

THE THEORETICAL ASPECTS OF TAX HARMONIZATION

Prof. Douglas DOSSER
Professor of Economics,
University of York

I. FUNDAMENTAL PRINCIPLES : THE IDEOLOGICAL APPROACH VERSUS THE ANALYTICAL APPROACH

1. It is interesting to look back on the justification for the harmonization of taxes, as stated in the Treaty of Rome itself, in the Neumark Report [9] and in subsequent Directives concerning action on particular taxes.

2. The Neumark Report was an amplification of the articles in the Treaty of Rome on the subject, and looking at either we can see that the main idea was the creation, as far as possible, of a fiscal system for the E.E.C. as similar as possible to that existing for a single state.

3. This meant the removal of obstacles, which could otherwise be called differentials, between the tax treatment of products or factors of production in different parts of the common market. The Neumark Committee recognised that some conflict was likely to arise between this concept and the degree of national sovereignty which member states were willing to surrender and wrote that its recommendations represented a "rational compromise between the necessity of eliminating or strongly reducing in the interest of the optimum functioning of the common market, the fiscal or financial disparities hindering the free play of competition between the member states on the one hand, and the expediency of not interfering in the policy of member states anxious to maintain

national peculiarities arising from natural conditions and/or historical evolution on the other hand.”

4. The way this compromise was effected by the Neumark Report and in later practice was to make the division between integration and national sovereignty on the basis of dividing taxes into two categories. Sales and corporation taxes are to be integrated on the grounds of removing fiscal or financial disparities hindering competition. The necessity of leaving some measure of national sovereignty in taxation is mainly met by refraining from action on the personal income tax.

5. We shall, of course, in this paper be particularly interested in those taxes, sales and corporation tax, which are subjected to harmonization. It is these specifically that the question needs to be asked; what is the purpose of harmonization?

6. The explicit reasons for harmonizing these two taxes found in the Treaty of Rome and in the Neumark Report derive from such sentiments as “fre competition”, “removing obstacles to trade”, etc. This is what I call the *ideological* approach, as opposed to the *analytical* approach.

7. The ideological sentiments do, of course, have a ground-work in economic theory. They follow from making an analogy between the removal of tariffs as hindrances to economic welfare, and the removal of tax differences as similar hindrances. The analogy is partly false.

8. In the tariffs case, the ideological approach and the analytical approach partly converge: unimpeded trade makes the most of different countries' comparative advantages and maximises output available from given resources. The main exception concerns less developed countries where economic welfare may for a time be maximised if the gains from industrialisation achieved through protection are thought to outweigh losses due to disrupting free trade.

9. But in the taxation case, the divergence between the ideological approach and the analytical approach is wider and deeper. It is wider because divergences apply to developed countries as

well as to less developed countries. It is deeper because the functions of an important tax are so much greater than a tariff. The function of a tariff is mainly protective, and even its revenue aspect is not very often important. But in the case of a tax, its functions cover revenue raising (and therefore the provision of government services), income-redistribution, macro-stabilisation, etc.

10. Consequently, when the question of harmonizing or co-ordinating a major tax in several different countries in a common market is discussed, it surely ought not to be treated in the same ideological way as were tariffs, using the general concepts of free competition and free trade. Rather, each case must be analysed taking account of the whole apparatus of modern public finance—not only allocative aspects, but revenue, income—distribution, stabilisation and growth as well.

II. THE ANALYTICAL APPROACH: GENERAL THEORY

11. In a previous work [5], I have tried to make a start at developing a general theory for the evaluation of tax harmonization covering the different parts of public finance mentioned above. Leaving aside the detail in that work, perhaps the most important theme was the development of what I called the *differentials* approach. The ideological approach so named above leads rather naturally to what I termed the *equalisation* approach.

12. The differentials approach implies a full analysis of the effects of any proposed tax harmonization measure in all of the areas of public finance listed earlier. It is recognised as inevitable that a particular measure will appear as beneficial for some economic objectives, injurious on others. It was suggested that a weighting system was needed to balance these gains and losses and to decide if a particular tax harmonization measure was conducive to economic welfare overall. These weights were political rather than economic. It follows that a particular tax harmonization policy may appear beneficial overall, even if the usual comparative advantage trade effects (those that underlie the assumed benefits

of free competition) are negative. Conversely, a case may appear where there are positive trade or allocative effects, but these are outweighed by adverse stabilisation effects.

13. It also followed from the general theory that a tax harmonization move which did appear desirable might be analogous to the tariff case in that tax differentials were to be eliminated. But equally, the most desirable tax harmonization move might be quite different from the tariff case, and involve the setting of specific differentials between the member states or between regions in the common market. This would tend to occur when the benefits under stabilisation, growth etc. from a particular set of differentials outweighed the assumed losses from comparative advantage from not having free trade or factor movements.

14. The general analytical approach is simply then: judging all feasible tax harmonization policies by this multi-dimensional economic welfare function and proceeding with those which show up the best. Equalisation or the tariff-equivalent case is only one of this possible set.

15. In order to implement this system of analysis, it is necessary to be able to judge the effects of different tax harmonization policies on the major fiscal objectives listed, i.e. allocation, stabilisation and growth. It is also necessary to have analyses of the revenue and income distribution effects.

16. All of these involve separate or specific theories, areas of theory of tax harmonization. When they are all knit together to evaluate a particular tax harmonization policy using the idea of a welfare function or objective function, this is what I have called the general theory of tax harmonization which has been outlined in this section. The separate or specific theories themselves form a list of special theories of tax harmonization. This, of course, is where detailed progress is to be made. But before we turn to them, there are some major problems which relate more to the general theory.

III. THE GENERAL THEORY : SOME MAJOR PROBLEMS

I will deal with five important problems. Only the first was discussed in my earlier expose of the general theory [5].

1. Conflict of Interest

When a tax harmonization policy is discussed there are many interests involved. At the highest level, there is the Common Market regarded as some entity in itself, there are the nation states, and there is the outside world. It has not been made clear above whose welfare function is in use to judge the desirability of any particular policy. It was recognised that weights would be necessary to balance the different economic effects, and that these weights were political. Now the various entities will weight different effects differently; for example, the commission may value overall stabilization of the European economy far more than one particular state which is itself in reasonable balance between inflation and unemployment. Or, a nation with several backward areas might favour fiscal arrangements encouraging growth more than does the Community.

18. There is no answer to this conflict of interest except a political one. The areas of economic analysis and politics can be fairly well marked off. Economics should give information of the effects of particular fiscal arrangements on particular economic objectives. Politics weights them within a political entity, and the political process decides between competing political entities.

2. Total versus Partial Tax Harmonization

It is implied in the earlier part of this paper, and indeed also in my earlier work [5], that each tax harmonization policy, whether it referred to sales taxation or corporate taxation or part of these two systems, could be evaluated independently according to the system outlined. This was to assume the legitimacy of partial as opposed to general equilibrium. But it is now quite clear that two

policies analysed jointly will not add up to the effects of each analysed separately. It is a relevant question as to whether any particular policy is being introduced in isolation, or in association with certain others, or in association with complete tax harmonization in some sense. A policy which might appear desirable on its own might later become undesirable when further tax harmonization measures are undertaken.

20. There is no simple answer to this problem. General equilibrium can be defined: it is the total effects of that part of the fiscal system which will eventually be harmonized — sales taxes and excises and corporate taxation. But the time span of this total harmonization plan is very long. And answers are required for specific and piecemeal tax harmonization policies. The only resort is to assume that partial analyses are proxies to changing a part of the whole system in the *final* general equilibrium frame, whereas the specific policy is actually being initiated in the initial general equilibrium frame. If amendments to the results for the change through time of the general equilibrium frame can be noted, this is some consolation.

3. Product Mobility and Factor Mobility

21. Customs union theory proceeds in a world of factor immobility, though newer work on tariffs and trade gets out of this framework. By having to consider tax unions involving corporate tax and capital movements we have perforce to move into the shifting sands of a factor-mobile world, and incidence in such a world.

22. But it is not satisfactory even to consider sales tax union in only a factor-immobile model, a corporate tax union in a factor-movement model. We shall see later some rate calculations concerning general sales tax shift the burden to factors, whilst incident tables for corporate tax, would on some recent hypotheses on shifting, pass some of the burden on to consumer prices.

23. Hence, strictly speaking, there are trade changes in the factor-immobility model arising from changes in product prices *and relative factor prices* (which may change comparative advantages).

And in the second model, allowing factor movement, these may stem from shifted-back sales taxes as well as the tax on the factor, the corporate income tax.

24. Thus we should work in two settings, the customary customs union one of factor immobility and one where differences in factor endowments are changed by movements of capital. Both sales taxes and corporation tax need consideration in each setting.

25. But again, it has to be admitted, that most work in tax harmonization, including subsequent sections of this paper, are still confined to the factor-immobile world of customs union theory.

4. Neutrality Effects versus Welfare Effects

26. In my earlier work, I lumped together all of the economic effects which should be taken into account in the objective function: revenue and income distribution effects as well as allocation, growth and stabilization effects. I do not think this is quite legitimate. If one thinks of what might be the real economic benefits of tax harmonization, these can not be said to be changes in tax revenue or alterations in income distribution. For these can be effected by the nation alone by changes in its own tax system. What is more to the point is whether new fiscal arrangements can be made in a Common Market which leave the size of the revenue and the state of income distribution in a member state intact, but add to short run real national income or long-term growth or stability compared with the non-harmonized situation. If we may assume that these are desirable prospects for a member state if obtainable without changes in revenue or income distribution, they are in one sense "costless". It does not seem fair to count in as benefits to a tax harmonization policy consequences which may in fact stem from changes in revenues or distribution and which could therefore have been achieved by the nation State acting on its own.

27. Therefore the real economic benefits of tax harmonization should be judged in a situation of *ceteris paribus* as regards revenue and income distribution; this is what I would call the "neutrality" of a tax harmonization policy.

28. In order to judge whether a tax harmonization policy is being analysed in a neutral situation, it is clear that it is just as necessary to consider its revenue and income distribution effects, as its allocative, growth and stabilization effects.

5. Proxies for the Variables in the Welfare Function

In the general theoretical approach, the objectives of improved allocative efficiency, stabilization, and growth are broadly and vaguely stated. As soon as implementation of the theory begins, especially statistical work, a closer specification of something measurable is required. This measurable proxy may not correspond completely with the grand objective in the general welfare function.

30 a. *Allocative Efficiency*

In tariff work, increases in trade arising from tariff reductions are taken to indicate improvements in specialization and hence global allocative efficiency.

Whilst we at present use the same proxy for the harmonization policies, the correspondence is not very satisfactory. For it can be shown that pre-harmonization tax differentials are "forcing" trade to take place which would not do so in a "free-trade" environment — the concept of anti-protection.

31. b. *Stabilization*

We first distinguish external and internal stabilization. But we also have to distinguish whether we mean that a tax harmonization policy *actually* improves a disequilibrium situation, or improves the *mechanism* for dealing with it.

32. For external equilibrium, there is an actual benefit if the deficit is reduced, though care is necessary as to which parts of the account — current visibles, current invisibles, capital — we are referring to. The mechanism may be altered in various ways: a change in propensities to im-

port and import elasticities, or in the range of policy weapons to deal with a deficit.

33. Internal stabilisation may be thought of in a number of ways — inflation or unemployment may itself be altered, or the structural relationship between them (the Phillips curve) can be shifted, or the policy weapons enhanced or limited.

34. *c. Growth*

It may not be so much overall growth that is considered, but its regional deviations. In either case, the Dennison distinctions between growth from increased inputs and from various sources of productivity improvement may be used, though many sub-proxies will be necessary.

In the case of the "neutrality" effects, revenue and income distribution, these can be measured directly.

IV. SPECIAL STUDIES: PROCEDURAL CONSIDERATIONS

35. It is clear from the preceding that the object of particular economic and statistical studies in tax harmonization is to evaluate a policy's effect on trade, balance of payments, etc.

But the "policy" itself needs a little more elaboration. Unlike the tariff case, where a rate change is the obvious policy move, in the tax field, practice has shown that the harmonization of a particular tax proceeds in stages. Three should be distinguished: *structural change*, *change in jurisdictional principle*, and *rate change*. At any one time, a tax harmonization policy may be under discussion involving either one, or more than one conjointly, of these stages.

36. We are now in a position to lay out the nature of a "special study". Given a particular tax, it involves ascertaining the effects on one of the right-hand economic variables of a policy instrument on the left:

Structural Change	}	Revenues
Jurisdiction Principle Change		Income Distribution
Rate Change		Trade
		Balance of Payments
		Inflation/Unemployment
		Productivity or Regional Growth

37. Thus, if we were dealing with the sales tax, a special study might evaluate the effects of the change-over from "cascade" to "value-added" form (structural change) on revenue or on trade. In the case of corporation tax, the effects of a uniform 15% withholding on earnings internationally — transmitted, on balance of payments may be the subject of a special study.

38. All of these potential special studies, besides being linked by the general welfare function, are knit together by a common procedure.

39. It is, in fact, essentially the same as that used in tariff and customs union work, but with the manifold extensions we have added for the tax case. The step-by-step procedure is:

Statement of initial position before harmonization

The change (structural, jurisdictional, rate) proposed
by the harmonization programme

Effects on the economic variables under study

In the further sections of this paper, the type of special studies envisaged will be illustrated by some case studies.

I shall concentrate on sales taxes and corporate taxes, in line with the action currently taking place in E.E.C.

Thus the statement of initial position will involve the pre-tax-union position of sales taxes and corporate tax for a group of countries who have or might be involved in economic union.

40. In the choice of this group, concentration is put on the E.E.C. whilst researchers in other countries would use a larger group, e.g. including Turkey, or the other current associate members, or including potential members such as Britain.

41. Such are the principles of selection for the initial situation before tax union. It will soon be seen that it leads to a weight of statistical work heavy enough.

A similar problem of selectivity will have to be operated, concerning the assumed change in the tax arrangements when the tax union is formed.

42. We shall try to follow the official documents closely, especially the Neumark report, for this gives applied relevance to any results and it does provide sufficient examples of interesting changes.

43. With a limited area of taxation under consideration, and with a few alternatives as to the fiscal changes implied by tax union, we than hope, in later sections, to indicate some of the effects, qualitative theorems and statistical results, which might ensue from the formation of a tax union between a group of countries.

45. Throughout, we shall try to keep close to customs union theory, both for procedural advantages, and to face the question — are tariff or tax barriers greater obstacles to economic integration? But it must be emphasised again that the whole situation is much more complicated in the tax union analysis than in the customs union case.

V. SPECIAL STUDIES OF SALES AND CORPORATE TAXATION: STATEMENT OF INITIAL POSITION

General Sales Taxes

By far the most important issue in indirect taxation in E.E.C. at present is the changeover in general sales taxes from mixed cascade and value-added (T.V.A.) systems to a common T.V.A. system. But, further, the recommendations of the Neumark Report included a change in jurisdictional principle. Finally, though perhaps simultaneously, rates are to be harmonized throughout E.E.C.

Accordingly, the statement of the initial position on indirect taxation in a group of industrial countries should be laid out as follows:

a. *Tax Structure*

This will show a mixture of single-stage sales taxes (like the British purchase tax) multi-stage gross value sales taxes (such as the German "cascade" system) and multi-stage net value taxes (the T.V.A. of France).

b. *Jurisdictional Principle*

This is the simplest aspect to state. Internationally-traded products may be taxed on the origin or destination principle, or in a group of countries, both principles may exist.

c. *Rates*

The most important and the most difficult part of the pre-tax union statement. We have the difficulty of nominal versus some form of effective versus some form of incident rates.

By nominal rates, we mean those which appear in legislation. Effective rates try to get to the fiscal charge on the economic unit after various *non market* factors are allowed for (e.g. allowances, compliance with the law, special loopholes, etc.). Incident rates aim at the real loss-of-income burden on an economic unit after shifting.

In tariff work, concentration has been put on unweighted and weighted "nominal" tariffs, and more recently on deriving "effective" tariffs or rates of protection. There has been a little attention to incidence.

The relation between the concepts and calculations on the tax side and tariff side is as follows. Nominal tax rates are equivalent to unweighted nominal tariffs. Effective tax rates correspond to weighted (by import values) nominal tariff rates. The only incident rates in tariff work consist of the assumption that part of the price change of European exports due to a tariff change is not passed forward.

The "effective" rates of Grubel and Johnson, [11] derived from input-output data, do not as yet have an equivalent in tax harmonization work. It is true that they themselves included indirect taxes in their calculations. But they consolidated sales and excise taxes and also by obscuring tax structures and jurisdictional principle, make it difficult to use the data to assess changes implied by current E.E.C. tax harmonization, which apply to *sales* taxes and mainly to structure and principle.

Aggregate figures have been calculated in nominal, effective and incident form and are expressed in [6]. Use of these corresponds to work with "average tariff" calculations. Some disaggregated figures are available from Grubel and Johnson. These have the disadvantages as "building blocks" already noted.

We now turn to the other major field of tax which will come under an E.E.C. tax harmonization programme, corporate taxation, and there unfortunately, the situation will be more complicated.

Corporate Taxation

In the case of corporate taxation, there is a similar situation on the aggregate side: possible international differences in structure, jurisdictional principles, and rates.

In the aggregate, the situation is easier as regards structure, for the E.E.C. countries all have a corporation tax similar to U.S.A. and U.K., separate from the personal income tax.

But problems of jurisdiction principle are more complicated in the corporate tax case than in indirect taxation. There is a similar duality of possible principle: taxation in country of source of earnings, taxation in country of residence of the owner of capital.

There is no general agreement as to which principle is to be applied; agreements (tax treaties) to modify the inherent double taxation of an item of capital income crossing an international frontier vary greatly and the initial situation is very haphazard.

This there is no need to express the insignificant initial structural differences, and it is pointless to lay out the tax treaty arrangements, which is more a lawyers job. So the *effect* of the complete, partial or zero modification of the inherent double taxation by tax treaty is built straight into the rate tables.

Tables of aggregate nominal, effective and incident rates all have to be in matrix form to show the different *net* rate payable according to the pair of countries between which the capital income is flowing, and even which way!

There is one further problem to add to the misery. The net tax rate differs in law according to the type of establishment which a company may be operating abroad and the degree to which profits are remitted home.

Tables in [6] show the nominal and effective aggregate rates of corporate tax taking these complications into account. Incident rates have not been attempted in view of the continuing and unresolved controversy as to the degree of forward shifting of the corporate tax.

VI. SPECIAL STUDIES OF SALES AND CORPORATE TAXATION: CHOICE OF TAX HARMONIZATION POLICY

The agenda of actual or possible changes in the initial situation is fairly straightforward in the tariff case. It may be the formation of a customs union like the E.E.C. with a common external tariff, or of a free trade area like E.F.T.A. where sovereignty over third-party tariffs remains. Or a % across-the-board cut in tariffs between trading blocs, as in the case of the Kennedy Round. Each of these may provide the starting point of the analysis. Hypothetical possibilities may be used to estimate comparative trade effects, such as recently performed by Balassa and Associates [2] and Maxwell Stemp Associates [19] for a possible N.A.F.T.A.

Essentially, these studies all involve the effects of *rate* changes. The effects may be expressed as qualitative propositions (e.g. trade creation predominates for customs unions between competitive

economies). Or actual trade changes are calculated by import-elasticity of demand methods, and the comparative increases in trade and changes in national balance-of-payments taken as a kind of welfare appraisal of which alternative is most desirable.

Now in the tax union case, we have to contend with many further difficulties.

The change in the tax situation produced by the formation of the tax union may be one of (a) structural co-ordination, (b) change in jurisdictional principle, (c) rate harmonization. And in the early stages of tax union, the evidence of E.E.C., in respect of both indirect and direct taxation is that (a) and (b) does precede (c) [6] [7].

The agenda of actual and not-unfeasible changes, in the tax union case, requiring a qualitative or statistical analysis is therefore almost limitless. Some strict selectivity principles are required if we are to get very far in later sections of this paper, where attempts are made to assess the effects of tax unions.

We propose two principles. The first is to choose tax harmonization measures in progress in E.E.C. or highly probable therein. This opens the agenda with:

General Sales Taxes

1. *Structural* change to T.V.A. throughout E.E.C.
2. *Jurisdictional* change along Neumark Report lines to the origin principle for intra-E.E.C. trade, the destination principle for E.E.C.-third party trade (in combination, called "the restricted origin principle").
3. *Rate* equalisation.

A similar agenda could be construed for corporate taxation:

Corporate Taxation

1. *Structural* change to a similar corporate tax in each E.E.C. country (uniform definition of the European Company, with its implications for common depreciation allowances, etc.)

2. *Jurisdictional* change along Segre Report [10] lines of "complete" elimination of double taxation, so that a company is not differentiated against by operating at home or in another E.E.C. country.
3. *Rate* equalisation for the corporate income tax.

All of these items for possible analysis are actual or potential happenings within the E.E.C., though, of course, with profound importance for outside trading parties.

But then we must add some analysis of hypothetical tax unions.

This, for two reasons. First, it should be noted that all of the real E.E.C. measures itemised above follow an approach of uniformisation, especially note the equalisation of *rates*. It has been argued very strongly in Section I that is an inappropriate copying of the customs union case.

So hypothetical schemes might be an attempt to analyse a set of "planned" differentials, as against E.E.C. rate equalisation.

From this possible agenda, the present paper must again select. Most later sections will dwell on the general sales tax, consistent with the most important actual tax harmonization in progress. Examples can be given of forecasts of qualitative and statistical change from structural, jurisdictional and rate change. Again this is in line with the historical development in E.E.C. Where structural and jurisdictional change is assumed, and economic effects analysed, there is no counterpart in customs union work. Where rate change is assumed, of course, there is, and we shall try to keep close to the assumptions of tariff theory for comparability of results.

VII. SPECIAL STUDIES 1: TRADE EFFECTS OF A CHANGE OF SALES TAX STRUCTURE

The change considered is that from "cascade" systems to the T.V.A., as recommended for E.E.C. by the Neumark Report [9] and about to be implemented. We are working with a factor-immobile model.

1. Trade Effects of Under- and Over - Compensation¹.

Under the universal destination principle, exports are rebated at the border, and the importing countries tax imposed.

Studies show that, statistically, products leaving countries dominated by single-stage and T.V.A. are under-compensated, i.e. carry a quasi-tariff. Cascade taxes are also under-compensated, probably to a greater degree.

But practice also varies in charging a comparable rate (to home products) in the importing country. In "cascade" countries, there is under-taxing, thus cancelling the quasi-tariff. But not in single-stage or T.V.A. countries.

So a rough picture of quasi-tariffs due to the pre-union structure of sales taxes can be built up:

Country of Origin \ Country of Destination	Single stage or T.V.A.	Cascade Systems
Single stage or T.V.A.	Some quasi - tariff	No quasi - tariff
Cascade Systems	Heavier quasi - tariff	Some quasi - tariff

Thus uniformity of sales tax structure in certain directions in a tax union would remove quasi-tariffs between some members, who, preceding tax union, had differently structured sales tax systems, though not increasing others.

For example, a change to universal T.V.A., *increases trade flowing from cascade countries to single stage/T.V.A. countries*, but *decreases trade flowing from single stage/T.V.A. countries to cascade countries* by erecting a quasi-tariff.

¹ From Dosser [6].

This is an example of a qualitative result on trade change due to structural tax harmonization. It could be quantified if the size of quasi-tariff could be estimated. The magnitude of the trade changes could then be calculated from the change in quasi-tariffs, using methods common for the estimation of the trade effects of tariff reduction [2].

2. Trade and Welfare Effects of Multi-Stage and Few-Stage Sales Taxation².

The following trade effects can be deduced from the change-over in a tax union from "cascade" to T.V.A. sales taxation.

The basic idea is that the cascade system, relative to the T.V.A. penalises many-stage products. Manufactures are many-stage products, whilst services are not. Thus a changeover to T.V.A. reduces the burden on manufactures, and increases the relative change on services. Assuming tax to be reflected in absolute price change, and the price elasticity of import demand for manufactures to be higher than for services, there will be trade expansion.

The analysis can be systematized and quantified as follows under the cascade system, tax at rate r , paid on the final value of a product, X , which has gone through n stages of production is:

$$\sum_{i=1}^n X_i r \quad (\sum X_i > X_n)$$

where X_i is gross value (not value added) at each stage of production i , X_n is final value and also total "value-added".

Product W goes through many stages of "value added" (e.g. manufactures).

Products S goes through few (e.g. services).

Thus

$$\sum_{i=1}^n w_i r > \sum_{i=1}^n s_i r$$

2 An analysis originated by Carl Shoup in an unpublished paper

Replace cascade rate tax with T.V.A. rate, r' ,

$$r' > r$$

to raise equal revenue, since the tax base is much smaller. Hence the tax burden on manufactures decreases relative to that on services.

$$w_n r' - \sum_{i=1}^n w_i r < s_n r' - \sum_{i=1}^n s_i r$$

If we assume this change in after-tax relative prices of W and S is translated into absolute price changes, $\Delta p_w < 0$, $\Delta p_s > 0$, the trade changes are:

$$\Delta T_w = M_w \eta_{mw} \frac{\Delta p_w}{p_w} > 0$$

$$\Delta T_s = M_s \eta_{ms} \frac{\Delta p_s}{p_s} < 0$$

But the import elasticity of demand for manufactures is much higher than for services; in fact, for many services, $\eta_{ms} \rightarrow 0$. So

$$\Delta T_w > \Delta T_s$$

and there is a net expansion of importing into the country changing from the cascade to the T.V.A. system.

An example can be given for Germany. It has been calculated that the same revenue is raised by a 10% T.V.A. as by an existing 4% cascade tax. Thus:

$$r = 0.04$$

$$r' = 0.10$$

But there are very few single-stage products which would feel the full force of this tax increase from 4% to 10%.

Disaggregating German products into several categories by the number of stages of production, the two extreme groups showed that for few-stage products, r increased from 8½% to 10%; for many-stage, r decreased from 11½% to 10%.

Thus:

$$\sum_{i=1}^n w_i r = w_n r^* = w_n (0.115)$$

$$\sum_{i=1}^n s_i r = s_n r^+ = s_n (0.085)$$

where r^* and r^+ are T.V.A. "equivalents" of the existing cascade rate on the two different sectors. So, with $r' = 0.10$,

$$w_n r' - \sum_{i=1}^n w_i r = w_n (0.10 - 0.115)$$

$$s_n r' - \sum_{i=1}^n s_i r = s_n (0.10 - 0.085)$$

To proceed further and calculate the trade changes, we would need in addition to the tax changes for each industrial group, the numerical value of the import elasticities and initial imports for each group. Since these are not available, the finding, of an expansion in German imports on the change-over from a cascade to a T.V.A., remains a qualitative one.

But we can go some way further with the analysis and, in fact, show a simple derivation of external stability effects as well as allocative effects. In a tax union between say, two, countries, both or one may be making the changeover.

The change in the trade account of countries A and B will depend on these factors:

- (i) Whether the tax change takes place in both A and B, or just one of these countries, and on the size of the tax change in each.
- (ii) Whether the origin or destination principle is in force, for we have seen that the effects on A's imports stem from the tax change in A if the destination principle applies, from the tax change in B if the origin principle is operative.

In a tax union, we can assume that both A and B change the structure and by equivalent amounts, and that one or other principle applies to all trade. Then the relative expansion of imports by A from B compared with B from A will obviously depend on the export supply and import demand elasticities in A and B comparatively.

It is extremely unlikely that the expansion of trade will be balanced, whatever the case. Whilst the public finance specialist is conscious of avoiding budget effects by an equal-yield constraint, the international trade specialist might want to neutralise foreign account effects by an equal-trade-expansion or balanced trade constraint. The latter constraint *could* be effected by allowing the *size* of the tax change in A and B to differ. But the public finance constraint and the trade constraint cannot both be realised at the same time.

Thus, the welfare effect of a tax union involving a change from cascade to T.V.A. systems may increase efficiency (trade creation) but at the expense of external stability.

VIII. SPECIAL STUDIES 2: TRADE EFFECTS OF A CHANGE OF SALES TAX RATE

In this case, we come fairly near to the estimates of trade effects from tariff changes, but with some essential differences.

We shall first derive appropriate methodology, and then apply it to calculate the trade effects of a near-to-actual rate harmonization in the E.E.C.

The common formula for the tariff case is:

$$dT = \eta_m (dP/P)M_0$$

i.e. change in trade equals the price elasticity of demand for imports times the relative price (tariff) change times base period imports quantities.

The constituents of the formula can be further examined.

(i) η_m = price elasticity of demand for imports and:

$$\eta_m = \frac{D}{M} \eta - \frac{S}{M} e_s^3$$

where η is the elasticity of total home demand, e_s the elasticity of home supply.

Thus, using the elasticity of demand for imports in the calculation of dT takes account simultaneously of the consumption and production effect which both expand imports.

(ii) dP/P = the relative price change:

$$dP/P = t/(1+t)^4$$

where t = the tariff rate change as % of pre-tariff price P_0 .

3 We have: $M = D - S$, where $D = f_1(P)$, $S = f_2(P)$

$$\begin{aligned} \text{so that: } \eta_m &= E [(f_1(P) - f_2(P))] = \frac{D\eta - S e_s}{D - S} \\ &= \frac{D}{M} \eta - \frac{S}{M} e_s \end{aligned}$$

4 The relative price change is:

$$dP/P = (P_t - P_0)/P_t$$

$$\text{But: } P_t = P_0 (1+t)$$

$$\text{so that: } dP/P = [P_0 (1+t) - P_0]/P_0 (1+t) = t/1+t$$

(iii) M_0 = the initial value of imports of the product in question.

The basic formula for the tariff case can thus be re-written:

$$dT = \left(\frac{D}{M} \eta + \frac{S}{M} e_s \right) \left(\frac{t}{1+t} \right) M_0$$

In the tax case, the formula is essentially changed. The effect of the tax change falls just as much on the home producer as the importer, unlike the tariff case. Thus there is no production effect, only a consumption effect.

This is taken account of when the formula is re-written:

$$dt = \eta \left(\frac{t}{1+t} \right) M_0$$

Since the expansion of imports on a tariff cut consists of a double positive effect, and one arm is missing in the tax case, the expansion of trade for a given % points change in taxation is less than for tariffs⁵:

It will readily be seen that the tax effect with non-specialisation is analytically equivalent to the tariff effect with specialisation (all home consumption imported).

Of course, the effect on a country's balance of trade may be as great or greater in the tax case compared with the tariff. For in a tax union or customs union, a country's exports (other partners imports) changes as well as its imports, and the difference between two small changes (the tax case) may exceed that between two large alterations.

We have arrived at this qualitative result — that the trade effect of an equal change in a tax rate will be less than in the tariff case — by comparing equal relative changes in taxes and tariffs.

5 It can be seen that $\eta < \eta_m$ by considering $M/D < 1$ and $S/D < 1$, $D > M$ and $D > S$, and $e_s > 0$, $\eta < 0$, $\eta_m < 0$.

We have seen from the preceding theoretical discussion that the required elasticity figures differ in the tax and tariff cases (assuming non-specialisation).

Now what is available, if anything, in the way of import demand elasticity estimates are regressions of time series of import values and prices.

It will not be clear whether such an estimate is η_m (correct for the tariff case, too large for the tax case) or η (correct for the tax case, but an under-estimate for the tariff case).

The answer must depend on whether the price and import changes observed arose from:

- (i) tariff changes when non-specialisation existed.
- (ii) tax changes, or tariff changes in a specialised world.

The source of the price change is not usually known, nor the alternative information as to whether the price changes gave rise to a production effect as well as a consumption effect. This is a problem to face in a moment.

Another problem is the compounding of structural change with rate change. At the moment, we are only interested in the latter. But to perform our rate exercise, the pre-harmonized position should be one of uniform structure.

The solution adopted is to convert present non-T.V.A. systems to T.V.A. - equivalent rates of tax by estimating the T.V.A. rates that would have been required to raise existing revenues, as raised by present cascade or single-stage sales tax systems. It is true that this does observe the effects structural change; possibly the following results of rate change need to be taken in conjunction with the preceding discussion on the trade effects of structural change.

The actual statistical estimates given shortly are based on:

- (a) manufactures only
- (b) the import elasticities used for tariff work [2]
- (c) all the work is in terms of nominal tariffs
- (d) the rate change is from present T.V.A. - equivalents to a common European T.V.A. rate of 14.7%.

In view of the discussion leading up to this calculation, the qualifications are clear:

(a) only partial coverage; the contrasting situation of trade in manufactures, agricultural products and services is not dealt with.

(b) the import elasticities used are too high.

(c) nominal rates are inferior to effective or incident rates.

(d) the effects of structural change are per se assumed away.

All these qualifications must be borne in mind when considering the following figures:

**Estimates of Effects on Trade of Manufactures (S.I.T.C. 5 - 8)
created by Sales Tax Harmonization in the E.E.C.**

Million \$

Exports from \ Imports to	France	Belgium & Luxembourg	Netherlands	Germany	Italy	Total Exports
France	x	-86.9	-110.2	-204.4	-135.4	- 536.9
Belgium & Luxembourg	+ 80.1	x	-148.7	- 72.1	- 16.8	- 157.5
Netherlands	+ 20.3	-19.7	x	- 40.1	- 10.1	- 49.6
Germany	+307.8	-107.5	-352.7	x	-205.3	- 357.7
Italy	+143.8	-22.2	- 73.5	-153.8	x	- 105.7
Total Exports	+552.0	-236.3	-685.1	-470.4	-367.6	-1,207.4

Notes :

1. Effects derived by application of the formula
 $dT = \eta t / (1 + t) M_0$.
2. Elasticities are taken from [2].
3. The derivation of price (tax) changes and the base - period trade nature (base year 1966) can be seen in [8].

Bearing in mind the qualifications, it can be seen that the trade (and balance of payments) effects are substantial. The change in individual country imports is of the order of 8-15%.

The present exercise, though subject to several qualifications, seems worthwhile in indicating how a study of some effects of a role change might be made, and improved upon.

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