import prices or export prices (for import and export commodities, respectively) plus all direct and indirect subsidies for agriculture (where not already included in the price differences).
14. The difference between the domestic price and the export price should be measured on the basis of the grower's price adjusted to a point of marketing comparable with the import or export prices, as the case might be. In this way differences in the degree of natural protection due to varying freight costs will be excluded, though differentials due to tariff differences, market management, or to membership in various commodity arrangements will still remain. If necessary, the export price should be adjusted for any subsequent payment of export subsidy. This procedure is to be distinguished from an alternative method, which the Group does not favour, by which domestic prices would be compared with a uniform world price. The standard method should also lessen the problem of over- or under-valuation of currencies. In order to avoid the effect of short-term fluctuations in international prices, the comparisons should be based on, say, the three preceding years individually and as an average.

15. The comparisons of domestic prices and import or export prices would relate to those grades and descriptions which were common to home production and the import (or export) trade. If the country concerned did not import the particular commodity and grade, the ruling import price in the nearest comparable market could be substituted.

16. The price differential, as estimated above, does not cover the total support given to agriculture, as many countries provide also subsidies on inputs or services which are not directly reflected in the price, and which are not always specifically related to any particular commodity. So far as the calculations for individual commodities are concerned, the estimated value of such supplementary aid would therefore have to be apportioned among end-products and added to the protection as indicated by the price differentials (formulae for these computations are given in Appendix III). Only that part of the non-price protection attributable to those commodities for which price comparisons are made should be brought into the calculation.

17. So far as the calculations of total protection for the agriculture of a country is concerned, the protection resulting from price support would be calculated by applying the indicated price differences to the quantities marketed. The total amount of non-price aids to agriculture as a whole would then be added to the total of price aids as calculated above, and the sum total of these price and non-price aids would then be expressed as a proportion (a) of the total value of output and (b) of the net national income from agriculture. This formula is predicated on the assumption that the price-aids for those products that could not be individually included in the calculations (see paragraph 8) are taken into account by an informed global estimate. (For example: price-aid for 80 per cent of total output is calculated commodity by commodity; the price-aid for the remaining 20 per cent is globally estimated.) This procedure is greatly to be preferred to the alternative of excluding from consideration the products not covered individually. The estimates required for this latter procedure would be much more difficult to make. Moreover, this procedure would express no judgment on the degree of protection in the farm sectors not examined - which might be much lower or much higher than protection in the sectors included.
18. It is recommended that, in estimating non-price aids to agriculture, expenditure on extension and research should be excluded and the capital costs of projects of a general nature, e.g. irrigation or land reclamation, should also be excluded. Any financial and physical services provided to farmers at less than cost (e.g. fertilizer subsidies, reduction or remission of charges for irrigation water, electricity, credit, transport, taxation on fuel oil etc.) should be included. All remission of taxation should in principle be included but in many cases its evaluation would be well-nigh impossible.

C. General

19. The quantitative measures of a country’s estimate of its need for protection, referred to in paragraph 2, might for example take the form of (a) the income ratio between the agricultural and non-agricultural population and/or (b) the country’s degree of self-sufficiency in foodstuffs and agricultural materials of kinds which it can produce itself.

20. Appendix I to this report gives more detailed guidance on the calculations to be made, especially for the pilot studies. It points up special difficulties for certain commodity groups, that may result in additional limitations to the professional acceptability and practical usefulness of the calculations. More conclusive views will emerge from the practical exercise of the pilot studies.
APPENDIX I

Statistical Notes on the Treatment of Certain Commodities

A. Wheat and coarse grains

1. In line with the general principle, it was agreed that the price differentials should be estimated on the basis of the main type of wheat produced in importing countries or the main type exported in exporting countries. The differential obtained in this way should then be applied to all wheat entering into the calculation in arriving at estimates of overall protection.

2. If a country did not import reasonable quantities of the chief type of wheat produced in the country, it was agreed that the comparison should be made with the nearest importing market for that type of wheat.

3. It was considered that no practicable distinction can be made between hard and soft wheat, or between any other aspects of variety or condition. Although in some years in some countries the moisture content of wheat may be very high, it is not practicable to allow for this.

4. In exporting countries the domestic price should be taken as the wholesale price, or where this is not appropriate, as the grower's price plus the cost of movement to the wholesale market at the main consuming centres or point of shipment. In importing countries the same principle would apply, though in most importing countries the cost of internal movements from farms and from ports would be small and could be ignored.

5. The quantities to which the price differential should be applied in arriving at any estimate of the overall limit of protection should be the quantity marketed off farms.

6. It may be convenient in some cases to treat coarse grains as one commodity rather than several.

B. Beef

1. The main problem of estimating protection for beef is that support to producers is mainly on the basis of live cattle, whereas protective measures are often applied to beef or beef products of widely varying quality. This problem involves not only quality considerations, e.g., prime and manufacturing beef; it could also involve the evaluation of by-products, such as tallow, hides, and other parts.

After discussion, the Group concluded that it would probably be necessary to work out separate differentials for live animals and products moving in international trade, and to find some appropriate method of weighting.

1Such differentials might, for instance, be calculated for live cattle (as traded between Denmark and the Federal Republic of Germany), sides of prime beef (Argentina into United Kingdom) or manufacturing meat (Australia into United States).
2. If producers are supported by direct deficiency or stabilization payments, any payments made should be treated as part of the price differential.

3. As an illustration of a general principle, it may be suggested that any fertilizer or similar subsidies applied to feed grains, or to pasture for beef production, should be included as part of the differential for cattle, rather than on the intermediate product, e.g. coarse grain.

C. Mutton and lamb

The same principles as laid down in respect of beef should be followed for mutton and lamb.

D. Pigs

Given the variety of grades, it was concluded that several price quotations should be considered in order to take into account the differences between:

- small pork pigs
- medium bacon pigs
- large pigs
- and possibly live pigs.

Inclusion of two types may in general be sufficient in computing the price differential for any one country. As in the case of beef, an appropriate method of weighting should be selected.

E. Milk and dairy products

The estimation of protection for dairy products is particularly difficult because of the rather common practice of maintaining a higher price for liquid milk than for manufacturing milk, the possibility of switching between a number of processed products, and the value set on the skim milk and other by-products.

A simple comparison of domestic prices in importing countries with landed prices of comparable grades of, e.g., butter and cheese, subsequently applying these differentials to the entire output of milk would not appear to be satisfactory. Moreover, this method would not separate the natural protection to liquid milk from any additional protection afforded by the existence of a guaranteed market for liquid milk.

In view of these circumstances, it is clearly important to make estimates of the degree of protection for the group of milk and milk products as a whole. While individual estimates for butter, hard cheese, dried and condensed milk, could be established by the standard method proposed in the Group's report, these estimates would not be sufficient in themselves, though they would provide useful supplementary information to estimates of protection for the whole commodity group.

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1Bacon might be included instead, as the prices of the two commodities can easily be translated into each other.
The main problem in such an overall estimate is to separate the natural protection afforded to liquid milk by the expense and difficulty of shipping so bulky and perishable a commodity from the artificial protection which should be properly included. For this no modification of the standard method seems valid, since at the present time only negligible quantities of liquid milk move in international trade. An alternative approach therefore seems necessary and it is suggested that for this commodity group resort must be had to a comparison of average returns to farmers in different countries, after making certain adjustments to eliminate natural protection. More concretely, it appears that, for a fairly wide range of countries, including a number of the main exporting countries, average returns to milk producers are rather close together. It is proposed that the average of the actual prices for this group of countries should be taken as a base, and that the ratio of the "adjusted price" (Appendix II, paragraph (a)) of any individual country to this average should be taken as the degree of protection. Two ways in which this might be done are set out in Appendix III. The first applies the method to milk production as a whole, while the second applies it solely to liquid milk, which would then have to be added to estimates made by the standard method for the principal milk products. In both cases, due allowance is made for the wide variations between countries in the share of the total output used for liquid consumption.

It is recommended that both these methods should be tried in the pilot study, together with any alternative methods which may suggest themselves as the work proceeds. As a preliminary, it would be necessary to assemble information from as many countries as possible on price differentials between liquid and manufacturing milk, and on any other points likely to make the estimates more reliable.

It is recognized that it is unsatisfactory to apply what must inevitably be a rather arbitrary procedure to a commodity which bulks so large as milk in the total agricultural output of most Western countries. The larger this share, the more any inaccuracy in the milk estimates would distort overall estimates of the total agricultural protection of a country. In this case, however, we see as yet no alternative. Whether the procedures suggested can be recommended for general adoption clearly cannot be decided until the results of the pilot study are available.

F. Eggs

1. Price differentials for fresh eggs should be calculated against imported or exported eggs of comparable quality, e.g. excluding liquid eggs or eggs of dubious freshness. However, if part of the import is excluded, this should be indicated in the work sheets.

2. To avoid a seasonal bias of prices, price comparisons should be made month by month.

G. Sugar

A particular problem in estimating the protection of beet and cane sugar arises from the fact that the sugar world free market price applies only to a small quantity of sugar traded outside various bilateral or unilateral agreements.
It is therefore recommended that standard prices might be used instead of the average export or import prices proposed by the general method. The standard price proposed is the average of the world free market price and the United States average preferential import price at shipping point West Indies, together with, in the case of importing countries, freight rates from that point. In establishing this standard, assistance should be requested from the International Sugar Council. In all cases, the price quotations should be converted into the equivalent 96° raw sugar.

H. Cotton

Price ratios should be established for cotton of comparable quality and account should be taken of possible quality fluctuations in the crop from one year to the other. Generally the standard method appears to be applicable.

I. Wool

The estimation of protection for wool might be limited to importing countries (disregarding any exports or re-exports). Raw wool only should be taken into consideration in establishing price differentials. Careful attention should be paid to differences between merino and crossbred, and the grades compared should be as close as possible in quality. Should price data for comparable grades not be available for certain countries, the corresponding price in the nearest market should be taken.

J. Oilseeds

It was agreed that the oils obtained from the various seeds, nuts, and kernels are to a large extent interchangeable. However, it will be sufficient if each country compares differentials for identical products at import/export and production. In the absence of trade in some of these products, the nearest substitute or a nearby market might be taken.

K. Tobacco

In establishing price differentials for tobacco, the principal types of tobacco should be distinguished.
APPENDIX II

Methods Provisionally Suggested for Estimating the Protection on Milk and Milk Products in the Pilot Study

Two alternative approaches are suggested for the purpose of estimating protection on milk and milk products, in spite of the fact that liquid milk does not enter into international trade. They are as follows:

(a) **Estimate covering total milk output**

In order to take account of the "natural" protection that liquid milk enjoys, a deduction would be made from the estimated total returns to farmers from milk sales. This deduction would rest on an assessment of the extent of "natural protection" per unit (say pound or kilogramme) of milk sold for liquid consumption, which would be derived from an assessment of natural protection initially estimated as a percentage of the return to farmers for milk used for liquid consumption. The adjustment would then take the following form:

Writing $T$ for total quantity of milk marketed

$A$ for average price returned to farmers

$L$ for quantity used for liquid milk consumption

and $P$ for estimated natural protection, expressed in national currency per unit sold for liquid consumption,

the *adjusted price* for all milk would be:

$$\frac{TA - LP}{T}$$

This adjusted price would be compared with the average of actual prices in the base countries, to give an index of price protection for milk and milk products as a whole.

(b) **Estimate limited to milk for liquid consumption**

In this case the estimated allowance for natural protection would be deducted from the average return to farmers for all milk sold for liquid consumption, to give an adjusted price for liquid milk. This would be compared with the average of actual prices in the base countries as a measure of the protection for liquid milk only.
By averaging these with estimates of protection for the main milk products obtained by the standard method (weighting the average according to the share each represented of total production) an average of price protection for the whole commodity group would be obtained.

(c) **Estimate of natural protection**

The validity of the above estimations clearly depends on making a reasonable assessment of natural protection. The members of the Group will make inquiries in their own countries with a view to advising the secretariats of GATT and the FAO as to a suitable range of percentages of natural protection for use in the pilot studies.

(d) **Non-price protection**

Both the above methods would measure only price protection, and as with other commodities an addition would have to be made for indirect subsidies not directly reflected in the price.