

THE PROTECTIVE EFFECTS OF INTRA-CUSTOMS UNION TARIFFS

SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

BY

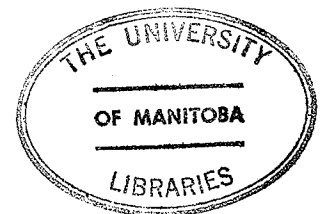
BERNARD MBUI WAGACHA

DEPARTMENT OF ECONOMICS

UNIVERSITY OF MANITOBA

WINNIPEG, MANITOBA

JANUARY 1976



"THE PROTECTIVE EFFECTS OF INTRA-CUSTOMS UNION TARIFFS"

by

BERNARD MBUI WAGACHA

A dissertation submitted to the Faculty of Graduate Studies of  
the University of Manitoba in partial fulfillment of the requirements  
of the degree of

MASTER OF ARTS

© 1976

Permission has been granted to the LIBRARY OF THE UNIVERSITY OF MANITOBA to lend or sell copies of this dissertation, to the NATIONAL LIBRARY OF CANADA to microfilm this dissertation and to lend or sell copies of the film, and UNIVERSITY MICROFILMS to publish an abstract of this dissertation.

The author reserves other publication rights, and neither the dissertation nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

## TABLE OF CONTENTS

Chapter		
I.	INTRODUCTION . . . . .	1
II.	LESS DEVELOPED COUNTRIES' TRADE IN PRIMARY COMMODITIES; THE EXPERIENCE . . . . .	8
III.	GROWTH OF MANUFACTURING AND DEVELOPMENT . . . . .	22
IV.	THE ALTERNATIVE OF ECONOMIC INTEGRATION . . . . .	44
V.	THE EAST AFRICAN COMMUNITY . . . . .	60
VI.	QUANTIFYING THE EFFECTS OF INTRA-CUSTOMS UNION TARIFFS FROM THE SINGLE COUNTRY STANDPOINT . . . . .	89
VII.	EQUILIBRIUM ANALYSIS OF INTRA-CUSTOMS UNION TARIFFS . . . .	100
VIII.	CONCLUSIONS . . . . .	137
	APPENDIXES . . . . .	140
	BIBLIOGRAPHY . . . . .	147

LIST OF TABLES

Table

5A.	TRADE AMONG CU MEMBERS BEFORE AND AFTER TARIFF IMPOSITIONS . . . . .	64
5B.	KENYA: EXPORTS AND GROWTH RATES (%) OF SELECTED TAXED EXPORTS TO TANZANIA AND UGANDA, 1961-1973 . . . . .	65
5C.	MEAN EXPORT QUANTITIES, KENYA TO TANZANIA AND UGANDA: 1961-1965 AND 1969-1973 . . . . .	67

#### ACKNOWLEDGMENTS

Without the thoughtful assistance provided to me from a number of sources, I would not have been able to write the present thesis. I wish to specially thank my co-supervisors Professor P. S. Dhruvarajan and Professor H. Rempel for Research Assistantships and the many hours they devoted out of their own time to discuss the thesis and advise me on the potential results of my analysis as it unfolded. In addition the Teaching Assistanship granted to me by the Graduate Studies Committee for two academic years is much appreciated.

## ABSTRACT

Practical problems faced by the single less developed country (LDC) in its trade with more developed countries (MDCs) have led to the consideration of other strategies in trade. Among the alternatives is economic integration. An unresolved problem exists in the received theory of customs unions, however. Can the formation of a customs union by two countries permit them greater benefits than they could each derive from unilateral preferential or non-preferential tariff reductions? The answer in the received theory is no.

A suggested explanation of the formation of customs unions among LDCs states that they each prefer to gain an industrial base through "swapping" manufacturing production lines for the wider market. In a laissez-faire or unregulated union, however, the industrial base and economic activity both polarize in the more developed member(s). The cumulative causation increases the divergencies between the more developed member(s) and the less developed member(s). At the expense of economic efficiency, equity may be pursued through forms of regulation. Such regulation may consist of a set of fiscal compensations and selective inducements to industries within the less developed partner(s) while such inducements are foregone by industries in the more developed member(s).

A more restrictive regulator is a body of intra-customs union tariffs to shift industrial production. Such a measure of protection

was brought into operation in the East African Community in 1967 although no economic theory of the effects of such tariff protection exists in the theory of economic integration. The analysis of such tariff protection, when operated in any customs union or common market, is the main new contribution of this thesis.

Chapter V analyses the effects of the tariff in a customs union of two partners and shows that the tariff changes the locus of production and terms of trade in favour of the tariff imposing partner while simultaneously increasing/decreasing domestic supply, domestic quantity demanded and commodity price in the taxed/taxing partner. Chapter VI develops a method of approximation of the change in the imports of the taxing partner from the taxed partner's standpoint. Chapter VII considers a customs union of three partners and shows that the more general effects of a single partner's tariff against commodity imports from a second partner are dependent on the effects of a third partner's tariff on imports from the second partner. In the event, a partner may hurt domestic production of a commodity by imposing the tariff or may hurt a domestic industry using the taxed commodity as input unless a tariff is also imposed on imports of the second industry's product from the union.

## CHAPTER I

### INTRODUCTION

Economic development theory studies two approaches to trade: trade theory on the one hand and trade policy on the other. These approaches usually consider the relationship between the less developed countries (LDCs) and the more developed countries (MDCs) in the global economy. Trade policy itself is closely connected with industrialization policy in the LDCs. Of the two areas of study, trade theory is the more prominent, perhaps because it offers a greater scope for theoretical analysis.

Despite the unambiguous proofs provided by trade theory on the benefits of free trade, it has long been argued that all other things are not equal among global trading partners and that the benefits from free trade may be unequal. Both MDCs and LDCs therefore practice forms of trade restriction, foregoing the real gains which would be conferred to consumers by free trade.

A well-known measure which a group of countries can take in trying to recover some of the benefits of free trade is to enter into a customs union. The literature on the effects of this measure is extensive and the whole issue is dealt with in chapter IV of this thesis. The central question of the customs union arrangement, as it affects the LDCs, has been posed theoretically by Cooper and Massel (1965) and H. Johnson (1965) and gives rise to the contribution of this thesis.



According to the Cooper and Massel argument, it is not possible in theory for a single less developed country to gain from a customs union with another less developed country what it could gain from unilateral tariff reductions toward free trade. Cooper and Massel argue that if a recovery of the benefits of free trade (or a proportion of them) was all that could be construed as the single LDC rationale for joining a customs union with another LDC, the said benefits are always theoretically obtainable if the country unilaterally adopts preferential or non-preferential tariff reductions. There is thus no a priori reason why a single country should choose to enter a customs union rather than adopt preferential or non-preferential tariff reductions. In practice, it is extremely difficult under the G.A.T.T. rules to make discriminatory tariff reductions.

The question raised by Cooper and Massel and H. Johnson, puts into doubt the usual analysis of customs unions which evaluates them in terms of efficient allocation of world resources. Cooper and Massel specifically set out criteria by which LDC customs unions may be chosen by the single country as a policy measure. Industrialization is hypothesized to be a prime aim of selection. In the promotion of industrialization, it is assumed that planners are willing to forego income in order to collectively promote and consume domestically manufactured goods.

These assumptions are adopted in this thesis. The specific countries of the East African Community, which motivates the analytical models developed in this thesis, indeed adopted in 1967 explicit measures

of promoting industrial manufactures within the less developed members of the union. Trade restriction within a customs union is suboptimal, however, in the sense that it reduces the level of specialization in the common market as a whole, as is shown in chapter VII.

The measure used was termed a transfer tax, essentially a low level tariff among partner members. The tax is referred to throughout the thesis as an intra-customs union tariff. The basis of the imposition of the intra-customs union tariffs was the long run forces at work in the union making for unequal distribution of manufacturing and other benefits. The more developed union members tended to draw more resources into their growth processes than the less developed members. The fact that gaps in the stages of development among members of a customs union of LDCs are likely to be accentuated over time is not explained in customs union theory since it ignores income distribution within the union.

Despite the important problem raised by Cooper and Massel regarding income foregone for the aims of industrialization, the approach taken in this thesis is that economic effects on key economic variables of intra-customs union measures to promote industrialization can be isolated as fully as possible and explained in economic terms. To this writer it is no less important in LDCs to present the authorities with the economic effects of their choices than with the probable gains they forego from not pursuing allocative efficiency.

As mentioned above, the problem of the less developed member within a customs union has never been met by the theory, as the theory

abstracts from income distribution. This is the problem dealt with in this thesis. The results of the analytical models of the intra-customs union tariff are new to the theory. It is shown that the trade effects hinge significantly on the relevant countries' own demand and supply, as well as cross-elasticities. If, as Cooper and Massel and H. Johnson hypothesize, LDCs have a preference for industrial manufacturing, how is this preference met within a customs union better than it would be outside of a customs union?

The formative stages of this thesis develop well known arguments in the literature to show first, how economic development, from the point of view of the single LDC country exporting primary commodities, may be slowed by the slow growth of world demand for the primary commodity. This idea is well known in the writings of Prebisch (1950, 1959), Myrdal (1956, 1957), Singer (1968) and others.

If growth is restricted by the slow growth of world demand for primary commodities of LDCs, an alternative approach would be to diversify into other products such as manufactures and promote exports of these. The problems faced by LDCs in taking this alternative approach are dealt with in chapter III.

How does a customs union facilitate development of domestic manufactures? One of the measures currently used in the East African Community to deal with the less developed partner problem is to impose intra-customs union tariffs on products from the more developed member(s) in order to generate domestic production within the less developed member(s). The core of this thesis develops models to isolate the

effects of the tariffs and show how the tariffs inter-act with each other to affect key economic variables throughout the common market.

The most comprehensive study of trade-flows in the East African Community, after the intra-union tariffs were implemented, has been conducted by Hazlewood (1971, 1972). The studies cover the relevant period of the operation of the tariffs up to 1970, without directly associating the movements in trade to the tariffs which were implemented to induce the relatively less developed members to increase their industrial manufacturing. It seems to this writer that, although the tariffs are only one of a number of factors which affect trade between the partners of the community,<sup>1</sup> an important approach to take is to establish in what direction the tariffs, singly and in combination with other tariffs, affect the prices, domestic demand and supply in the individual country.

In the course of the two studies mentioned above, Hazlewood set himself four main tasks: (1) to establish how much inter-state trade balance was being approached in terms of the so-called "80 percent" rule,<sup>2</sup> (2) to establish what value of inter-state trade was subject to the transfer tax, (3) to find out how the value of transfer taxed trade had changed over the years, and (4) to establish the relative values of taxed and untaxed trade. However, in the studies, Hazlewood does not purport to answer the following question: what were the economic impacts of the intra-union tariffs to be expected from economic analysis. This is the question dealt with in this thesis. Time constraints do not permit an empirical verification of the new results to the problem but the emphasis is on expected general results which can be tested for any

customs union operating such a measure.

The East African Community has a long history. The union came into being by stages over a considerable length of time during the colonial period. By 1917, Kenya and Uganda had a fully established customs union. Tanzania was fully integrated into the union in 1927. A common tariff came into operation at that time and did not exceed ten percent before the first world war.<sup>3</sup>

From the beginning there were problems of unequal rates of development between the partners with corresponding claims that these differences in the rates of growth were related to unequal benefits of the partners from the union. By the beginning of the 1960s the pressures for evaluating the common market arrangements in the light of unequal rates of development was strong enough to warrant a full-fledged analysis of the union. This was done by the Raisman Report (1961). It is the most detailed analysis of the union to date. Its major conclusions recommended fiscal redistributions within the Community in order to offset the inequalities. A new feature introduced by the Report was the Distributable Pool from which the fiscal redistributions would be made. However, the arrangement lasted until 1967 when the Treaty for East African Co-operation was signed, bringing into operation the tariffs whose impacts we deal with in this thesis.

## FOOTNOTES

### CHAPTER I

<sup>1</sup>One of the most distortionary factors in the East African inter-territorial trade is the rise of state trading corporations. It is clear that the activities of the S.T.C.'s can directly cut into the adjustment process expected to occur after inter-country trade is subject to preferential inter-country tariffs. For this aspect of trade in the East African Community, see Arthur Hazlewood, "State Trading and the East African Customs Union," Oxford Bulletin of Economics and Statistics, vol. 35 (May 1973).

<sup>2</sup>The regulations of the 1967 Treaty stipulated that no further transfer taxes would be permitted to a single country whose exports of manufactures to the rest of the common market exceeded 80 percent of its imports from the same common market. This provision is in article 20, par. 21 of the Treaty.

<sup>3</sup>A. Hazlewood, Economic Integration: The East African Experience (London: Heinemann, 1975), chap. 3.

## CHAPTER II

### LDCs TRADE IN PRIMARY COMMODITIES:

#### THE EXPERIENCE

2.1 That countries can enter into international trade in accordance with their comparative advantages, specializing under free trade and simultaneously maximizing the individual welfares of their communities, is one of the most controversial propositions in economic theory. The gains from free trade have long been proven theoretically; the best known formulation being that of Ricardo.<sup>1</sup> In the Ricardian model, countries happened to differ in their relative efficiencies in the production of traded commodities. Specialization and trade serve to integrate the single country into the world economy in which it simultaneously confers the benefits of its efficiency in the production of a given commodity on the rest of the world and derives similar benefits from other producers of other commodities.

From the standpoint of developing countries the Ricardian scheme has been viewed with misgiving. Leading trade theorists after Ricardo confined themselves to the original thesis, that countries differ only in relative efficiencies in commodity production. The diffusion of the commodities of the relatively more efficient producers into the world economy bring global welfare benefits though there has been great reluctance to explicitly examine the apportionment of the benefits to the single participant country. In the refined contributions of Haberler,

Samuelson, Ohlin, Meade and others, an essentially "horizontal" view of specialization and international trade is taken, in which little discrimination is made between any pair of traded commodities with respect to stages of fabrication, value added, or income and price elasticities.

The inequalities arising in the benefits that countries can derive from international specialization have been debated not only among those countries whose shares are small and those countries whose shares are large. Theorists in the area of development and trade have long carried on the tedious controversy between free trade and protectionism and taken sides in one or the other camp. As is often observed it is hard to agree that the classifications "free traders" and "protectionists" exist in their rigid form outside of learned discussions and textbooks.

Only one of the leading theorists has indicated some recognition of inequalities in the shares from trade and specialization in the context of the running debate on terms of trade. Samuelson,<sup>2</sup> in two of his leading contributions on the subject of gains from international trade, points out that a country's share from specialization and trade may not after all be guaranteed in a free trade world: "Practical men and economic theorists have always known that trade may help some people and hurt others."

But even this admission by Samuelson is qualified. He confines the deterioration of the single country's terms of trade to the pre-trade real-domestic price ratios for a country engaging in external trade. In this context then, it is clear that gains for the single



country from international trade may fluctuate within the intermediate zone of "international" welfare gains for which theoretical proof is provided. But the worst that could happen to the single country, in the orthodox view of international trade theory, is that, after trade, its welfare may remain unchanged from the pre-trade conditions. It may benefit less than its partners from engaging in international trade.

It is clear that the orthodox view of international trade leads to the prescription of a first-best world of free trade to maximize global welfare. It is thus identical to the horizontal view taken of trade partners by free traders. The usual reasons conceded to explain deviations from free trade are military self sufficiency, stability of domestic employment and diversification to reduce fluctuations in external commodity prices. A more recent view given on protection is that technological leadership is a dynamic factor in trade and with diffusion of technology, it becomes increasingly costly to adopt free trade.<sup>3</sup>

Three additional views on deviations from free trade should be mentioned separately. These are the infant industry argument, Hagen's (1958) justification for protectionism in the face of a dual wage economy and Linder's (1961) hypothesis.

The infant industry proposition is straight forward. Essentially it states that a country has inherent comparative advantage in the production of some commodity which it currently imports. The sole reason the advantage is not revealed is that the importable has been established among more advanced trading partners. The result is that potential

exploitation of the advantage in the domestic market is competed away by the inflow of importables. Protection of the industry involved permits the production of the importable domestically such that after an initial "learning by doing" period, the protection can be removed and yet leave the industry competitive vis-a-vis foreign producers. A critical requirement is that the industry marginal cost curve must shift downwards in the intervening period of tariff protection.

The problem of tariff protection with factor market distortions in the economy was introduced by Hagen. Briefly, the approach taken is to show that in a representative developing economy, the rural-urban wage differential introduces a distortionary effect such that the rate at which labor and any other factor are substituted in production in different sectors will no longer be equal. This effectively reduces transformation possibilities, such that the product transformation curve "shrinks in." At each point of the new locus of the curve, the domestic rate of transformation diverges from the domestic price ratio. A tariff increases real income by protecting the importable if its production calls forth the higher wage, but Hagen further argues that a subsidy on labor-use by the sector paying the higher wage and a tax on the sector paying the lower wage may both increase the real income from the importable producing sector and correct the distortion.

Linder's central thesis is that the volume of trade in manufactures of a country with each of her trading partners, taken as a proportion of the GNPs of these countries will be higher, the greater the similarity in the demand patterns of the pair of trading partners. "Similarity of

demand patterns" would presumably be associated with per capita incomes. The theory is not rigorously formulated, but it is clear that (1) for a non-primary commodity to emerge as an export, the pre-condition of home demand must be satisfied, and (2) the existence of an industry to meet domestic demand for a given commodity will determine the range of commodities which can potentially emerge as exportables. For the sake of brevity these two strands of the thesis are the only relevant ones dealt with here. Linder's reasoning on (1) is that external trade is simply an extension of domestic trade. Innovation tends to centre on existing industries and may give rise to export potential. In the reasoning of (2), Linder introduces his concept of "representative demand" although the idea is not given a precise definition. The attempt however is to narrow down the range of potential exports for a country, excluding commodities for which internal production is presumably not "large enough."<sup>4</sup>

2.2 In this section, attention is focused on the rationale for industrialization and regional co-operation in the developing countries. There are important contributions in this area by Myrdal (1956, 1957), Prebisch (1950, 1959), Singer (1968), Hirschmann (1958) and Myint (1969). The mainstream of trade theory has neglected to pay attention to the effects of trade on development generally and some of the above contributions to the theory of economic development have similarly neglected to include international trade as an integral part of their approach. This is true, for instance, of Hirschmann, whose main concern is to establish a theoretical case for the so-called "unbalanced growth" and simultaneously argue against the balanced growth theory of economic development.

Other theorists who have dealt with the question of international trade as it affects economic development have sought to rehabilitate trade theory and economic theory in general as they apply to the analysis of economic development. In this field the propositions of trade theory and economic theory have long been under attack from economists from LDCs. Thus the free trade and protectionist positions are taken mostly by theorists from the MDCs and LDCs respectively.

Myint's (1969) contribution argued that the comparative costs theory, as a branch of the static theory of allocation of resources, not only was the best guide to the foreign trade policy of developing countries but that the theory was neutral between foreign trade and domestic production. This being the case an argument was advanced for impartiality in the allocation of resources between the export sector and the

domestic sector according to comparative advantage. This view is interesting, coming as late as 1969, when it was already recognized that there were extremely high costs to the widespread unemployment in the LDCs.

In his considerable contributions, Myrdal has considered trade relations between the "centre" and the "periphery," terms also used by Prebisch. In his analysis, there are "spread" effects such as the growth of markets, availability of new products, and the diffusion of technology, which are transmitted to the periphery--the LDCs--as a result of the rising income levels of the centre. But the favourable trends are counteracted by the so-called "backwash" effects which operate unfavourably against the periphery. These effects result from the diversion of capital and skilled labor from the periphery to the centre and the tendency of resource uses to be centre-oriented. Myrdal's analysis of the trade problem has close correlation to the problem of regional inequalities. An interesting sidelight is provided by a recent study of regional inequality. Williamson (1965) tested both time series and cross-section data of the U.S. and several other countries and found that in the long term the inequalities are an inverted, U-shaped function of the national level of per capita income. Could we then expect in an analogous manner, that "backwash" effects predominate early in trade relations of LDCs with MDCs but can be dominated by "spread" effects in the long run?

This writer's view is that there are two principal reasons why Williamson's inverted U-shaped function may not hold in the case of global inequalities. First in the international economy no supra-national

body exists to attack the development problem by movement of resources to the affected areas or move idle resources from depressed regions to growing areas. An economy such as that of the U.S. has some adjustment mechanisms for such a problem. Secondly, movement of labor within the international economy is biased against lower skilled categories, a problem Myrdal identifies with the "brain drain." But for a national economy, labor mobility can be quite high and relatively smooth.

In the rest of this section, we analyze the influential views of Prebisch. The background of Prebisch's ideas is the question he put concerning general economic theory. He was convinced that "one of the most conspicuous deficiencies of general economic theory--from the point of view of the periphery--is its false sense of universality."<sup>5</sup> His attempts were aimed at tailoring an economic theory to fit the problems of economic development in general and those of Latin America in particular. His aim was to make such a theory the scientific rationale for "effective proposals for practical action" on development problems. The beginning scenario is one in which the world is divided into the "centre" and the "periphery." The central countries are the MDCs and the peripheral countries are the LDCs.

A high degree of technical progress characterizes the countries of the centre, while the periphery, "under the outdated scheme of international division of labor which achieved great importance in the nineteenth century" provided the industrial centres with foodstuffs (sic)<sup>6</sup> and raw materials, and received manufactured goods in return. Technical progress permeates all sectors in the central economics while occurring

mainly in the export sectors of the periphery. Displaced labor in the centre may be the result of increases in productivity, i.e. technical progress, but is re-absorbed into gainful employment in the capital goods industries.

This reabsorption of labor displaced by technical progress in the export sectors of the LDCs is minimal and thus, productivity improvements become a source of surplus manpower. Other surplus labor is found in low productivity activities or pre-capitalist engagements.

Prebisch holds that technical progress is lower in the periphery due to lack of capital which in turn is a consequence of low savings rates (Prebisch, 1950, pp. 1-7). In a circular manner, this low savings rate is linked to the low per capita incomes of the periphery. This line of thinking clearly compares with the "vicious circle" theory of Myrdal and Nurkse.

The peripheral theory, although it has strong supporters and critics alike, gives some insights into the conditions which lead a representative less developed country to consider development strategies other than those based on free trade. One of the approaches which follows from the theory is economic integration among developing countries, and this is the approach which this thesis considers in further detail. The problem of unequal benefits is no less likely to occur in the customs union or common market than it does in the case of the less developed country under free trade conditions. At a higher level than economic integration, countries are likely to bargain and make arrangements which distribute the benefits of free trade more

equitably. Such distribution may aim at the growth of manufacturing in the respective members, as in the case of the East African Community, which motivates the models of chapters V, VI and VII. Alternately it may take the form of fiscal redistribution in favour of the less developed partners.

How does the alternative of economic integration emerge from the arguments of the peripheral theory? For the purposes of the following brief exposition, we focus on the role of technical progress in the periphery and the centre, employment, productivity, terms of trade and the major criticisms of the theory.

The theory assumes that technical progress, within the framework of classical economic theory and international division of labor, should have led to a more equitable distribution of the benefits accruing to the international community after such developments. According to Prebisch, technical progress, which is seen as a major driving force for economic development, is widely diffused in the more developed countries of the centre while it tends to concentrate on primary export sectors in the periphery. The unemployment brought about by technical progress in the centre tends to be transitional only as the slack is absorbed by the growth of the capital goods industries. In the periphery, where capital goods industries are not significant and where labor on the land has low productivity, technical progress only exacerbates the problem of unemployment.

In order to argue that technical progress favours the centre, Prebisch considers the effects of a rise in productivity on the products



of the centre and the periphery. In the centre, it is argued, labor is organized, such that it can claim some of the fruits of progress in higher incomes. Firms exercise market power such as monopoly, so that they also can claim productivity increases. The upshot is that little in the benefits of technical progress is transferred to the international consumers through lower prices. The above situation is contrasted to the conditions in a less developed economy, where relative abundance of labor coupled with weak organization keeps wages down, so that technical improvements are not dissipated through higher incomes. There is thus less upward pressure on the prices of the export sector due to technical progress. A further argument in this connection is that the income elasticity of the primary exports of the periphery is low so that as incomes of the centre grow, a smaller proportion is expended on imports from the periphery. The opposite is the case with the more fabricated products of the centre.

The combined effects of technical progress on primary commodity prices which the periphery obtains in the international markets and the low income elasticity of demand leads to the paradoxical conclusion that while the process lowers labor inputs in the primary sectors of the periphery the gains are not generally retained but are dissipated through consumption by the international community. As Prebisch put it, ". . . while the centres kept the whole of the benefits of technological development of their industries, the peripheral countries transferred to them the share of the fruits of their own technological progress."<sup>7</sup>

The most controversial proposition of the theory is that the

prices of the primary exports of the periphery have been falling over time, relative to the prices of the imports of more fabricated commodities from the centre. Prebisch derived this proposition from an examination of the effects of technological progress on the price ratio between primary commodities and manufactures for the period 1876-1938.<sup>8</sup> The statistics used are of British import prices of primary commodities and British export prices of manufactured goods. From the examination, the controversial conclusion was drawn that the terms of trade between the peripheral countries and the industrial centres show a constant tendency to deteriorate to the disadvantage of the periphery.

The controversy over terms of trade centres on the variety of available statistical measurements of the ratio. Prebisch estimated the so-called commodity terms of trade which is simply the ratio of the export price index and the import price index. Other definitions weight this ratio with productivity in the centre and the periphery, with the outcome that the ratio measured by Prebisch may not show the deterioration claimed if these additional developments are taken into account. This statistical argument dominates the response of critics of the theory, the main ones being Viner (1953), Meier (1964) and Haberler (1961).

The arguments against the proposition have also recognized the role of commodity quality changes and the inability of the commodity terms of trade measurement to handle this problem. Other responses have attempted to bring the question of population growth into the debate.

The policy implications of the problems analysed in the theory provide alternatives for coping with the alleged disadvantages of the single LDC. These alternatives include the development of manufacturing under protection. The alternative of economic integration was later advanced as Prebisch recognized the danger of the fragmentation of industrialization into "as many watertight compartments as there are countries without the advantages of specialization and economies of scale."<sup>9</sup> It is the problems of this alternative that we examine after showing that industrialization does reach the threshold of manufacturing exports from the periphery to the centre but that it is checked by the tariff structures of the centre.

FOOTNOTES

CHAPTER II

<sup>1</sup>David Ricardo, On the Principles of Political Economy and Taxation (London: J. Murray, 1817), chap. 16.

<sup>2</sup>P. Samuelson, "The Gains from International Trade Again," Economic Journal (Dec. 1962), p. 823, and "The Gains from International Trade," Canadian Journal of Economics and Political Science (May 1939),

<sup>3</sup>See, for instance, F. Seton, "Productivity, Trade Balance and International Structure," Economic Journal (Dec. 1956), p. 66.

<sup>4</sup>S. B. Linder, An Essay on Trade and Transformation (New York: John Wiley, 1961).

<sup>5</sup>R. Prebisch, The Economic Development of Latin America and its Principal Problems, ECLA, UN (1950).

<sup>6</sup>Ibid., p. 1. It may not be true in the light of recent events, that LDCs provide foodstuffs to the MDCs predominantly.

<sup>7</sup>Ibid., p. 10.

<sup>8</sup>Ibid., p. 8.

<sup>9</sup>\_\_\_\_\_, Economic Survey of Latin America: 1949, United Nations (1951), p. 55.

## CHAPTER III

### GROWTH OF MANUFACTURING AND DEVELOPMENT

3.1 In the last chapter the problems of complete specialization by LDCs in the production of primary commodities were discussed. The effects of technical progress on the terms of trade and development are not normally taken account of in the conventional trade theory or in the Ricardian analysis such as that of Lewis.

Ronald Findlay (1973) has shown that not only does technical progress raise profit rates and capital accumulation initially in the primary sector, but when an analysis of incomplete specialization (i.e. primary production with a manufacturing sector) is conducted, the same results occur in the manufacturing sector. But in the case where the rise in profit rates and capital accumulation occur in the manufacturing sector, the increases can be sustained more permanently under certain assumptions. Findlay<sup>1</sup> believes that this conclusion may be one source of the motivation for industrialization in the developing countries since manufacturing is seen as one escape from external dependence.

The intellectual roots of the thinking behind industrialization strategy go back to what has been called the "old-old orthodoxy".<sup>2</sup> This early position exemplifies the view of the academics in that comparative advantage was assumed for LDCs in the production of primary commodities. The "old orthodoxy" however concedes incomplete specialization so that a limited import substitution caters for the domestic market of the

LDC (especially in certain consumer goods), but does not supply to foreign demands. This strategy, which has also been dubbed "inward-looking" strategy was the rule in many LDCs until recently. It was partly a reaction to the adverse consequences of dependence on international trade for supplies of manufactured goods for which the required technology had come within reach of developing countries. In addition, the instabilities brought by the Second World War revealed the uncertainties of relying on international trade for these manufactures.

It has been argued, however, that there are three major factors which motivated the "old orthodoxy." The major influence came from the infant-industry argument and this seems to have been applied across the board to LDCs manufacturing. Secondly, it was argued that the corollary of infant industry encouragement (the necessary tariff protection before such industries could set up) would give developing country governments the needed finance to take fiscal measures and also stimulate domestic savings rates. Thirdly, import substitution would enable savings in foreign exchange as the import bills of developing countries would be lower. Little, Scitovsky and Scott, for instance, argue that the purpose of protection has often been to save foreign exchange, rather than solely to protect domestic industry in the import substitution process. The achievement of this third goal is often elusive and has caused this approach to conserving foreign exchange to be increasingly questioned by researchers. The protected industry may often contribute little value added though inputs may have to be imported in quantities large enough to offset the foreign exchange saving which the industry is expected to

yield. The net foreign exchange saving may also be negative.

It would appear that there is a certain self-perpetuating process set off by the foreign exchange saving industry such that any savings ultimately call forth self-cancelling foreign exchange expenditures or even expenditures in excess of the initial levels of saving. This is observed particularly in the case of the firms which set up from foreign borrowing or private financing. Inputs may often be also foreign and, more importantly, the hired domestic labor force may exercise demands which increase the economy's import bill.

Concerning the infant industry argument, there is general agreement that certain industries can make substantial gains if given a "setting up" period in which to achieve a level of efficiency comparable to external producers. What seem to be the two greatest obstacles in the import substitution process are (1), the ability to identify a priori which industries can make such gains through infant-industry protection, and (2), the decisions as to the appropriate levels of protection required by such industries. There is a growing body of evidence, notably the Little, Scitovsky and Scott study (1970), that where the level of protection accorded to an industry is inappropriately high and remains so through the escalation of tariffs on inputs which are domestically produced, competitive pressure will be diminished, particularly in the case where imports provide such competitive pressure. The result is inefficient industry which comes to depend more and more on excessive levels of protection instead of making efforts "to grow." This is one source of the disparity between rural incomes and urban incomes in developing economies.

Sectoral inequalities may be triggered by the high rates of protection accorded to the industrial sector relative to the agricultural sector. High protection of infant industries leads to high profits and high wages in the manufacturing sector with the effect that the allocation of domestic resources begins to reflect the preferential treatment of the industrial sector. All factors of production demanded by the manufacturing sector begin to earn higher incomes although these factors may have higher real returns in other sectors such as agriculture. Moreover, while products of the industrial sector may not be competitive enough to venture into foreign markets (for which reason they are protected), the creation of a protected industrial sector begins to exert a downward pressure on the foreign exchange earned externally for the (largely agriculturally based) exports of the developing economy. This happens because, with imports restrained, the domestic currency becomes overvalued and this reduces the competitiveness of exports while making imports, for example capital imports of the industrial sector, artificially low-priced.

In protection, the relevant measurement is called the effective (as distinguished from the nominal) rate of protection. This measures the rate of increase in the price of commodity which results from a given tariff accorded to an economic activity. Thus, in effective protection we are interested in the resource allocative effects of protection while the nominal rate of protection indicates the increased cost that a tariff imposes on the consumer in a protected market.

Consider the following example. Suppose that the domestic



production of paper involves only two stages of value added: the production of wood and the processing of paper from wood. Let us assume, firstly, tariff free importations of wood. Suppose that it costs \$2.20 to produce enough wood for fabrication into a given quantity of paper, say 1 roll. Suppose in addition that the value added for the second stage to produce 1 roll of paper is \$1.80. The final selling price of paper will now be \$4.00.

Suppose now that the paper-making industry is accorded a 20 per cent tariff protection against foreign importations. The domestic price of 1 roll of paper now goes up to \$4.80 i.e.  $P(1+t)$  where  $P$  is the initial price and  $t$  the nominal tariff rate. In this case, the protective benefit of the tariff accrues entirely to the paper manufacturers since domestic wood producers continue to sell their wood at \$2.20. The ultimate result therefore is that the paper manufacturer receives \$2.60 for the second stage of production. This is an improvement of 44.4 per cent over the initial free trade situation. Thus, while the policy maker's nominal rate of protection is only 20 percent, the effective rate of protection accorded to the paper manufacturer is more than double that rate.

Now if the wood producers discover their disadvantage relative to paper manufacturers and successfully claim protection from foreign supplies of wood to the level of 20 percent, this protection exerts no influence on the nominal protection accorded to paper manufacturing. Assuming that paper manufacturers do not increase prices to the consumers, the price of wood inputs goes up to \$2.64. This implies that

the second stage of value added now receives \$2.16. Compared to the initial free trade position, this now implies a 20 percent effective rate of protection rather than the 44.4 percent rate when the paper manufacturer only is protected.

It is possible for the tariff structure to be quite meaningless as a means of protection for domestic activities though it may still serve its goal as a revenue source. Consider the above case. If the wood industry was protected to the level of 36.36 percent nominal tariff, this completely nullifies the protection accorded to the paper manufacturers at the rate of 20 percent. To see this, note that the wood producers may now charge approximately \$3.00 for their product and that, given that prices stay at \$4.80, the paper manufacturers' receipts for the second stage of value added revert to \$1.80 as in the free trade case. Since this amount is no greater than what the paper makers would receive without any protection at all, the effective rate of protection is zero although the nominal rate is positive. Little, Scitovsky and Scott (1970) point out cases of negative rates of protection for some stages of value added. This negative protection rate for the above example sets in as soon as wood production is accorded a nominal rate of protection greater than 36.36 percent.

Not all developing economies conducted import substitution behind protective walls. Notable exceptions are Hong Kong and Taiwan. Moreover by the late sixties, as the Little, Scitovsky and Scott study (1970) and Bruton's (1970) survey show, the failures of the strategy had largely been admitted. This strategy was giving way to what Chenery

has termed the "new orthodoxy."<sup>3</sup> This included possible entry of LDCs manufactures into MDC markets.

The corollary of the new orthodoxy thinking was, of course, that there would be accommodation in the international markets for LDC manufactures, a case of "outward looking" strategy in reverse, the onus this time being on the MDCs to specialize and trade according to comparative advantage. But the record of manufacturing exports from LDCs to both MDC and LDC countries has been poor.

To this writer there are several reasons why comparative cost advantage could not be expected to gain wider acceptance in MDCs than it did in LDCs during the phase of the "outward-looking" strategy of development. The initial approaches to economic development through the Smithian "vent for surplus" and comparative cost advantage had produced trading patterns between MDCs and LDCs such that the latter had specialized somewhat in the production of primary commodities, especially in the categories in SITC 0-4.<sup>4</sup> Although MDCs had some primary commodity production of their own, the intake of these commodities from total world production was importantly augmented by LDCs production.

The intake of primary commodities by MDCs had been directed over time into the development of some first-stage to final stage fabrication of raw materials into manufactured commodities. The fabrication had become the base of employment for substantial quantities of domestic factors of production as will be seen below in the case of textiles. The "new orthodoxy" stage of economic development in LDCs no doubt posed a threat to long-established industries which engaged especially in the

lower reaches of primary product fabrication. These industries were the first to pressure for protection from LDC manufacturing. Higher levels of fabrication did not face similar competitive pressure as the absorption of technology in manufacturing in LDCs was from lower levels towards higher levels. Therefore successful pressure for protection has tended to create the phenomenon of cascading tariffs, where the level of value added of LDC exports into MDCs would seem to be "taxed" through protection as it increases.

This tendency can be observed quite clearly in the case of some primary commodities and the tariffs would seem to be relatively higher in some MDCs than others. Take the case of cocoa and wood imports into MDCs:<sup>5</sup>

	<u>EEEC</u>	<u>USA</u>
<u>COCOA</u>	(Percentage ad valorem tariffs)	
Beans	9	0
Butter	22	6.2
Paste	25	2.0
Powder	27	4.2
<u>WOOD</u>		
Wood, roughly squared but not further manufactured	0-5	0
Veneers, plywood, boards etc.	12.5	11
Wood manufactures	14.0	19
Cork	20.0	24

The effects of a tariff structure of this kind across almost the whole range of primary products can be quite complex in both the importing countries and the exporting countries. Let us note, for instance, that this tariff structure mitigates against manufacturing exports from LDCs to the MDCs regardless of the rate at which lower level technology becomes available for the fabrication of primary commodities before export. There are no doubt other factors acting on the rate of transformation of LDC primary commodities, but the following figures are instructive.

Imports of LDC Manufactures by MDCs<sup>6</sup>

(Percentage Distribution by Stage of Transformation)

Stage 1 . . . . .	71
Stage 2 . . . . .	23.8
Stage 3 . . . . .	2.9
Stage 4 . . . . .	2.1

Consider the effects of the above tariff structures on allocative efficiency in MDCs. The case of textiles may be used to illustrate the problem.<sup>7</sup> As low level technology has come within reach of LDC manufacturing, some exports have been increasingly fabricated before export especially in lines where the cascading tariff was not too great a barrier to exports. But for exports of these commodities to grow in MDC markets, it would have to be presumed that, in these lines at any rate, comparative cost advantage was beginning to favour LDCs. Early development, particularly the "outward looking" phase, created a pattern which gave rise to some first stage fabrication or low level technology industries

in MDCs. These are some of the industries which have come under the greatest competitive pressure from LDC exports into MDCs and for which tariff protection is often accorded.

The above phenomenon is dubbed domestic market disruption in common parlance. The textile industry is characterized by low level technology and the absence of appreciable gains from economies of scale. These factors enabled the LDCs which had developed the appropriate primary products during the "outward looking" phase of development strategy to begin fabricating their products through the four main stages of spinning, weaving, knitting, and fabric finishing before export.

Since the textile industry is also labor intensive, and wages are lower in LDCs than in MDCs, imports into MDCs from LDCs began to rise steeply in the 1950s, especially from Indian, Pakistan, Hong Kong, Taiwan and Korea. It was also the case that, historically, higher stages of fabrication of primary materials into textiles and related manufactures had grown to absorb 10 percent of the total labor force in most MDCs. In anticipation of increasing competition from imports in this line, MDCs, principally the United States, prevailed over the G.A.T.T. to introduce the Long Term Agreement Regarding International Trade in Cotton Textiles (L.T.A.).

The L.T.A. originally gave the MDCs an "adjustment" period during which to impose tariffs and import quotas on cotton textile imports. Not only did it not become a temporary measure (now going into its fourth renewal, and with prospects of other fibres being covered by similar arrangements), but by a "gentleman's agreement," only imports

from LDCs, including Japan, became subject to the import quotas and higher tariffs imposed in order to cope with the market disruption problem. These particular actions have precipitated LDCs dissatisfaction with the G.A.T.T. as an impartial body and their trade strategy seems to be finding expression increasingly through UNCTAD.

Let us briefly note the possible effects of the above protective measures on allocative efficiency in MDC destinations of commodities from LDCs covered by the above protection. Commodities in this category may be in competition with LDC imports. First, consumers, as a body, are usually unable to exercise power in the setting of tariffs while manufacturers have some leverage. Yet manufacturers who win tariff protection for their products can mark up their prices to consumers to some degree of the tariff protection accorded. Furthermore, as tariffs tend to "escalate" from low levels of processing to higher levels, any industries using a given protected output as an input faces increasing input costs in its operations in MDC markets. These increased input costs may be expected to appear in prices paid by consumers for the finished products in the domestic markets of MDCs. Furthermore, where these final stage products are exported to the LDCs for consumption, the higher prices may be expected to appear in prices paid by LDC consumers of the product which has protected inputs. In a manner similar to the allocative effects of import substitution, it seems that all factors of production related to the industry protected against competition from LDC manufactures, will gain higher incomes as will firms engaged in the fabrication of the protected activities.

In the light of the above effects, it is not an unlikely explanation that part of the movement of cheap synthetic materials into low-level technology industries in MDCs, e.g. textiles and apparel, may have been motivated by the higher incomes which were to be earned through tariff protective measures. But note that such a movement should act to depress both the incomes of primary producers in the MDC domestic markets and the LDC incomes from exports of the primary commodities. The competition offered by synthetics in the protected industry is neutral between domestic primary production and imports of the primary commodity from foreign sources. The only comment that may be made in regard to this competition is that as the terms of trade deteriorate for this class of products, and without regard to the competition offered by the synthetics, MDC producers face only moderate price effects from these events since they may often have available income stabilizing policies while these facilities are rarely extended to LDC primary producers.

The above patterns shed some light on why even at the beginning of the seventies, LDC exports continued to be principally primary products. These products are in classes 0-4 and are, broadly (0) Food and live animals, (1) Beverages and tobacco, (3) Mineral fuels, lubricants and related materials, (4) Animal and vegetable oils and fats. Production continued to be high in LDCs, 40 percent of total world production, while MDCs also produced 45 percent of the total. However MDCs were by far the highest consumers, 75 percent of the total, while consumption in LDCs was 15.7 percent. It is a mark of the extensiveness of the earlier "outward-looking" phase that for 75 percent of the LDCs, 60 percent of the total



exports were still made up of three primary commodities.

Origin and Destination of World Primary Products: 1970

Current U.S. Dollars

<u>World Origin:</u>			<u>World Destination:</u>	
<u>Area</u>	<u>Value</u> <u>('000\$)</u>	<u>Percent of</u> <u>total</u>	<u>Value</u> <u>('000\$)</u>	<u>Percent of</u> <u>total</u>
MDCs	46.3	44.7	74.6	72.0
LDCs	41.5	40.1	16.3	15.7
Eastern Areas	10.4	10.0	9.4	9.1
Australia, N.Z. and South Africa	5.4	5.2	3.3	3.2
Total	103.6	100.	103.6	100.

Source: Based on International Trade, 1970: G.A.T.T., Geneva, 1971, pp. 22-23.

3.2 In many instances in economics we are concerned with the partial effects of a change in a given variable. For instance, we may be interested in analysing the effects of a tariff change on revenue or on domestic supply of the commodity covered by the tariff. In this section, a symbolic analysis is made of the problem of increasing value added in the face of increasing tariff protection on levels of fabrication. This problem is mentioned in the literature only indirectly as, for instance, in Arquidi's comment in Samuelson (1969). The full range of the effects of a tariff on the levels of value added on commodities which can be manufactured using a given set of primary inputs imported for the manufacturing is no doubt complex. The full effects would probably only be grasped through a general equilibrium analysis of the country which uses the imports as inputs in industry. This analysis is beyond the scope of the present thesis and we merely schematize the possible price effects of a cascading tariff structure. Taking the stages of commodity transformation shown in 3.1, let us make the following assumptions.

- $T_i$  = Level of ad-valorem tariff protection accorded to stage  $i$  of fabrication in the importing country.
- $\pi_i$  = Discrete ad-valorem tariff increment, from stage  $i - 1$  to stage  $i$ , accorded to manufacturers at stage  $i$  in the importing country.
- $V_i$  = The incremental value added from stage  $i - 1$  to stage  $i$ . We have to make an assumption about the magnitude of this value added in both the exporting country (which can export a product at stage  $i - 1$

or fabricate it to level  $i$  prior to exportation regardless of the incremental protection  $\pi_i$  accorded to stage  $i$ ), and the importing country. The assumption is that the capturable  $V_i$  is equal in both importing and exporting countries.

- $VA_i$  = Total value added up to stage  $i$  of fabrication. If the assumption regarding  $V_i$  holds, then  $VA_i$  will also be equal in the importing and exporting countries. We abstract from transportation costs.
- $P_i$  = Retail price of the imported commodity at stage  $i$  of fabrication in the importing country (c.i.f. price).
- $R_i^*$  = An identity we may call a tax on value added as a percentage of incremental value added product for stage  $i$ . This tax is borne by the exporting country if it fabricates its commodity to level  $i$  before exportation regardless of incremental tariff protection  $\pi_i$ .
- $R_{ij}^{**}$  = The taxation of value added for the production line of  $j^{\text{th}}$  commodity at stage  $i$ .

Before writing the last two variables as functions of  $\pi_i$ ,  $VA_i$ ,  $V_i$ , and  $T_i$ , let us demonstrate with the exports of the completely specialized economy and then assume incomplete specialization with the primary exports being fabricated through higher levels of value added in the face of cascading tariffs.

Stage 1: Complete specialization and free trade. No tariff protection in the importing country against the primary commodity.

$$(3.1.0) \quad P_o = VA_o (1 + T_o) = VA_o + VA_o T_o$$

There is no tariff protection in the importing country, hence  $VA_o T_o = 0$ .

Stage 2: Onset of incomplete specialization. "Front-line" tariff protection accorded to domestic manufacturing in the importing country engaged in fabricating stage 2 of the primary product. We assume the exporting country begins to offer competition in the importing country for products at level 2 of fabrication.

$$(3.1.2) \quad P_t = VA_t (1 + T_t) = VA_t + VA_t T_t.$$

The value added for this stage by the exporting country, if it fabricates the commodity up to this stage regardless of the tariff imposed is  $V_t$ .

Now  $VA_t$  in (3.1.2) may be written as:

$$(3.1.3) \quad VA_t = VA_o + V_t \text{ and}$$

$$(3.1.4) \quad V_t = VA_t - VA_o.$$

Furthermore, the tariff level is now positive such that  $T_t$  is also  $\pi_t$ .

The tariff  $T_t$  accorded for this stage of fabrication may be written:

$$(3.1.5) \quad T_t = T_o + \pi_t$$

Substituting equations (3.1.3), (3.1.4) and (3.1.5) into (3.1.2), we have:

$$(3.1.6) \quad P_t = (VA_o + V_t) (1 + T_o + \pi_t) \\ = VA_o + VA_o T_o + VA_o \pi_t + V_t + V_t T_o + V_t \pi_t.$$

Now the change in domestic prices in the importing country for the commodity fabricated from stage  $i - 1$  to stage  $i$  is

$$(3.1.7) \quad P_t - P_o = VA_o \pi_t + V_t + V_t T_o + V_t \pi_t \\ = \pi_t (VA_o + V_t) + V_t (T_o + 1).$$

Furthermore, the tax on value added, i.e.  $R_t^*$ , may be obtained by expressing the change in the domestic prices of the commodity in the importing country as a percentage of the incremental value added at the particular stage by the exporting country.

$$(3.1.8) \quad R_t^* = \frac{P_t - P_o}{VA_t - VA_o} \times 100$$

Substituting equations (3.1.8) and (3.1.4) we have

$$(3.1.9) \quad R_t^* = \frac{\pi_t (VA_o + V_t) + V_t (T_o + 1)}{V_t} \times 100$$

A more general statement can be made with regard to  $R^*$  for the full range of economic activities which can be performed on the original primary commodity, or a number of them, to increase value added product for every level of finished stage of the product and/or derivative products.

$$(3.1.10) \quad \sum_{i=0}^n R_i^* = \sum_{i=0}^n \left[ \frac{P_i - P_{i-1}}{V_i} \right] \\ = \sum_{i=0}^n \left[ \frac{\pi_i (VA_{i-1} + V_i) + V_i (T_{i-1} + 1)}{V_i} \right] \times 100$$

Where the exporting country has a range of  $l - m$  primary exports which can be processed through stages  $0 - n$  of fabrication, then we have

$$\begin{aligned}
 R_{ij}^{**} &= \sum_{j=1}^m \left[ \sum_{i=0}^n R_{ij}^* \right] \\
 &= \sum_{j=1}^m \sum_{i=0}^n \left[ \frac{\pi_{ij} (VA_{i-1j} + V_{ij}) + V_{ij} (T_{i-1j} + 1)}{V_{ij}} \right] \times 100
 \end{aligned}$$

This crude measure, which abstracts from important concepts such as the elasticities of traded commodities both in the supplying country and in the domestic market of the importing country, is an indication of what Goran Ohlin has termed "the defensive attitude of the industrialized countries (which) is to some extent a measure of the remarkable success which some developing countries have scored in exporting manufactures in recent years."<sup>8</sup>

It seems to this writer that the trends which bring about the above structure and constrain manufacturing exports from developing countries are strongly modified by certain factors regarding the technology and management of the typical firm in a developing economy. Firstly, many of the larger firms which often are multinational in scope invested initially in the developing economies in order to take advantage of the higher profit rates which were to be had behind the protective walls of the import substitution phase. Many of these firms have been associated with the inefficiencies of this phase and a widely held view was that these industries had failed to adapt technology to prevailing factor prices. This view is not now popular in the light of the technological expertise of some of the exports from LDCs.<sup>9</sup> Secondly, many of the corporations which followed the highly protected firms of the import

substitution phase, moved to the LDCs in search of low-priced input bases. Some of these firms often supplied outside markets out of their own initiative or under pressure from LDC governments. Furthermore some governments made public funds available for export promotion. Unemployed labor in the urban sectors of LDCs has kept wages fairly low. Compared to MDCs, where labor costs per unit of output have been rising, labor costs per unit of output have been falling in the LDCs.<sup>10</sup>

Another factor which tends to modify the effects of cascading tariffs is the uncertainty, in the MDCs, with regard to that element of production in lower-level technology industries which is genuinely displaced by the incursion of imports into the domestic markets and that element which is the result of rapid growth and structural change over time. The so-called adjustment assistance is often aimed at the former element of production in order to overcome the resistance to imports.

Despite the above uncertainties, it is remarkable that the volume of adjustment assistance has been rising in the developed economies. All recent statistical evidence produced by UNCTAD and the UN (1971, 1972, 1972) converges on the fact that the United States, EEC and Japan spend between 21 to 24 billion dollars per year on direct and indirect support of importable primary commodities, let alone commodities fabricated through the stages shown in the above model. These expenditures compare poorly with official aid whose net figure was 7.7 billion dollars for the year 1970.

The other observation is that any growth of manufacturing exports from LDCs should not wrongly be attributed to all LDCs. Statistics show

that while the share of manufactures as a percentage of LDC exports rose from 10 percent to 18 percent in the last decade, six countries, Hong Kong, Korea, India, Yugoslavia, Mexico and Taiwan accounted for three fifths of the total.



## FOOTNOTES

### CHAPTER III

<sup>1</sup>R. Findlay, International Trade and Development (New York: Columbia University Press, 1973), pp. 76-84.

<sup>2</sup>For two good reviews of this area of the literature see J. Power, "The role of Protection in Industrialisation Policy with reference to Kenya," Eastern Africa Economic Review, Vol. 4, No. 1, O.U.P., Nairobi (June 1972), p. 4 and H. Bruton, "The Import Substitution Strategy of Economic Development," Pakistan Development Review, Vol. 10 (summer, 1970).

<sup>3</sup>J. Power, Ibid., p. 4.

<sup>4</sup>Standard International Trade Classification. The full classification is:

- (0) Food and live animals.
- (1) Beverages and tobacco.
- (2) Crude materials, inedible, except fuels.
- (3) Mineral fuels, lubricants and related materials.
- (4) Animal and vegetable oils and fats.
- (5) Chemicals.
- (6) Manufactured goods classified mainly by material.
- (7) Machinery and transport equipment.
- (8) Miscellaneous manufactured articles.
- (9) Commodities and transactions classified according to kind.

<sup>5</sup>United Nations, World Economic Survey, 1962: The Developing Countries in World Trade (New York: United Nations, 1963), p. 79.

<sup>6</sup>B. Balassa, "Tariff Protection in Industrial Countries; An Evaluation," Journal of Political Economy, 73: pp. 573-94.

<sup>7</sup>The Brookings Institution, World Trade and Domestic Adjustment (Washington, D.C.: 1973), p. 5.

<sup>8</sup>H. Hughes, ed., Prospects for Partnership: Industrialization and Trade Policies for the 1970s (IBRD, 1970), pp. 32-34. Ohlin also makes the interesting point that, for better or for worse, it is the multinational branches in the developing economies which tend to increase exports to MDCs because resistance to them is rather less than to indigenous manufacturing.

<sup>9</sup>H. B. Chenery, "Industrialization and Trade Trends: Some Issues

for the 1970s," in Helen Hughes, ed., op. cit., pp. 9-12.

<sup>10</sup>Ibid., pp. 9-10.

## CHAPTER IV

### THE ALTERNATIVE OF ECONOMIC INTEGRATION

4.1 Economic integration has received much attention in recent years, both in developed nations and in LDCs. The growth and the accompanying problems of the EEC have provided a great deal of the motivation for studying the problems of economic integration. In the present chapter, the approach is to lay down the theoretical foundations of economic integration and then examine the findings of the theory in the light of LDC trade. But this chapter goes further, in that regional economic integration of LDCs will be treated as development strategy. In the light of the foregoing chapter, where the analysis of barriers to LDC trade with MDCs is limited by the slow growth of demand for primary products and the structural problems of exporting manufactures from LDCs to MDCs markets, the present chapter raises such questions as the ability of LDC destinations for LDC manufactures to become stimulants to LDC manufacturing growth. In chapter V, the recurrence of inequality within a regional grouping is examined using the East African Community as an example. It is shown that the inequalities are likely to set in and accumulate over time if the vertical distances between the levels of development of the members is substantial.

Regional economic integration is provided for in the G.A.T.T.'s "most favoured nation" clause. According to this clause the only permissible form of trade discrimination (barring exceptional circum-

stances), is that of customs unions and free trade areas. The difference between customs unions and free trade areas is that the latter do not operate a common external tariff while, according to the G.A.T.T. definition, customs unions constitute:

the substitution of a single customs territory for two or more customs territories, so that (1) duties and other restrictive regulations of commerce are eliminated with respect to substantially all the trade between the constituent territories of the union . . . and (2) substantially the same duties and other regulations of commerce are applied to each of the members of the union to the trade of the territories not included in the union.

By far the greatest attention with regard to trade discrimination is accorded to Customs Union theory in the literature. The type of discriminatory tool given the most attention is the protective tariff. Quantitative restrictions, which have grown significantly, are treated along with tariffs since imposition or removal of tariffs has similar effects to quantitative restrictions, save that price effects do not occur in the case of the latter. Review of quantitative restrictions will be treated only in a peripheral manner as, for instance, in the consideration of the activities of state trading corporations in the East African Community.

Prior to 1950, the traditional theory held tariff protection to be a movement away from free trade and a subtraction from potential global welfare, while the elimination of tariffs worked in the opposite direction. In the particular case of a customs union, CU, the accompanying removal of tariff barriers was thus a blow for free trade. Free trade maximized world welfare. A CU increased world welfare by bring-

ing welfare benefits to consumers in the participant countries of the union.

In a contribution which has formed the basis of all subsequent studies in trade discrimination through CUs, Viner (1950) adopted a static partial equilibrium approach to show that a CU did not unambiguously lead to increased world welfare and could lead to a reduction through inefficient allocation of global resources. A judgement on the direction toward which welfare moved, Viner showed, could only be made after account was taken of the product transformation curves for the partner countries and a determination as to the relative incidence of the two opposing forces, trade creation and trade diversion, was made. The greater the degree of overlap between traded commodities and the greater the trade creation net of trade diversion, the greater would be the benefits created by the CU.

The concept of trade creation and trade diversion can be illustrated by the following example. Let A, B and C be high/home, medium/partner and low/rest of the world, producers of a commodity respectively. Let the money prices of equal amounts of the commodity, exchange rates constant, be as below, with ad valorem tariff protection as given.

Country	A	B	C
Prices (domestic)	30s	24s	20s
Tariff	30	30	30
Least cost source pre-CU	C(26s)	Self (24s)	Self (20s).

In the above example, we have a case where A's domestic production is not protected at a level high enough to shut off imports from C, while the level of protection is adequate to exclude B's exports to A's domestic market. If A's tariff is geographically non-discriminating, then that country enjoys better terms of trade with C in the specific commodity than with B. But notice that if a CU is formed between A and B and the tariff protection of 30 percent is removed between them, B totally captures the market for the commodity in the CU. Notwithstanding B's lower (24s) money prices which constitute the least cost prices for the CU consumers, the CU formation accompanies, in A's case, a movement from a lower cost to a higher real cost source for the commodity. This is the typical case of Vinerian trade diversion. It is held to be a movement away from global specialization and trade.

Now suppose the initial tariff in A had been 51 percent, ad-valorem. This would, pre-union, have been adequate to cut off all imports of the commodity from B and C, thus giving A's domestic market wholly to A's producers. A CU between A and B will, in this case, give A's market to B's suppliers without, however, displacing imports from a lower cost source. It is noted here that the CU will lead to A's consumption of the commodity at an opportunity cost of 24s worth of exports for the specified quantity, while releasing 30s worth of factors of production entailed in domestic production prior to the CU. This move constitutes Viner's trade creation. In our specific example, it is noted that trade creation will occur whether the CU is formed between A and B or C.

Viner's two opposing forces of trade creation and trade diversion

and their incidence on a particular CU were held to be the criteria on which the desirability of the CU was judged. One of the immediate corollaries of the above argument was that the desirable force of trade creation would be the greater the more competitive were the commodities produced by would-be members of a CU. Thus by definition greater potential welfare gains were to be had in the case of competitiveness of products rather than in complementarity.

Viner's model uses all the usual neo-classical assumptions of international trade and, like the latter theory, derives its most serious weaknesses from these assumptions when questions of economic development analysis are put to it. In particular, the trade of partners is not held to bring economies of scale in product transformation. Constant costs and fixed consumption coefficients, i.e. non-substitutability of products, are central to Viner's contribution and to the modern theory of CU as developed by other writers. These assumptions effectively rule out considerations of such important questions as technical changes or post-union adjustments. Viner examined welfare effects as the signals which led to bodily shifts of the locus of production within a CU.

Despite the present complexity of the theory and its increasing refinements, it has retained its essential limitation as a rather disguised argument for free trade. The main body of the theory of regional integration involving customs union formation has been built on not a great deal more than a running taxonomy of variant outcomes which relate to (a) magnitudes of community welfare and (b) variability in production on points on the product transformation curve, as the assumptions of the

fundamental Vinerian contribution are relaxed. For each assumption relaxed in the development of the theory, there have been elegant contributions and counter-examples.

Meade (1956), Gehrels (1956) and Lipsey (1957, 1970) all independently developed the theoretical implications of relaxing the fixity of coefficients in consumption assumption, introducing positive price elasticities for commodities and the implied substitution between them. Melvin (1969) and Bhagwati (1971) then independently showed the implications of relaxing the assumption of constant costs in production.

At one point in his survey of the theory, Krauss (1972) decries the direction taken in the analysis after Viner's contribution. To this writer, it seems that results derived from varying Viner's initial assumptions, however refined, perhaps developed the study of CUs less than would have been the case if other fundamental forces similar to Viner's had been incorporated into the theory. For instance, the "horizontal" view of the trading countries was again taken although one of the main problems of successful integration arises out of "vertical" distances in levels of development among members in a CU. Issues such as balance of payments, growth rates, the allocation of industry, income distribution, have all been prominent in discussions of Britain's entry into the EEC. On these matters, the theory has not much to say. One of the major tasks of the remaining part of the thesis is the economic analysis of policies designed to reduce disparities in the allocation of manufacturing activities.



4.2 As mentioned above, several writers take credit for analysing the effects of relaxing the fixity of consumption coefficients in traded commodities in Viner's model. A revealing analysis is that of Lipsey (1960). One of the conclusions arrived at, through the theory of second best, is that consumption effects are indeterminate in their direction. The application of second best theory in this special case arises from the fact that deviations from free trade welfare optimal conditions no longer provide for sufficient conditions to make a statement of unequivocal welfare gains.

This indeterminacy can be shown from a world of three spheres, A, B and C as we have in 4.1. In free trade, all relative prices are equalized with the rates of transformation in the three countries and thus the optimal conditions of welfare are met. However, if country A imposes a tariff on the commodities from B and C, then the price ratio faced by the consumers in A between a domestic good, say Y, and the importable, say X, is less than the international price ratio. However, with no tariff between them B and C continue to consume the commodities under optimal conditions. Thus, globally, only some optimality conditions hold. Now if A forms a CU with B, optimal conditions will hold between A and B, will cease to hold between B and C (by virtue of the CU common external tariff), and will continue not to hold between A and C. Thus we see that in the two cases, A acting to impose a tariff independently and both A and B imposing a tariff, we have optimal conditions fulfilled for two countries only. All that can be said about consumption effects is that they may raise or lower welfare.

What does Lipsey and Lancaster's theory imply for a CU? If free trade Pareto optimum is not to obtain because of CU formation, the implication is that an optimum can be reached only by departures from all other optimum conditions apart from the constraint imposed by CU common external protection. But the second best solution outside of free trade does not mean bringing down all tariffs. Even the solutions of second best seem indeterminate and perhaps of little practical guidance for a wide range of commodities and tariffs.

One of the first significant developments in the theory after Viner's contribution is credited to Lipsey (1957), Gehrels (1956), and Meade (1956). It is the case that for the relaxation of each of Viner's assumptions, a constant cost matrix and fixed consumption coefficients, several elegant contributions have been made independently which arrived at the same conclusions. In the case of the fixed consumption coefficients, we take Lipsey's analysis.

Lipsey's theoretical contribution took the form of a proof that a welfare loss necessarily resulted from a trade diverting CU only if the fixity in consumption coefficients postulated by Viner was allowed to remain in the analysis. If the assumption was to be removed, then it was possible to show, through indifference curve analysis, that trade diversion notwithstanding, where a country consumes a tariff-protected commodity from a least-cost source (a supplier at free-trade price), pre-CU, its welfare can always be improved post-CU with any number of partners up to a given terms of trade level, despite all possible partners offering worse terms of trade than free trade terms (see Appendix I).

This outcome is explained in the following way. When a country does not impose a tariff, it consumes a given product pair, say the home product X and the importable Y, in free trade conditions where the community welfare rises to the point where the indifference curve is tangent to the international price line. This is the free trade equilibrium. When a tariff is imposed on Y, however, the domestic price line is steeper than the international price line, i.e. the real price ratio between X and Y goes up. The result for welfare is that the relevant community indifference curve is lower than the free trade one. If X and Y are assumed to be consumed in fixed proportions, it is then shown that even if the country goes into a CU with a partner who offers a higher price ratio between X and Y than that which obtains after protection, the resulting trade diversion vis-a-vis free trade necessarily lowers welfare.

But if price and commodity substitution effects are allowed in the model, then all possible CU partners who offer a higher price ratio between X and Y than the pre-CU ratio of the country in question can be demonstrated to necessarily raise the country's welfare regardless of the fact that welfare level remains below the free trade equilibrium. Thus Lipsey's position is that, for welfare gains to be captured in the case of the above type of CU, the analysis must take account of substitution and price elasticities which are ruled out by Viner's assumption.

The relaxation of the constant costs assumption is attributed to two independent contributions by Bhagwati (1971) and Melvin (1969). Bhagwati's contribution is built on a remark which is critical of Lipsey's

interpretation of the Vinerian fixity of consumption coefficients assumption. Although this assumption is not explicit in Viner, it can be inferred from his references to "shifts in the production locus." Bhagwati presents an alternative analysis (see Appendix IIa and IIb), which assumes an implicit Vinerian interpretation that imports into a potential CU partner are held constant--( $dM = 0$ ). With this assumption, it can be shown that Lipsey's proof that Viner's assumption of fixed consumption coefficients led to a necessary welfare loss for a trade-diverting CU, rested on an inevitable lowering of imports. But Bhagwati shows that with his interpretation of Viner, as well, a sufficient condition for a trade-diverting CU to result in welfare loss is provided.

On the basis of the above finding however, Bhagwati then demonstrated that if variability of production is assumed, Lipsey's interpretation of fixed coefficients in consumption then cease to provide a necessary and sufficient case for a trade-diverting CU to result in welfare loss, while the assumption of fixed rates of imports continues to provide a necessary and sufficient condition for the diversion to result in welfare loss.

Melvin's analysis provided conclusions similar to Bhagwati's. But Spraos (1964) has argued, and would seem to have done so correctly, that the Bhagwati-Melvin contributions mis-specify the elements of the Vinerian trade diversion/production effects. They content themselves with the measurement of the net effects of trade diversion and welfare gains, ignoring the logically inevitable fact of their analysis that movements along the product transformation curves constitute trade

creation, involving movements from high cost domestic sources to lower cost CU partner sources.

Spraos demonstrated that to clearly identify any net trade creation, it is the trade creation/production effects combination which is relevant, rather than the trade diversion/production effects. This relevant combination, Spraos argues, should be weighed against any simultaneous trade diversion. The symbolic relations resulting in trade creation are set out below.

$$\frac{\partial S_h / \partial P_h}{\partial S_l / \partial P_l} > \frac{T - t_l}{t_h - T}$$

where,

S = Quantity supplied.

P = Price.

t = Pre-union tariff percentages.

T = Post-union common external tariff.

h and l refer to high and low tariff trading partners respectively.

The significance of the Bhagwati-Melvin-Spraos contributions is that an important moderating force between Vinerian trade creation and trade diversion is brought into the theoretical work through a consideration of the product transformation rates. It becomes clear that net trade diversion, an undesirable outcome in the orthodox judgement, ceases to provide a conclusive argument against CUs on the basis of the diversion alone. Although the corollary is that trade diversion can be consistent with favourable effects in a CU partner, it is not examined for the multiplicity of the reasons or sources of the favourable effects. The

sources of gain most frequently mentioned, such as economies of scale, can not be brought into the analysis since the fundamental trade theory assumes constant returns to scale. We are consequently left to observe only the counteracting effect of production effects when any losses in welfare are expected from a CU formation.

This particular conclusion would seem to this writer to be of particular significance to LDCs where the well-known imperfections in factor markets and the domestic distortions which account for high unemployment imply that many economies operate well within their production possibility frontiers. In the event, trade diversion as a consequence of CU formation would be expected to reallocate resources not merely from one productive use to another less productive use; on the contrary, the CU may bring into the production stream factors whose alternative uses have hitherto been negligible or zero. Such a case is unemployed labor or labor whose contribution to the total product of a sector, such as agriculture, is marginal.

Much of the above theoretical work takes CUs as given, without considerations of this alternative's selection by members in terms of its ability to fulfil any given goals better than other alternatives available to the single country. Some alternatives which would seem logical in the light of the pure theory have rarely been taken. Such an alternative is the non-preferential tariff reductions or the discrimination of one potential member against another in CU formation. These considerations lie outside of the traditional theory. Johnson (1965) and Cooper and Massell (1965), with different aims and approaches, have

made theoretical contributions to attempt to study the conditions under which countries will be willing to embark on CUs and adjust their commercial policies on behalf of its subjects who are assumed to derive a higher degree of satisfaction from the consumption of any specified value of domestic manufactures than in the consumption of comparable imports of a similar manufacture. The community welfare is therefore defined in terms of private and public goods rather than in the traditional terms of private consumption.

Cooper and Massell begin their analysis in the following manner. Since the existence of protection is an indication of the single country's choice to forego the benefits of free trade, how do LDC type countries choose a CU to achieve more fully the ends served by protection? The paradox raised in a theoretical judgement of a CU along traditional lines is that if it is interpreted as merely a move to make domestic price ratios between a home commodity and a traded commodity more favourable, the greatest advantage will be obtained at the free trade price line, a point which can consciously be approached through unilateral tariff reduction. This throws up the possibility that the benefits from any CU (save the special case of a global CU) will always be a proportion of the potential free trade benefits. We are consequently led to the conclusion that there are, theoretically, no benefits that the single country can capture in a CU that could not be increased by moving unilaterally to free trade by elimination of tariffs.

A question of the type posed in the Cooper-Massell analysis may have an important influence on the theory in the future. For, in direct

contradiction to traditional theory, it implies that two countries may each derive higher benefits in a CU than the single country may be able to from free trade. This possibility, which is also evident in the Johnson analysis, arises from the fact that the welfare function assumed places a higher satisfaction on the consumption of domestic commodities than on foreign supplies. This line of thinking throws up the following propositions:

(1) Contrary to traditional theory, CUs will be set up and chosen over free trade as a move to consolidate gains from protection rather than as a move to claim appropriable free trade benefits which are foregone to begin with and could always, theoretically, be regained through unilateral tariff reduction.

(2) In the measurement of welfare in terms of CU "real income," rather than in free trade real product (with the former defined to include collective utility from consumption of domestic industrial production), increasing trade diversion ceases to be an argument against a CU and may be an argument for it.

(3) CUs will be most likely and stable among partners with similar degrees of preference for industrial production and whose competitiveness in industrial production will lead to increases in output within a CU, or, in the event of aggregate decreases, to compensating gains in efficiency.

(4) Contrary to standard trade theory, CU members will not merely maximize efficiency of production on monopoly-monopsony basis of regional comparative advantage. The theory holds that members will press for a



more equitable share of the combined industrial production in terms of industrial location.

(5) Assuming rationality of the planners, protection will be carried to the point where the marginal collective utility derived from the consumption of domestic industrial production will be equal to the marginal excess private cost of the protected industrial production.

Thus the Johnson and Cooper and Massell contributions bring a reorientation of the theory from trade creation/trade diversion criteria for gains to a re-examination of the very motivations of partners in a CU. In the remaining chapters, we examine the East African Community and the motivations of individual partners. More specifically we examine the development strategies of the members and see how the Treaty for East African Co-operation is used to further these strategies. A theoretical framework is designed for testing the effects of protective measures permitted by the treaty to individual partners. After laying down the framework, a simple approach is adopted for testing the changes brought about by the treaty on the composition and volumes of the inter-country trade. In terms of composition, the relative growths of one-digit SITC classes is examined for trade after the Treaty was signed in 1967. Percentage changes in volumes of each class are calculated.

FOOTNOTE

CHAPTER IV

<sup>1</sup>G.A.T.T., "Basic Instruments and Selected Documents," vol. 1,  
part III Article XXIV, Section 8 (a).

## CHAPTER V

### THE EAST AFRICAN COMMUNITY

5.1 The East African Community is a renowned example of attempted development through economic integration. Serious problems, however, persist due to the unequal development of the partners. One of the methods for identifying the motivations of partners in a CU is through the observation of how they define and pursue redress against inequality in the common market. We shall see in the examination of the relevant sections of the treaty, that the preference for industrial manufacturing of the Johnson and Cooper and Massel hypothesis is given partial support. But, first an analysis of the strategy of economic integration is given, pointing out the expected sources of mutual gains.

When industrialization is deemed to be a necessary part of development strategy, the single country may follow several routes in promoting manufacturing. The import substitution option has already been examined. The process, however, is limited by the size of the domestic market. Costs rise in the absence of a domestic market large enough to support certain industries whose efficient operations call for large-scale production.

Since we have seen that LDC exports to MDCs are handicapped by the cascading tariffs, one of the ways in which a market may be found for manufactures beyond the domestic market is the membership of an

LDC in a CU. This may remove some of the limitations placed on economic growth through the import substitution process. Foreign exchange is also increased through the export market growth. The trends set up during the import substitution phase may also be altered by the fact that comparative advantage in a CU may be found in products which are intensive in a country's abundant resource--usually labor--rather than in capital-intensive or imported input-using industries.

A further source of gain from trade in manufactures within a CU is that the magnitude of any infant industry protection to be granted any line of manufacturing is lowered through specialization and a wider market. Thus costs may not be as high within CU as would obtain in the single country.

The East African co-operation dates back to 1885 at the Conference of Berlin.<sup>1</sup> This led to the signing of the Congo Basin Treaties. Under the metropolitan power, Britain, Kenya, Uganda, and Tanzania ensured co-ordination of trade policies by setting up common limits to tariff rates on imports. By 1923 Kenya and Uganda had a common external tariff of 20 percent and internal free trade. In 1927 agreements on inter-country transportation of goods were reached for the three countries. Tanganyika (Tanganyika and Zanzibar now constitute Tanzania) was incorporated into the union in 1949. From the beginning, industrial location favoured Kenya which attracted a relatively high income group in the Kenya highlands and Nairobi. The treaty signed in 1967 was largely a result of pressures exerted by the other two partners, Tanzania and Uganda, for a conscious policy to deal with the accumulated

benefits accruing to Kenya as the major manufacturer for the common market.

Article 20, Section 1, sets out the purposes of inter-customs union protection which was imposed by the less developed partners, Tanzania and Uganda. The purposes were ". . . to promote new industrial development in those partner states which are less developed industrially . . ."2

The definition of manufactured goods was relatively wide reaching from the lowest levels of value-added in trading commodities (SITC 0 to 8; see Annex IV of the Treaty). This covered virtually the whole range of goods which feature in the early stages of the import substitution process. Since the intra-customs union tariff could be applied only to trade which could be replaced, within 90 days of the tariff imposition, by domestic production in the imposing country, this forced the commencement of domestic production of all levels of taxed manufacturing. Therefore the imposition of the tariffs by Tanzania and Uganda a priori accompanied the stimulation of domestic manufacturing within these countries. But in order to discover the extent to which the tariffs stimulated such domestic manufacturing, it would be necessary to set out a framework to show how Tanzania's and Uganda's tariffs simultaneously worked to affect key variables throughout the customs union.

There does not presently exist an exposition of the effects of intra-CU tariffs from which the above stated simultaneous effects can be drawn. Chapters V, VI and VII set out a framework of analysis

for these effects. What is remarkable in assessing the effects of the tariffs on the key variables (domestic production, consumption and prices in each partner) is the extent to which the variables for each individual partner are determined by other effects throughout the customs union. In the autarkic customs union assumed for a number of less developed countries, the data requirements are substantial. Although the growth of LDC manufacturing and the search for external markets may increase trade flows among poor countries in the future, attempts to distribute manufacturing among CU members through intra-customs union tariffs are not common. The East African Community which stimulates the study is not an autarkic customs union although the impacts of the tariffs imposed in 1967 are dealt with at some theoretical detail in this thesis and under autarky assumptions.

The present section utilizes some available data to discuss the tariffs' effects casually. As the data at hand permitted a discussion of only Kenya's exports to Uganda and Tanzania for a relatively long period (13 years) covering both the pre-tariff period and the post-tariff period, this is the main category of customs union trade used in attempting to demonstrate the nature of intra-customs union tariff protection.

Table 5A shows the general trade flows among the customs union members in the two years immediately preceding and following the tariff impositions of 1967.

TABLE 5A TRADE AMONG CU MEMBERS BEFORE AND AFTER  
TARIFF IMPOSITIONS

'000 shillings (current prices)

	KENYA TO		TANZANIA TO		UGANDA TO	
	TANZANIA	UGANDA	KENYA	UGANDA	KENYA	TANZANIA
1965	281,731	306,775	91,390	26,926	142,698	51,834
1966	265,634	312,381	76,129	16,843	146,334	62,407
1967	227,642	295,913	65,762	14,998	203,309	48,639
1968	261,375	265,299	73,843	17,103	172,998	40,579
1969	256,957	318,985	80,359	23,534	156,054	34,261

Source: East African Customs and Excise: Annual Trade Reports of Tanzania, Uganda and Kenya; various years.

Under the conditions of the 1967 agreement, only Tanzania qualified to place the intra-union tariffs on certain commodities imported from the remaining two members. Uganda imposed tariffs on various commodities imported from Kenya only (within the CU) and Kenya did not qualify to place the tariffs on any trade originating from her two partners.

Table 5A shows that Kenya and Tanzania suffered a setback in the value of their exports to the rest of the common market during the period 1965-1967. Tanzania's exports to the rest of the common market seem to have improved after the tariff year 1967. Uganda's export performance to the rest of the common market seems to have improved through the tariff impositions of 1967 but fell off after 1967.

To the extent that tariffs had effects on intra-union trade flows, one can check the data on the taxed partner(s) exports to the

TABLE 5B KENYA: EXPORTS AND GROWTH RATES (%) OF SELECTED TAXED EXPORTS TO TANZANIA AND UGANDA, 1961-1973

Commodities, SITC & Units	Taxing Partner	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1) Wheat meal & wheat flour (0) (tons)	Tanzania	3780	3917 (4)	3435 (-12)	2484 (-28)	64 (-97)	0 (-100)	0	0	0	0	0	756	1856 (146)
2) Biscuits (0) (tons)	"	435	412 (-5)	406 (-1)	408 (0)	522 (28)	560 (7)	328 (-35)	147 (-55)	98 (-33)	16 (-84)	13 (-19)	27 (108)	21 (-22)
3) Cigarettes (1) (tons)	"	750	700 (-7)	564 (-19)	383 (-32)	131 (-66)	59 (-55)	78 (32)	0 (-100)	0	0	0	0	3
4) Paints (5) (tons)	"	262	350 (34)	301 (-14)	448 (49)	412 (-8)	146 (-67)	96 (-34)	54 (-43)	114 (111)	57 (-50)	57 (0)	152 (167)	41 (-73)
5) Paints (5) (tons)	Uganda	389	526 (35)	610 (16)	971 (59)	1764 (82)	1213 (-31)	1229 (1)	194 (-84)	*234 (21)	122 (-48)	148 (21)	89 (-40)	23 (-74)
6) Soap, soap powder (5) (tons)	Tanzania	3525	4520 (28)	4178 (-8)	7044 (69)	3236 (-54)	2140 (-33)	1262 (-41)	2021 (60)	3394 (68)	3085 (-9)	2763 (-10)	2383 (-14)	286 (-88)
7) Aluminium (6) (tons)	"	347	426 (23)	500 (17)	566 (13)	497 (-12)	159 (-69)	45 (-71)	24 (-47)	17 (-30)	21 (24)	13 (-38)	25 (92)	59 (136)
8) Blankets (6) ('000)	Uganda	60	131 (118)	246 (88)	411 (67)	599 (46)	490 (-18)	108 (-78)	128 (19)	27 (-79)	6 (-78)	17 (183)	0 (-100)	2 --

Source: East African Customs and Excise: Annual Trade Reports of Tanzania, Uganda and Kenya, 1970, 1971, 1972, 1973 and, Republic of Kenya, Statistical Abstracts, 1973.



taxing partner(s) on the specific commodities taxed and attempt to make some inferences from the behaviour of this trade before and after the tariff. Eight commodity export groups were selected. The basis of selection rested mainly on availability of data for pre-tariff and post-tariff periods, whether the commodity was taxed on an ad-valorem basis, and whether the taxed commodity is reported individually in the statistics. It is the case that while individual commodities were taxed, the data are reported by SITC classes so that some taxed commodities have no identifiable quantities reported against them in the data used.

Two simple procedures were used to associate the tariffs with exports from the taxed partner. Firstly, for the eight commodities taxed by either Tanzania, Uganda or both, the growth rates of quantities exported per annum were calculated for the period 1961-1973. See table 5B.

Secondly, a representative pre-tariff period and post-tariff period were selected and the means of quantities exported for these periods were calculated. The periods are 1961-1965 and 1969-1973. The difference between the means as a proportion of the pre-tariff mean was regressed against the ad-valorem taxes imposed by Tanzania or Uganda or both. The regression equation is<sup>3</sup>

$$\left[ \frac{\bar{Q}_a - \bar{Q}_b}{\bar{Q}_b} \right] = \alpha + \beta T + u$$

where  $\bar{Q}_a$  and  $\bar{Q}_b$  are the mean quantities for the periods 1969-1973 and 1961-1965 respectively. T is a vector of tariff rates and U is the error term.

From the calculation of growth rates, it is observed that growth rates were negative for two commodities between 1961 and 1962. Growth rates of

five commodities were again negative for 1962/63 but the exports of all eight commodities with the exception of two rose in 1963/64. In 1965/66 growth rates of most commodity exports were negative. For the tariff-imposition period 1966/67, only two commodities, cigarettes and paints, experienced positive growth rates. For 1969/70, only one of the eight commodities, aluminium, had even a positive growth rate, and 1970/71 similarly had two commodities which enjoyed positive growth rates. The data generated for the regression model is as follows:

TABLE 5C

## MEAN EXPORT QUANTITIES, KENYA TO TANZANIA &amp; UGANDA:

1961-1965 and 1969-1973

Commodity & taxing partner units	$\bar{Q}_b$ 1961-1965	$\bar{Q}_a$ 1969-1973	$\left[ \frac{\bar{Q}_a - \bar{Q}_b}{\bar{Q}_b} \right]$ %	Ad-valorem tariff rate
<u>Tanzania</u>				
1) Wheat meal and wheat flour tons	2736.0	522.4	-81	15
2) Biscuits "	436.6	35.0	-92	18
3) Cigarettes "	505.4	0.6	-100	50
4) Paints "	354.6	84.2	-76	18
5) Soap, soap powder and detergents "	4500.6	2382.2	-47	18
6) Aluminium holloware "	467.2	27.0	-94	10
<u>Uganda</u>				
7) Paints "	852.0	123.2	-86	10
8) Blankets '000	289.4	10.4	-94	20

The estimated model was,

$$\left[ \frac{\bar{Q}_a - \bar{Q}_b}{\bar{Q}_b} \right] = -76.15 - 0.39T. \quad r^2 = 0.09.$$

(-6.3391) (-0.7619)

where the values in parenthesis are the t-ratios.

Thus although the estimators had the correct signs, the estimate is not significant. The discussion of the  $\beta$  estimate and the model in footnote (3) attempt to identify the estimation problems of using the export data and relates the  $\beta$  estimate to the results of the intra-customs union tariff models of this chapter and chapter VII.

An important question that can be raised concerning the reduction in Tanzania's and Uganda's imports of the above commodities after the tariff impositions is whether trade was diverted from the common market as a whole. It will be seen in the theoretical models of the tariff impacts that the above reductions in imports are expected. They are accompanied by a rise in domestic production in the taxing partners as well as a decrease in the equilibrium quantities of the commodity demanded. Data was not in hand to test "but of union" imports or domestic production by Uganda and Tanzania for the relevant periods. If importations from outside of the union increased substantially post-tariff, then it would indicate a priori that the protective effects of the tariffs, rather than stimulating domestic production in the taxing partners were somewhat dissipated through an increase in that proportion of any taxed commodity originating from outside of the union. Some increase in out-of-union imports would, however, be expected in any case.

5.2 The following theoretical framework has its sources in the hypothesis of preference for industrial manufacturing proposed by Cooper and Massell (1965) and Johnson (1965). Initially a back to back diagram, Fig. 5.1 depicts the case of two countries, A and B, in a CU. It is assumed that the production of a single commodity on the horizontal axis, is protected well enough for the two countries to fill the total demand of the CU at above world prices. It is also assumed that producers in A and B respond to the tariff protection along marginal cost curves which differ. Plausible reasons why the marginal cost curve in A may differ from that in B are, for instance, factor endowments, transportation costs, economies of scale in the more advanced region, etc.<sup>4</sup>

Given competitive conditions in both A and B, the individual producer's profit-maximizing strategy may lead to the selection of an output level such that the marginal cost is equalized with the equilibrium customs union price. Each partner's supply curve of the commodity will then be given by the horizontal summation of the individual producer's marginal costs. Given there is intra-union trade in the commodity, market clearance requires that one partner be a net exporter of the commodity. Let B be the exporter. Then B's supply curve,  $S_B$  intersects with a demand curve  $D_B + M_B$  where  $M_B$  is the (positive) excess demand for the commodity in partner A at the CU price.<sup>5</sup>

The demand and supply curves in A and B are drawn such that at price  $P_W$ , the free trade or world price level, the CU product can be exported to the world market in unlimited quantities given the price. Conversely, <sup>above</sup> the CU common tariff inclusive price  $P_W (1 + T)$ , producers

in the CU lose their market entirely to foreign suppliers as imports become infinitely elastic.

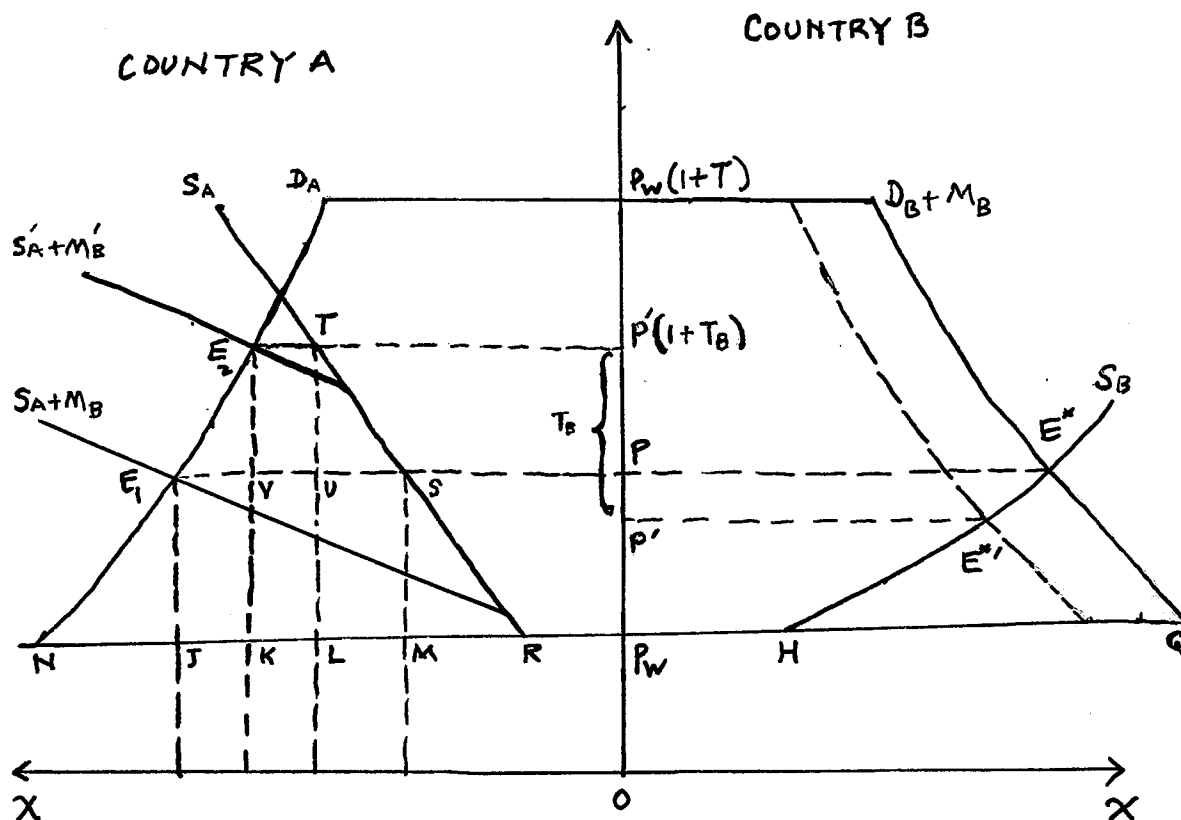


Fig. 5.1

In other words, importers into the CU can import the product at  $P_W$ , pay the protective tariff duty and still sell below domestic prices. The margin provided by the tariff thus takes account of increasing costs in the CU, but above that margin, CU producers are competed out of their own market by foreign suppliers. It can be observed that the tariff protection in the above figure is of the "excess protection" type which features in the import substitution process of LDCs as noted in the Little, Scitovsky and Scott (1970) study. When two countries are taken, the rate of protection required for a given commodity may differ during

the import substitution process. When a CU is formed therefore, we postulate that the LDC CU will in general be characterised initially by an industrialization process of the import substituting type. But, on a microeconomic level, the rate of protection required for a commodity in region A will differ from the rate required in B. Thus, a manufactured commodity from a region which requires a relatively low protective rate to capture its own domestic market from foreign suppliers, will begin to be exported to the CU partner having a relatively higher protective rate. The exportations may slow down the industrialization process in the less developed partner by competing with domestic production there. It may even be claimed that if the more developed partner becomes a leader in the manufacturing of higher value-added products, the less-developed partner "pays" part of such higher-level industrialization by consuming the advanced partner's commodities above world prices. Economic development and import substitution specifically throughout the CU may tend to be "led" by the partner country which has relatively low tariff requirements to become self-sufficient in the production of higher value-added commodities.

The model assumes increasing production costs within each partner but we retain the small-country assumption in regard to the rest of the world. The implication is that while one partner may affect the other partner's export price through quantities demanded from that partner within the CU, world price for the commodity can not be so influenced. The single country's demand is too small for that to happen. For each country we can therefore draw the foreign supply curve as a horizontal

line.

To see how an intra-customs union tariff affects domestic production in the partner countries and the way a new equilibrium price is arrived at, let A place a tariff  $T_B$  on the commodity imported from B. Such a tariff may be aimed at increasing the proportion of total CU production of the commodity accounted for by producers in A. In the scheme of the diagram above, such a tariff protects A's producers relative to B's producers but still leaves any CU producer some protection relative to foreign producers. The new equilibrium price in the imposing partner A will include the tariff although there is a terms of trade gain on importations from B. Prior to the tariff imposition, domestic supply is PS in A along the supply curve  $RS_A$ . Importations from B are  $SE_1$  so that the composite supply is  $PE_1$ .  $S_A + M_B$  is a composite supply curve of the commodity in A and includes imports from B. The total supply of the product in B is  $PE^*$  along the supply curve  $HS_B$ .

The imposition of the tariff by partner A will induce new equilibrium quantities produced and consumed within the CU. Consumption in partner A declines to PV and B's export price decreases to  $OP'$ . B now produces a smaller quantity of the commodity,  $P'E'^*$ . But domestic production of the commodity in A increases from PS to PU, so that of the total quantity of the commodity produced in the customs union post-tariff, i.e.  $P'E'^* + PU$ , A now produces proportion  $PU/[P'E'^* + PU]$  which may be higher than the proportion produced pre-tariff,  $PS/[PE^* + PS]$ .

The intra union's tariff effects are importantly modified by supply and demand elasticities. These are incorporated in the mathe-

mational formulation, but let us note that, from the diagram, if the exporting partner's supply curve is relatively inelastic, the post-tariff export price fall would be more significant and would tend to make the price rise in the importing partner smaller. But, on the other extreme, if the supply curve of the exporting partner had been infinitely elastic, the fall in the importing partner's demand after the tariff would not be accompanied by a fall in export price for that proportion of A's demand met from B. Thus it may be concluded that ceteris paribus, the less elastic the exporting partner's supply of a commodity, the smaller will be the price effect of the intra-union tariff in the importing partner because of the greater fall in export price. If we assume that the importing partner is the only export market for the exporting partner, this fall in prices may be large. For a CU of the import substituting type assumed, this case may be approximated. But if this assumption was relaxed and the exporting partner had other importing countries for the commodity, then the total demand in that exporting partner would not be affected significantly by the intra-union tariff and the post tariff export price to the taxing partner will, correspondingly, not be much affected either. This is the case when  $D_B + M_B$  does not shift too far left.

The elasticity of supply in the importing partner is important in the determination of the new equilibrium conditions after the tariff imposition. If the supply curve  $S_A$  is elastic, domestic production in A increases in response to the protection accorded by the tariff thus dampening the price rise due solely to reduced imports.



To see the importance of demand elasticities, let us note that in the diagrammatic analysis, we assumed the exporting partner's demand curve to be a composite of both domestic demand and export demand, i.e.  $D_B + M_B$ . Thus partner B is both consumer and exporter of the commodity. The decrease in the export price as noted above after the tariff imposition by the importing partner would not ordinarily lead to reduced domestic production in the exporting partner, but, at the lower price, domestic consumption would increase, so that the two components  $D_B$  and  $M_B$  move in opposite directions. Increased domestic consumption would lead to lower export supplies and therefore this counteracts the lower export price that would otherwise benefit the importing partner.

The next section analyses the effects of the intra-union tariff in some detail. The static effects of A and B's common external tariff against the rest of the world can be put into the well known Marshallian analysis as is done, for instance by Johnson (1960). In the diagram above, the tariff inclusive price accorded by the common external tariff T is  $P_W (1 + T)$ , but the final customs union price P is only a proportion of that. Thus only a proportion of the tariff is in the final CU price and we may write the final price as

$$P = P_W (1 + aT)$$

where a is the proportion of the tariff in the final CU price before the intra-customs union protection is accorded to A's product.

The usual analysis treats the areas  $PE_1NP_W$  and  $PE^*QP_W$  as the total consumers' surplus losses in A and B respectively. These losses are broken down in terms of increased profits to producers, tariff revenues,

increased costs of producing for the domestic market at a higher output, and the decrease in domestic demand. These effects in A are, respectively,  $PSRP_W$ ,  $SMJE_1$ ,  $SMR$  AND  $NJE_1$ .

On the basis of the initial equilibrium CU price P, an analysis can now be made of the effects of the intra-CU tariff on the domestic price in A, the exporting partner price, the demand in A and B, and the supply response in A and B.

5.3 In this section we develop a formal and more general model of an intra-union tariff in a union of two partners only. Let the demand in country 1 be  $D$  initially, for a commodity which is produced and consumed wholly within the customs union of two countries. Let the initial customs union equilibrium price and also the price in the net exporting country be  $P$ , expressed in terms of that country's currency. We can now adopt an analytical procedure which will become useful in deriving the more general results of chapter VII. This consists in setting the sum of all excess demands in the union equal to zero and solving for all production, price, and consumption effects within the customs union after one member imposes an intra-customs union tariff on imports from the other member. This effectively implies an analysis of production, consumption and prices of commodities originating wholly within the union.

Let us define  $D_1(P_1)$  and  $S_1(P_1)$  as partner 1's equilibrium quantity demanded for the traded commodity and the total domestic supply respectively. The demand and supply curves are downward sloping and upward sloping in that order and are functions of price. Since the commodity is a tradable within the customs union, country 1 either imports or exports it and thus has a negative or positive excess demand for the commodity. Analogous definitions hold for partner 2, so that we can write,

$$(5.3.1) \quad X_i(P_i) = D_i(P_i) - S_i(P_i) \quad , \quad \frac{\partial D_i}{\partial P_i} < 0 \quad , \quad \frac{\partial S_i}{\partial P_i} > 0$$

$i = 1, 2$

where  $X_i (P_i)$  is the excess demand in country  $i$  and is a function of price. Under the free trade conditions of the customs union, domestic prices are equalized under equilibrium conditions, so that  $P_1 = P_2 = P$ . The market clearing condition in equilibrium thus becomes,

$$(5.3.2) \quad X_1 (P) + X_2 (P) = 0.$$

It is clear that  $X_1$  and  $X_2$  must be equal in the market clearing condition, save that they must be opposite in sign. Let country 2 be the net exporter so that  $X_2 (P)$  is negative. Noting that after partner 1 imposes a tariff on partner 2's commodity we have a domestic price in 1

$P_1 = P (1 + T_{12})$ , where  $T_{12}$  is the ad-valorem tariff rate, we can write,

$$(5.3.3) \quad X_1 \{ P (1 + T_{12}) \} + X_2 (P) = 0.$$

Equation (5.3.3) now determines the equilibrium prices in the two countries,  $P (1 + T_{12})$  and  $P$ , as well as the equilibrium quantities produced, consumed and imported or exported by each partner.

Differentiating totally the equilibrium conditions of (5.3.3), we have,

$$\frac{\partial X_1}{\partial P_1} \left[ dP(1+T_{12}) + PdT_{12} \right] + \frac{\partial X_2}{\partial P} dP = 0$$

where  $P_1 = P (1 + T_{12})$ , or,

$$dP \left[ \frac{\partial X_1}{\partial P_1} (1 + T_{12}) + \frac{\partial X_2}{\partial P} \right] = - P \frac{\partial X_1}{\partial P_1} dT_{12}$$

In the limit, as  $T_{12}$  approaches zero, we have,

$$(5.3.4) \quad \frac{dP}{dT_{12}} = \frac{-P \frac{\partial X_1}{\partial P}}{\frac{\partial X_1}{\partial P} (1 + T_{12}) + \frac{\partial X_2}{\partial P}} < 0$$

The negative sign of  $dP/dT_{12}$  becomes clear once it is observed that  $\partial X_i / \partial P_i$  is negative from the equation  $X_i(P_i) = D_i(P_i) - S_i(P_i)$ . We now have, in equation (5.3.4), the tariff's effect on the commodity price in country 2. To obtain the corresponding price effect in country 1, let us note again that  $P_1 = P (1 + T_{12})$ . Differentiating this equation with respect to the tariff, we have, in the limit, that as  $T_{12}$  approaches zero,

$$\begin{aligned} \frac{dP_1}{dT_{12}} &= \frac{d [ P (1 + T_{12}) ]}{dT_{12}} \\ &= \frac{dP}{dT_{12}} (1 + T_{12}) + P \end{aligned}$$

Substituting  $dP/dT_{12}$  from (5.3.4) and rearranging the terms, we have,

$$(5.3.5) \quad \frac{dP_1}{dT_{12}} = \frac{P \frac{\partial X_2}{\partial P}}{\frac{\partial X_1}{\partial P} (1 + T_{12}) + \frac{\partial X_2}{\partial P}} > 0$$

The positive sign of  $dP_1/dT_{12}$  is clear from the negative sign of  $\partial X_1 / \partial P$ . Equation (5.3.5) yields the price effect of the tariff in country 1. Thus we now have the price changes in the partners of the customs union. The results of (5.3.4) and (5.3.5) are unambiguous. The price of the commodity rises in the imposing country and falls in the taxed country. The fall in partner 2's price may be termed an intra-union terms of trade gain in favour of partner 1, involving a fall in the price which country 2 receives for her exports to country 1. This fall in price,

however induces greater consumption of the commodity by consumers in partner 2 itself, and the magnitude of the terms of trade gain is modified by the price elasticity of demand for the commodity in partner 2. The consumption effect in partner 2 will be derived below.

In the two-country customs union the results are unambiguous when we consider trade in a finished good. Provided the good has a complement or substitute of other commodities in the customs union, the demand curves for these other commodities will all shift from their pre-tariff positions. Intuitively, the demand curves for these other commodities for which the taxed commodity is a complement or substitute will shift in opposite directions in partners 1 and 2 due to the opposite signs of the price changes in (5.3.4) and (5.3.5). Since the finished good is not an input into any firms in the customs union, we would however expect that no shifts will occur in the supply curves of other commodities.

Now consider the case where the commodity is an input into firms in both partners. Then the supply curves of the firms using this commodity will shift due to the changes in the costs of production. The changes will again be in the opposite directions due to the input price changes of (5.3.4) and (5.3.5). We return to this point in chapter VII.

It remains to show the directional changes of consumption and production after the tariff imposition. For this formulation, let

$$A_1 = \frac{dP}{dT_{12}} = \frac{-\frac{\partial X_1}{\partial P_1} P}{\frac{\partial X_1}{\partial P_1} (1+T_{12}) + \frac{\partial X_2}{\partial P}} < 0$$

and

$$A_2 = \frac{dP_1}{dT_{12}} = \frac{\frac{\partial X_2}{\partial P} P}{\frac{\partial X_1}{\partial P_1} (1 + T_{12}) + \frac{\partial X_2}{\partial P}} > 0$$

Let  $D_i (P_i)$  and  $S_i (P_i)$  represent demand and supply respectively in country  $i$ . Then the tariff's effect on equilibrium quantities demanded in partner 1 may be written

$$\frac{\partial D_1}{\partial T_{12}} = \frac{dD_1}{dP_1} \cdot \frac{dP_1}{dT_{12}}, \quad \frac{dD_1}{dP_1} < 0, \quad \frac{dP_1}{dT_{12}} > 0$$

This effect can be written alternatively as

$$(5.3.6) \quad \frac{\partial D_1}{\partial T_{12}} = \frac{D_1 \cdot \eta_1 \cdot A_2}{P_1} < 0$$

where  $\eta_1$  is the elasticity of demand for the commodity in country 1 and is negative. Since  $A_2$  is positive, the whole right hand term is therefore negative. Demand in the imposing country unambiguously decreases by a quantity determined by the initial equilibrium quantity consumed in 1, the elasticity of demand in partner 1, the price effect of the tariff in partner 1 and the initial equilibrium price in 1.

In a similar manner, the supply response may be written

$$\frac{\partial S_1}{\partial T_{12}} = \frac{dS_1}{dP_1} \cdot \frac{dP_1}{dT_{12}}, \quad \frac{dS_1}{dP_1} > 0, \quad \frac{dP_1}{dT_{12}} > 0$$

and

$$(5.3.7) \quad \frac{\partial s_1}{\partial T_{12}} = \frac{S_1 \cdot \epsilon_1 \cdot A_2}{P_1} > 0$$

where  $\epsilon_1$  is the elasticity of supply in partner 1. Since  $\epsilon_1$  is positive and  $A_2$  is also positive, the whole expression is positive, so that the commodity supply increases in partner 1. The amount supplied by producers at the post-tariff price is determined by the price elasticity of supply in partner 1, the initial equilibrium quantity supplied, the pre-tariff price and the price effect of the tariff. If the tariff imposition permitted to partner 1 in the union is aimed at increasing that partner's domestic production of the given commodity, we see that, in this case of a union between two partners only, the tariff measure operates in the expected direction. As we shall see in chapter VII, this result ceases to be necessarily true in a union of more than two members with more than one member permitted to impose the tariff on a given commodity.

The analogous results in partner 2 become

$$\frac{\partial D_2}{\partial T_{12}} = \frac{dD_2}{dP} \cdot \frac{dP}{dT_{12}}, \quad \frac{dD_2}{dP} < 0, \quad \frac{dP}{dT_{12}} < 0$$

or alternatively,

$$(5.3.8) \quad \frac{\partial D_2}{\partial T_{12}} = \frac{D_2 \cdot \eta_2 \cdot A_1}{P} > 0$$



$$\frac{\partial s_2}{\partial T_{12}} = \frac{ds_2}{dP} \cdot \frac{dP}{dT_{12}}, \quad \frac{ds_2}{dP} > 0, \frac{dP}{dT_{12}} < 0$$

and

$$(5.3.9) \quad \frac{\partial s_2}{\partial T_{12}} = \frac{S_2 \cdot \epsilon_2 \cdot A_1}{P} < 0$$

where  $\eta_2$  and  $\epsilon_2$  are the demand and supply price elasticities in partner 2. Since  $\eta_2$  and  $\epsilon_2$  are negative and positive, respectively and  $A_1$  is negative, we have that  $\partial D_2 / \partial T_{12}$  is positive and  $\partial s_2 / \partial T_{12}$  is negative. We conclude that the equilibrium quantity demanded increases in partner 2, an opposite effect from that in partner 1, and that the determinants of this change are the same as those of partner 1. We also conclude that the supply change is similar to that in 1 but opposite in sign, so that partner 2 produces less of the taxed commodity.

Among a number of questions that may be asked of the impact of the tariff imposition on the customs union as a whole, one concerns the change in the quantity of the commodity X traded between the two partners and whether this change increases or decreases trade flows in the commodity. Another question concerns the effect of the tariff on specialization in the customs union as a whole. To what extent is the new equilibrium quantity produced in partner 1 able to restore the pre-tariff total production of the customs union in commodity X? These are the questions we now turn to. The latter question examines the change in the locus of

production.

From equation (5.3.1), the imports of partner 1 are represented by  $X_1(P_1)$ , the excess demand for commodity X. Let us further denote these imports more conventionally by  $M_{12}$ . Then we have,

$$\begin{aligned} \frac{\partial M_{12}}{\partial T_{12}} &= \frac{\partial [D_1 - S_1]}{\partial T_{12}} \\ &= \frac{\partial D_1}{\partial T_{12}} - \frac{\partial S_1}{\partial T_{12}} < 0 \end{aligned}$$

From equations (5.3.6) and (5.3.7) this result may alternatively be written,

$$(5.3.10) \quad \frac{\partial M_{12}}{\partial T_{12}} = \frac{A_2}{P_1} [D_1 \cdot \eta_1 - S_1 \cdot \epsilon_1] < 0$$

We conclude that imports of partner 1 fall by a magnitude which is determined by the ratio of the tariff's price effect in partner 1 and the pre-tariff price multiplied by the difference between the products of the initial demand and the price elasticity of demand and the initial supply and the price elasticity of supply. Intuitively this magnitude will be matched to a corresponding fall in exports from partner two whose similar equation, with  $X_{21}$  as excess demand can be derived and written as,

$$(5.3.11) \quad \frac{\partial X_{21}}{\partial T_{12}} = \frac{A_1}{P} [D_2 \cdot \eta_2 - S_2 \cdot \epsilon_2] > 0$$

Since  $A_1$  is negative, the whole right hand term is positive so that  $\partial x_{21} / \partial T_{12}$  takes an opposite sign from  $\partial M_{12} / \partial T_{12}$

The second question examines the rate of change of the ratio of partner 1's domestic production to total customs union production of the commodity X, with respect to the tariff imposed by partner 1. Partially differentiating the commodity production ratio with respect to the tariff, we have,

$$\begin{aligned} \frac{\partial \left[ \frac{s_1}{s_1 + s_2} \right]}{\partial T_{12}} &= \frac{(s_1 + s_2) \frac{\partial s_1}{\partial T_{12}} - s_1 \left( \frac{\partial s_1}{\partial T_{12}} + \frac{\partial s_2}{\partial T_{12}} \right)}{(s_1 + s_2)^2} \\ &= \frac{s_2 \frac{\partial s_2}{\partial T_{12}} - s_1 \frac{\partial s_2}{\partial T_{12}}}{(s_1 + s_2)^2} \end{aligned}$$

from equations (5.3.7) and (5.3.9), the above expression reduces to

$$(5.3.12) \quad \frac{\partial \left[ \frac{s_1}{s_1 + s_2} \right]}{\partial T_{12}} = \frac{1}{P(1+T_{12})} \cdot \frac{s_1 s_2}{(s_1 + s_2)^2} \cdot (\epsilon_1 A_2 (1+T_{12}) - \epsilon_2 A_1) > 0$$

Equation (5.3.12) shows that the share of partner 1 in total customs union production of the commodity X must increase post tariff. It is clear that initial domestic supplies, price elasticities of supply in each partner, the magnitude of the tariff and the respective price effects of the tariff in partner 1 and 2 all play a significant role in determining the shift in the locus of production to partner 1.

An interesting and contrary result however, obtains in the locus

of consumption of the commodity X within the customs union as a whole. A similar evaluation of the ratio of the total customs union product which goes into consumption in partner 1 and the total consumption in the union yields the result,

$$(5.3.13) \quad \frac{\partial \left[ \frac{D_1}{D_1 + D_2} \right]}{\partial \tau_{12}} \cdot \frac{1}{P(1+\tau_{12})} \cdot \frac{D_1 D_2}{(D_1 + D_2)^2} \cdot (\eta_{1,2} A_2 (1+\tau_{12}) - \eta_2 A_1) < 0$$

Since the right hand terms of (5.3.13) yield a negative sign, we conclude that consumers in partner 1 will consume a diminished proportion of total customs union consumption post-tariff.

The above results are parallel to the analysis of the same problem in the case where the single country imposes a tariff against the rest of the world.<sup>6</sup> But the results are not unambiguous when the tariff is imposed in a customs union of more than two countries. The case analysed in chapter VII therefore becomes more complex. In chapter VI, using the excess demand approach we attempt to devise a measure of the effects of the tariff on the single country's imports from the taxed member when there are in fact three partners in the union.

FOOTNOTES

CHAPTER V

<sup>1</sup>For a more detailed analysis of the historical development of the East African Community, see F. Nixon, Economic Integration and Industrial Location (London: Longmans, 1973).

<sup>2</sup>E.A.C., Treaty for East African Co-operation (Nairobi: Government Printer, 1967).

<sup>3</sup>This was the second of two regression equations fitted. The first was,

$$\Delta \left[ \overline{\Delta Q/a} \right] = \alpha + \beta T + u$$

where T is a vector of tariffs,  $T_i$ , on commodity i,  $i = 1, 2 \dots 8$ , and the dependent variable was generated from the growth rates as follows for each commodity

$$\Delta \left[ \overline{\Delta Q/a} \right] = \left[ \overline{\Delta Q/a} \right]_{1970-73} - \left[ \overline{\Delta Q/a} \right]_{1961-1964}$$

The estimated model was

$$\Delta \left[ \overline{\Delta Q/a} \right] = 30 - 1.53 T$$

(20.15)      (-0.97)       $r^2 = 0.17$

where the values in the parenthesis are the t-ratios. In this and the alternative regression equation below it is important to observe the assumptions made concerning the least squares estimator for  $\beta$  and its relation to our two and three country models of intra-customs union tariff in this chapter and in chapter VII. This may clarify the need for other adjustments required on the dependent variable, before the estimator can be expected to be significant. The low  $r^2$  of the models also reflects the % form of the dependent variable and perhaps the strength of other variables like income. The dependent variables of the two regression equations are not adjusted for the price elasticities of demand for each commodity. This assumes that all commodities respond to the tariff (through their response to prices) at the same rate. This is not true

from economic theory. A number of factors, such as substitutability of the commodity, will determine the price elasticity of each commodity so that we would have a vector of  $\eta_i$ ,  $i = 1, 2 \dots 8$ , for the commodities. Professor P. S. Dhvuranajan has suggested that one of the ways of adjusting the dependent variable for these elasticities, in the case of the regression reported in the text, is to weight each commodity with its price elasticity of demand and run a regression based on the figures obtained. The price elasticities could not be obtained however.

Let us now relate the  $\beta$  estimator to the results of section 5.2 below. Suppose the tax imposing country was Tanzania and the exporting country was Kenya. How do imports of Tanzania from Kenya change post-tariff? This import change is the dependent variable of our regressions.

From equations (5.3.6) and (5.3.7) respectively, we have that

$$\frac{\partial D_i}{\partial T_{12}} = \frac{D_i \cdot \eta_i \cdot A_2}{P_i}$$

and

$$\frac{\partial S_i}{\partial T_{12}} = \frac{S_i \cdot \epsilon_i \cdot A_2}{P_i}$$

The change in the (positive) excess demand in Tanzania is

$$\frac{\partial X_i}{\partial T_{12}} = \frac{\partial D_i}{\partial T_{12}} - \frac{\partial S_i}{\partial T_{12}}$$

so that,

$$\frac{\partial [D_i - S_i]}{\partial T_{12}} = \frac{D_i \cdot \eta_i \cdot A_2 - S_i \cdot \epsilon_i \cdot A_2}{P_i}$$

for a given commodity, we can write,

$$\frac{1}{[D_i - S_i]_i} \times \frac{\partial [D_i - S_i]_i}{\partial T_{12 i}} = \frac{A_{2i} [D_i \eta_i - S_i \epsilon_i]}{P_{1i} [D_i - S_i]_i} < 0$$

Since imports are the difference between domestic demand and domestic supplies we may write the above expression as,

$$\frac{1}{M_{12i}} \times \frac{\partial M_{12i}}{\partial T_{12i}} = \frac{A_{2i}}{P_i} \times \frac{[D_{1i}\eta_i - S_{1i}\epsilon_i]}{M_{12i}}$$

$$\frac{dM_{12i}}{M_{12i}} = \frac{A_{2i}}{P_i} \times \frac{[D_{1i}\eta_i - S_{1i}\epsilon_i]}{M_{12i}} dT_{12i}$$

Thus,

$$\beta_i = \frac{A_{2i}}{P_i} \times \frac{[D_{1i}\eta_i - S_{1i}\epsilon_i]}{M_{12i}}$$

which is represented by the  $\beta$  estimator in the regression in the text.

<sup>4</sup>The resulting deviation from unity of the commodity price ratio between A and B is the basis of the excess demand and excess supply approach to inter-country trade. A good outline of this approach is R. Findlay, Trade and Specialization (Middlesex, England: Penguin Books, 1970), chap. 2, p. 34.

<sup>5</sup>A further basis of the following analysis is the framework of the effects of a tariff set out by J. Viner in International Trade: Theory and Economic Policy (Homewood, Illinois: Richard Irwin, 1962), chap. 16, and D. Snider, Introduction to International Economics (Homewood, Illinois: Richard Irwin, 1958), chap. 8.

The assumption of perfect competition in the production of the commodity within each partner is not strictly necessary for the model. As long as domestic quantities demanded are responsive to the tariff through price within each member, the change in quantities supplied can be similarly analysed in imperfect competition, although the analysis is not pursued in this thesis.

<sup>6</sup>See, for instance, J. Viner, op. cit., chap. 16.

## CHAPTER VI

### QUANTIFYING THE EFFECTS OF INTRA-CUSTOMS UNION TARIFFS FROM THE SINGLE COUNTRY STANDPOINT

6.1 The present chapter utilizes the analysis of the excess demand and excess supply model of chapter V to construct a model for quantifying the impact of the tariffs between customs union partners. The impact is shown to depend on the tariff itself, the price elasticity of demand for imports (in the imposing partner) and the price elasticity of the supply of exports from any CU partners whose products the tariff does not attract.

The literature on both the excess demand and excess supply approach and on customs union theory is extensive, but has remained largely of partial equilibrium nature. This is the treatment adopted in this chapter.<sup>1</sup> The model below considers the single country vis-a-vis the rest of the CU when only one other partner is considered to be affected by the tariff. This is similar to some of the results in chapter V. But a more complex model is required in quantifying the effects of the tariff if only one of the partners is taxed.

Consider the case of a single partner imposing an intra-union tariff against the products of a second partner. Let the countries be Kenya and Tanzania, in fig. 6.1.



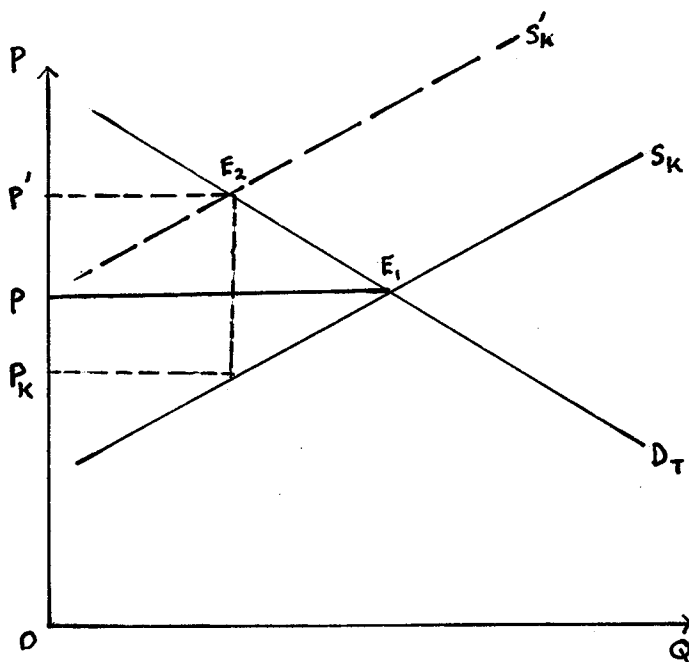


Fig. 6-1

Let  $D_T$  be the Tanzanian demand for a category of commodities from Kenya alone. Let the Kenyan export supply schedule to Tanzania be  $S_K$  before tariff imposition.  $E_1$  will be the equilibrium price and  $PE_1$  the equilibrium of Tanzania's imports from Kenya of commodities in this category.

Suppose a tariff is imposed by Tanzania on the commodity category, the tariff being  $T = P_K P'$ . The price and quantity responses are as described in chapter V. The new equilibrium price is  $P'$  and the tariff-ridden export supply schedule is  $S'_K$ . Tanzania's imports decline to  $P'E_2$  and the export price of Kenya's exports is forced down from  $P$  to  $P_K$ .

From the standpoint of the single partner, customs union regulations or tariff bargaining may permit tariff imposition at different rates against other partners. In the case of the agreement which constituted the Treaty for East African Co-operation in 1967, partners were permitted to impose intra-union tariff under certain rigorous conditions; con-

sequently commodities traded in the common market and falling under the definition of manufactured goods to which the tariff was to apply, were taxed at rates ranging from zero to 50% of the common external tariff depending on the key conditions (in article 20 sections 3 and 4) that (a) the imposing partner was to be in deficit in total manufacturing trade with the rest of the CU for the tariff to be positive, and (b) that the imposing partner imposed the tariff on goods of a value not exceeding the amount of deficit with the state of origin. Under the circumstances only one partner between any pair could impose the intra-union tariffs. For instance the outcome of the 1967 agreement was that Tanzania was permitted to impose the tariffs on products from Kenya and Uganda and Uganda was permitted to impose the tariffs on Kenya commodities.

It follows that the intra-union tariff protection on any commodities between a pair of partners could be imposed by only one of the members depending on the deficit condition. At the same time the commodity category could be imported free of duty into the imposing country from a partner country which did not have a large deficit with the imposing country.

In any case, for a customs union of those countries, such as the East African Community, all tariff protected commodities can, for analytical purposes, be divided into two categories from the standpoint of the single country. Those two categories will give rise to two different equations describing the single country's domestic demand. The two equations are distinguished simply by asking the question whether the tariff protection imposed (if any) applies to only one of the remain-

ing two countries or to both of them. We assume that CU consumers do not consume imports from outside the CU and do not discriminate on the basis of the partner country of origin or brand names, provided that the commodities traded are homogeneous. Demand in a given country  $i$  may then be described by one of the following equations depending on the scope of the tariff as stated above.

$$(6.1.1) \quad D_i = Q_i + M'_j + M_K$$

$$(6.1.2) \quad D_i = Q_i + M'_j + M'_K$$

$$i = 1, 2, 3$$

$$j \neq K.$$

where  $D_i$  is the total quantity demanded in partner  $i$ ,  $Q_i$  is the quantity produced domestically in  $i$ ,  $M_j$  is the quantity imported from partner  $j$  and  $M_K$  the quantity imported from partner  $k$ . The primes indicate the scope of the tariff.

From the above two equations, a relationship can be established between tariff imposition and the money value of changes in imports of the tariff imposing country. This is what we set out to do now. The procedure followed yields the relationship in three steps. First, for the given category, the price elasticity of demand for imports from the taxed partner is derived. Secondly an expression is derived for the price elasticity of supply of exports from the partner on whose product the tariff applies. The final step combines the two elasticities for the given category with the tariff imposition to derive the estimate

of changes in the money values of imports of the imposing country.

As an illustration, let us follow this procedure for the category expressed by equation (6.1.1),

$$D_i = Q_i + M'_j + M_k.$$

In this case, the tariff applies only to partner j and k's commodities are not taxed. The imports from the taxed partner may be expressed from the above quantity balance equation as,

$$(6.1.3) M'_j = D_i - Q_i - M_k.$$

If we consider the effect of a price change on the quantity balance equation rewritten as above, we can write a new relationship which expresses the price elasticity of demand for imports from partner j as,<sup>2</sup>

$$(6.1.4) \eta_{ji} = \frac{1}{M_j} [\eta_i D_i - e_i Q_i - \epsilon_k M_k]$$

$$\eta_j < 0, \eta_i < 0, \epsilon_k > 0, e_i > 0$$

where  $\eta_{ji}$  is the price elasticity of country i's demand for imports from partner j whose commodity group is taxed,  $\eta_i$  is the price elasticity of demand in the tariff imposing partner i,  $e_i$  is the price elasticity of domestic supply of the taxed commodity group in partner i and  $\epsilon_k$  is the elasticity of (excess) supply of the commodity group from partner k whose commodities are not taxed by i.

The second step breaks down the taxed partner's total production of the commodity group such that it is wholly consumed within the CU

markets. Thus partner  $j$ 's total production may be written,

$$(6.1.5) \quad Q_j = D_j + X_i + X_k$$

where  $D_j$  is domestic demand for the commodity in  $j$ ,  $X_i$  is the exports (from  $j$ ) to  $i$ , and  $X_k$  is similar exports to  $k$ . By a similar procedure to that which yielded (6.1.4) we can obtain the effects of a price change and write the price elasticity of partner  $j$ 's exports to partner  $i$  as

$$(6.1.6) \quad \epsilon_{ji} = \frac{1}{X_i} [e_j Q_j - \eta_j D_j - \eta_k X_k]$$

where  $\epsilon_{ji}$  is the price elasticity of supply of exports of partner  $j$  to partner  $i$ , the tariff imposing partner,  $e_j$  and  $\eta_j$  are the taxed partner's domestic supply and domestic demand price elasticities respectively, and  $\eta_k$  is the elasticity of (excess) demand for the taxed partner's commodity group in partner  $k$  where partner  $i$ 's tariff is not applicable. The impact of a price change induced by a tariff on imports from a single member may be shown diagrammatically as in fig. 6.2.

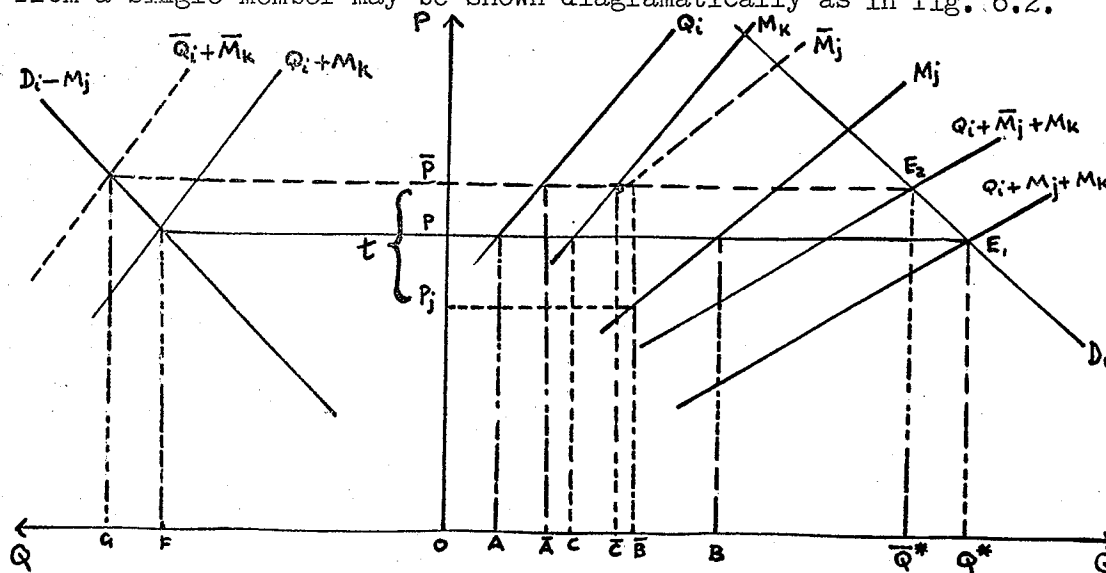


Fig. 6.2

Prior to the tariff imposition by partner  $i$  on imports from partner  $j$ , the equilibrium price in the customs union is  $P$  and the equilibrium quantity demanded in partner  $i$  is  $OQ^*$  or  $PE_1$ . At  $E_1$ ,  $D_i = Q_i + M_j + M_k$  as in equation (6.1.1) except that this is the equilibrium position prior to the tariff imposition. The quantity  $OQ^*$  consists of the quantities  $OA$ ,  $OC$  and  $OB$  produced domestically in  $i$ , supplied along  $k$ 's export supply schedule and  $j$ 's export supply schedule respectively. By summation, the composite supply schedule,  $Q_i + M_j + M_k$  is obtained and intersects  $D_i$  at  $E_1$ . Note that in the diagram,  $j$  supplies by far the largest proportion of  $i$ 's domestic demand. The quantity supplied by  $i$ 's own producers and imports from  $k$  is depicted in the back-to-back diagram as  $OF$ . The demand curve  $D_i - M_j$  represents the demand for the commodity from  $i$ 's domestic market and  $k$ 's exports alone.

Now consider the effect of a tariff imposition by  $i$ , against imports from  $j$ . The composite supply curve is shifted to  $Q_i + \bar{M}_j + M_k$  and the new equilibrium quantity demanded is  $O\bar{Q}^*$  at  $E_2$ . The export supply schedule in  $j$  shifts to  $\bar{M}_j$ . At the new equilibrium price in country  $i$ , therefore,  $i$  produces an increased quantity  $O\bar{A}$  and imports  $O\bar{C}$  and  $O\bar{B}$  from  $k$  and  $j$  respectively. Partner  $j$ 's export price also falls to  $P_j$  so that the tariff-ridden price of her exports to  $i$  is  $\bar{P}$  and the tariff rate is  $P_j\bar{P}$ . Thus the post-tariff position  $E_2$  increases domestic supplies in  $i$ , increases imports from  $k$  but decreases imports from  $j$ , and raises the commodity price. The increases for  $i$  and  $k$  are represented by the shift in their combined supply curve to  $i$ 's market to  $G$  from  $F$ .

6.2 The results of the last section can now be used to derive the change in  $i$ 's imports from  $j$  whose exports into  $i$  are liable to the tariff. Let  $P$  represent the CU equilibrium price prior to the tariff imposition. Let  $M_j$  be the imports from  $j$  and  $T_j$  the ad-valorem tariff imposed by partner  $i$  on imports from  $j$ .  $T_j$  can be considered as a weighted average ad-valorem tariff on all of the taxed commodities imported from  $j$ .<sup>3</sup> The analysis of the change in imports assumes no changes in tastes, incomes and the prices of other commodities in  $i$ . The first step utilizes equations (6.1.4) and (6.1.6) to depict the new equilibrium conditions in  $i$ 's imports from  $j$  and  $j$ 's exports to  $i$ . In equilibrium the demand for imports from  $j$  in  $i$  will equal the supply of exports from  $j$  so that we can write,

$$\begin{aligned} M_j &= \beta \cdot P^{\eta_{ji}} \times (1 + T_j)^{\eta_{ji}} \\ X_j &= \alpha \cdot P^{\epsilon_{ji}} \\ M_j &= X_j \end{aligned}$$

Expressing the import demand and export supply equations logarithmically, we can write,

$$\begin{aligned} \log M_j &= \beta + \eta_{ji} \log P + \eta_{ji} \log (1 + T_j) \\ &= \beta + \eta_{ji} \{ \log P + \log (1 + T_j) \} \\ &= \alpha + \epsilon_{ji} \log P \end{aligned}$$

$$\eta_{ji} < 0, \beta > 0, \alpha > 0, \epsilon_{ji} > 0$$

and from the equality of the supply and demand for imports at the equilibrium post-tariff price, we have,

$$\begin{aligned}
 d \log M_j &= \epsilon_{ji} d \log P \\
 &= \eta_{ji} \{ d \log P + d \log (1 + T_j) \} \\
 d \log P (\epsilon_{ji} - \eta_{ji}) &= \eta_{ji} \{ d \log (1 + T_j) \},
 \end{aligned}$$

From which we can write,

$$(6.2.1) \quad d \log P = \frac{\eta_{ji} \{ d \log (1 + T_j) \}}{\epsilon_{ji} - \eta_{ji}}$$

The expression in (6.2.1) yields the change in partner  $j$ 's price for her exports to the tariff imposing partner  $i$ . The money value of the change in imports from partner  $j$  may be derived by combining the price change with the change in the quantity of imports. Since,

$$\begin{aligned}
 d \log M_j &= \epsilon_{ji} d \log P \\
 &= \frac{\epsilon_{ji} \eta_{ji} \{ d \log (1 + T_j) \}}{\epsilon_{ji} - \eta_{ji}}
 \end{aligned}$$

we have,

$$\begin{aligned}
 d \log M_j + d \log P &= \frac{\epsilon_{ji} \eta_{ji} \{ d \log (1 + T_j) \}}{\epsilon_{ji} - \eta_{ji}} + \frac{\eta_{ji} \{ d \log (1 + T_j) \}}{\epsilon_{ji} - \eta_{ji}} \\
 (6.2.2) \quad d \log V &= \frac{\eta_{ji} (\epsilon_{ji} + 1)}{\epsilon_{ji} - \eta_{ji}} d \log (1 + T_j)
 \end{aligned}$$

where  $d \log V_j$  is the money value of imports of the commodity by  $i$  from partner  $j$ . The significance of equation (6.2.2) is that it takes account of the fact that the supply curves of each partner's manufacturing and exports exhibit increasing costs, so that we do not require the assumption



usually adopted in external trade that the supply of imports is infinite at a constant price from the exporting countries--i.e.

$\epsilon_{ji} = \infty$ . The above result (for the category (6.1.1) of imports which are taxed only if they originate from a particular partner) can be modified to reflect the case where the imports from both of the remaining partners are taxed, i.e.  $i$  taxes both  $k$  and  $j$ .

In the case where two tariffs  $T_j$  and  $T_k$  are imposed we can take the weighted average of  $\bar{T}$  defined as the average of the tariff rates, i.e.  $\frac{1}{2} (T_j + T_k)$ , and then apply the procedure of this section for each of countries  $j$  and  $k$  to find the money values of the change in imports. The approximations would yield the effects in the case of commodities in category (6.1.2).

FOOTNOTES

CHAPTER VI

<sup>1</sup>The present framework of analysing the impact of the intra-customs union tariff has drawn from several theoretical and empirical studies of the parallel problem in international trade. See in particular:

- (1) C. E. Ferguson and M. Polasek, "The Elasticity of Import Demand for raw apparel wool in the United States," Econometrica (Oct. 1962),
- (2) K. Kojima, "Trade Preferences for Developing Countries; A Japanese Assessment," Hitotsubashi Journal of Economics (Feb. 1969),
- (3) R. Blackhurst, "Estimating the Impact of Tariff Manipulation," Oxford Economic Papers (March 1973),
- (4) B. Balassa, "Tariff Protection in Industrial Countries; an Evaluation," Journal of Political Economy (Dec. 1965),
- (5) J. E. Floyd, "The Overvaluation of the Dollar; a Note on the International Price Mechanism," American Economic Review (March 1965),

<sup>2</sup>The derivation is as follows,

$M'_j = D_i - Q_i - M_k$ .  
If a price change occurs, we have,

$$\left[ \frac{dM'_j}{dP} \cdot \frac{P}{M'_j} \right] M'_j = \left[ \frac{dD_i}{dP} \cdot \frac{P}{D_i} \right] D_i - \left[ \frac{dQ_i}{dP} \cdot \frac{P}{Q_i} \right] Q_i - \left[ \frac{dM_k}{dP} \cdot \frac{P}{M_k} \right] M_k$$

which may be written and rearranged to yield,

$$\eta_{ji} = \frac{1}{M'_j} [\eta_i D_i - \epsilon_i Q_i - \epsilon_k M_k]$$

Professor P. S. Dhruvarajan has pointed out, however, that there is a methodological problem in the above excess demand approach in defining the elasticity of import demand from a single source only when there are more than one alternative suppliers. Although there is an extensive literature and some empirical work based on the approach, the more general results of chapter VII were arrived at by following Prof. Dhruvarajan's suggestion that all prices, consumptions, productions and excess demands be solved for in terms of the tariff change(s) in the individual customs union partners.

<sup>3</sup>Obtaining a weighted average tariff rate and aggregating commodities into the categories above requires the assumption that cross-elasticities of demand and supply between commodities are either negligible or ignored altogether.

## CHAPTER VII

### EQUILIBRIUM ANALYSIS OF INTRA-CUSTOMS UNION TARIFFS

7.1 Chapter V developed the excess-demand approach to examining the effects of intra-customs union tariffs in the case of a two country customs union. The direct effects of the tariffs on each partner were formulated. However these effects are much more complex when more than two partners are in the customs union and any or several of them impose the tariffs against one or more members. We can consider now the general framework in which the effects on each member may be analysed.

The following three sections of chapter seven deal with the effects of intra-customs union tariff impositions on the equilibrium price, consumption, production and excess demand in each of the partners of the customs union. The motivating example is the East African Community, which signed a Treaty in 1967, bringing such tariff protection into operation within the already established customs union. Although no attempt is made to analyse the tariffs' effects on allocative efficiency in the customs union as a whole, some results are derived in examining the single country effects of the tariffs.

Under the "deficit rule" of the Treaty signed by the East African partners in 1967, a country could impose an intra-customs union tariff against one or both of the remaining partners, provided (a) it had a deficit in manufacturing trade against the taxed member(s), and (b) was either (at the time of imposition) already producing at least 15%

of her domestic consumption of the commodity or would commence domestic production of the commodity within ninety days of the tariff imposition. Condition (a) in effect ruled out tariff retaliation by a partner whose commodity was taxed by one or both of the remaining partners.

Three outcomes come to light. Let the partners be 1, 2 and 3.

Then we can have,

- (a) Partners 1 and 2 impose the tariff against partner 3 while 3 does not impose any tariffs.
- (b) Partner 1 imposes the tariff on partner 3 who, in turn, imposes the tariff on partner 2.
- (c) Partner 1 imposes the tariff on partner 3 but partner 3 imposes no tariffs and is not taxed by partner 2.

Of the above cases, (b) is most complex and is not dealt with in this exposition. As will be shown later, outcome (c) is a special case of the outcome in (a) with the tariff by partner 3 at zero. However the former case is treated fully by itself in this section since we can see the implications more clearly in the simple case. Section 7.2 deals with the latter case and 7.3 deals with some microeconomic interpretations.

We assume competitive conditions in the markets for the taxed commodities within the customs union partners 1, 2 and 3. Let  $P$  be the commodity price in partner 3 and also the initial equilibrium commodity price within the customs union. Fixed exchange rates are assumed.

Case (c): In the first case we analyse, country 1 is in deficit with country 3 and imposes an ad-valorem tariff on that partner. No other tariffs are imposed in the customs union except this one tariff,

which we designate  $T_{13}$ , on a particular commodity assumed to be wholly produced, consumed and traded within the customs union. In order to solve for the effects of the tariff imposition by partner 1 on production, consumption and trade flows within the customs union, we can write the following:

$$(7.1.1) \quad X_i (P_i) = D_i (P_i) - S_i (P_i)$$

$$i = 1, 2, 3,$$

$$\frac{\partial D_i}{\partial P_i} < 0, \quad \frac{\partial S_i}{\partial P_i} > 0$$

The above equation states that the excess demand,  $X_i$ , of a given partner  $i$ , is equal to the domestic consumption,  $D_i$ , less domestic production,  $S_i$ , and all three variables are functions of domestic price,  $P_i$ . The demand curves and the supply curves within each partner are downward sloping and upward sloping, respectively.

$$(7.1.2) \quad \sum_{i=1}^3 X_i(P_i) = 0, \quad \frac{\partial X_i}{\partial P_i} < 0$$

This equation states that, in equilibrium the total excess demand within the customs union is equal to zero. It is equivalent to the condition that the total demand for the commodity in the CU is equalized with the total supply of the commodity in the CU. The situation may be depicted diagrammatically as follows if we assume, as in all further exposition, that only one partner, partner 3, is a net exporter of the commodity to the rest of the customs union.

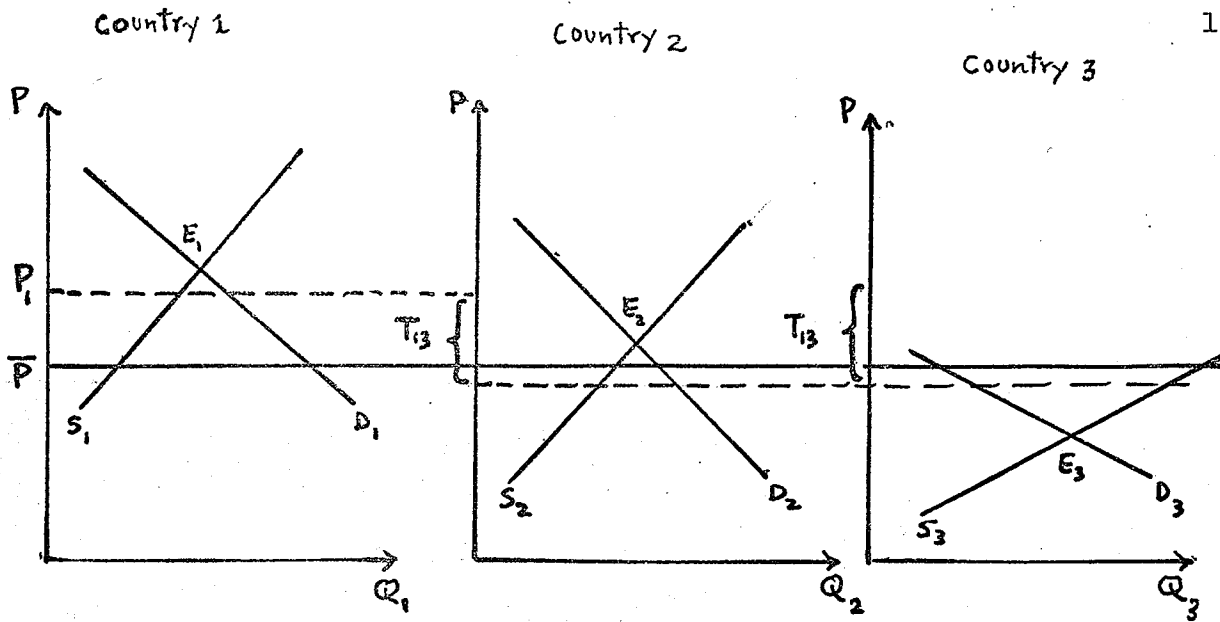


Fig. 7.1

In fig. 7.1, only partner 3 within the customs union has negative excess demand at the initial customs union equilibrium price  $\bar{P}$ . Partners 1 and 2 have positive excess demands and with no trade could only fill total domestic demands at prices corresponding to  $E_1$  and  $E_2$  respectively. Partner 1's tariff against partner 3 reduces the former's excess demand while increasing it in partner 2. At the same time the magnitude of partner 3's negative excess demand is diminished.

To show the full interaction of the tariff with prices, production, and demands, let us note that the tariff imposition changes equation (7.1.2) to,

$$(7.1.3) \quad X_1 \{ P (1 + T_{13}) \} + X_2 (P) + X_3(P) = 0.$$

Differentiating totally the equilibrium conditions of (7.1.3)

with respect to  $T_{13}$ , after noting that  $P_1 = P(1 + T_{13})$ , we have,

$$\frac{\partial X_1}{\partial P_1} \left[ dP(1 + T_{13}) + P dT_{13} \right] + \frac{\partial X_2}{\partial P} dP + \frac{\partial X_3}{\partial P} dP = 0$$

$$dP \left[ \frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P} + \frac{\partial X_3}{\partial P} \right] = - \frac{\partial X_1}{\partial P_1} P dT_{13}$$

$$(7.1.4) \quad \frac{dP}{dT_{13}} = \frac{- \frac{\partial X_1}{\partial P_1} P dT_{13}}{\frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P} + \frac{\partial X_3}{\partial P}} < 0$$

The negative sign of  $dP/dT_{13}$  becomes clear once it is

observed that  $\partial X_i / \partial P_i$  is negative from the equation,  $X_i(P_i) = D_i(P_i) - S_i(P_i)$ .

From the expression  $P_1 = P(1 + T_{13})$ , partially differentiating with respect to  $T_{13}$ , we have,

$$\frac{dP_1}{dT_{13}} = \frac{\partial [P(1 + T_{13})]}{\partial T_{13}} = \frac{\partial P}{\partial T_{13}} (1 + T_{13}) + P$$

substituting for  $dP/dT_{13}$  from (7.1.4) and rearranging the terms, we have,

$$(7.1.5) \quad \frac{\partial P_1}{\partial T_{13}} = \frac{P \left[ \frac{\partial X_2}{\partial P} + \frac{\partial X_3}{\partial P} \right]}{\frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P} + \frac{\partial X_3}{\partial P}} > 0$$

The positive sign of  $\partial P_1 / \partial T_{13}$  follows from the sign of  $\partial X_i / \partial P_i$ . Equations (7.1.4) and (7.1.5) now yield the effects of the tariff on the prices of the taxed partner and the imposing partner respectively. If the customs union was simply between partners 1 and 3,

these effects would require no further assumptions in order to hold. But in the CU assumed, there are three members and the tariff is imposed between only two of them. Since the intra-union tariffs are assumed to be less than the common external tariff of the union (in the East African Treaty, no tariff could exceed 50 percent of the common external tariff), customs union producers still retain the protection of their products against suppliers outside of the union. What the tariff between 1 and 3 does is to further protect domestic suppliers in country 1 against other common market suppliers. But the tariff against partner 3 does not disturb free trade conditions between partner 1 and 2 and partner 2 and 3. Therefore, in order for the conditions of equations (7.1.4) and (7.1.5) to hold without ambiguity, a country of origin restriction, similar to the one well known in free trade areas, has to be imposed on intra-customs union flows of the commodity going to partner 1. It is clear that if this restriction was not placed on importations into partner 1, importers in partner 1 need only receive partner 3's trade through partner 2 (in new packaging or other forms) in order to avoid the tariff. Nor does the country of origin rule wholly eliminate the problem in the case where the product from partner 3 is not a finished good.

Consider the case where country 1 is the least developed partner in the customs union and has little industry. Suppose partner 1 uses the tariff arrangements to encourage "beginning stages" industries suited for supplying services or other inputs into other planned domestic industries. Take the case of commodities such as textiles and thread



making. Suppose the more developed partners 1 and 3 already have these industries and garment industries in addition. The imposition of tariffs by partner 1 against partner 3 on textiles and thread, while garments are not taxed, does not prevent manufacturers of garments in partner 2 from importing thread and textiles from partner 3 as inputs in the production of garments. Some of the garments may find free trade access to partner 1's market. The striking fact about the result  $dP/dT_3$  in (7.1.4) is that it is negative, indicating that the price of the taxed commodity in partner 3 decreases. This is clear from the equation after observing that  $\partial x_i / \partial P_i$  in equation (7.1.1) must necessarily be negative. A similar argument can show that  $\partial P_2 / \partial T_3$  is also negative. This partial will be derived below. But the important implication of this result for the example above is that the prices of textiles and thread will decrease in partners 2 and 3, possibly permitting the expansion of the higher level garment industry although the domestic quantities of textiles and thread produced in 2 and 3 decrease through the positive sign of  $\partial S_i / \partial P_i$  in (7.1.1).

The expansion of the garment industry in the above example could have several meanings for the members of the customs union. Within the partner members 2 and 3, the marginal cost curves of the industry shift to the right and, all other things equal, the equilibrium commodity price of the industries in 2 and 3 decreases. The opposite is the case in the tariff imposing partner 1. Using a similar argument to the one used to sign  $dP/dT_3$  above, it is observed that  $dP_1/dT_3$  is positive in equation (7.1.5), so that we can expect the prices of the two inputs

into the garment industry to rise. This increase in the costs of production, with other things unchanged, shifts the marginal cost curve of the industry in 1 to the left and raises the equilibrium price in partner one. We shall return to these effects in the next section.

It is clear that the industry in partner one, though not directly affected by the tariff imposed by partner 1, is nevertheless put at a competitive disadvantage relative to the industries in partners 2 and 3. Free trade conditions in the products of the garment industry will permit producers in 2 and 3 to compete 1's domestic producers out of their own market.

The competitive advantage gained by 2 and 3's taxed-commodity user industries has wider implications outside of the customs union when the terms  $dR_2/dT_{13}$  and  $dP/dT_{13}$  produce large enough changes. If the garment industries in 2 and 3 happen to be on the margin of world price, the tariff imposition by partner 1 may provide the required margin of competition for an export drive into world markets. It seems in general that the same effects of the tariff which encourage partner 1's domestic industry will hurt any industries in the same country which use the taxed product as input while encouraging other industries in the customs union to expand their exports to partner 1 and, possibly, to the rest of the world.

In order to examine the impact of the tariff on production and consumption in partner 1 and the impact on partners 2 and 3, let,

$$A_1 = \frac{dP}{dT_{13}} = \frac{-\frac{\partial X_1}{\partial P} P}{\frac{\partial X_1}{\partial P} (1+T_{13}) + \frac{\partial X_2}{\partial P} + \frac{\partial X_3}{\partial P}} < 0$$

and,

$$A_2 = \frac{dP_i}{dT_{13}} = \frac{P \left[ \frac{\partial X_2}{\partial P} + \frac{\partial X_3}{\partial P} \right]}{\frac{\partial X_1}{\partial P_i} (1 + T_{13}) + \frac{\partial X_2}{\partial P} + \frac{\partial X_3}{\partial P}} > 0$$

Let  $D_i$  and  $S_i$  represent demand and supply respectively in country  $i$ . Then the tariff's effect on demand in country 1 may be written,

$$\frac{\partial D_1}{\partial T_{13}} = \frac{\partial D_1}{\partial P_i} \cdot \frac{dP_i}{dT_{13}}$$

From this expression, we can derive,

$$(7.1.6) \quad \frac{\partial D_1}{\partial T_{13}} = \frac{D_1 \cdot \eta_1 \cdot A_2}{P_i}, \quad \eta_1 < 0$$

where  $\eta_1$  is the elasticity of demand for the commodity in country 1 and is negative. The whole right hand term is therefore negative. Demand in the imposing country decreases by an amount determined by the initial quantity of the commodity consumed in 1, the elasticity of demand for the commodity in 1, the price effect of the tariff and the initial price in 1.

In a similar manner, the supply response may be written,

$$\frac{\partial S_1}{\partial T_{13}} = \frac{\partial S_1}{\partial P_i} \cdot \frac{dP_i}{dT_{13}}$$

From the above expression, we can again derive that

$$(7.1.7) \quad \frac{\partial S_1}{\partial T_{13}} = \frac{S_1 \cdot \epsilon_1 \cdot A_2}{P_i} > 0, \quad \epsilon_1 > 0$$

where  $\epsilon_1$  is the elasticity of supply in country 1. Since  $\epsilon_1$  is positive, the whole expression is positive. Supply of the commodity by domestic producers in 1 changes by an amount determined by the initial quantity supplied, the price elasticity of supply in 1, the price effect of the tariff and the initial price.

Since the tariff is imposed in the present case by only one partner against a second partner (i.e. 1 against 3), free trade conditions hold between partners 3 and 2 as well as between 2 and 1. The price effects of partner 1's tariff against partner 3 only affect the commodity price in partner 2 indirectly. In order for these indirect effects to hold, a crucial assumption must be made that there is no re-export of the commodity from partner 3 through partner 2 into partner 1. Then the effects of 1's tariff against 3 on the commodity price in 2 may be expressed,

$$\frac{\partial P_2}{\partial T_{13}} = \frac{\partial P_2}{\partial P} \cdot \frac{dP}{dT_{13}}$$

Since free trade holds between 2 and 3 we have,

$$(7.1.8) \quad \frac{\partial P_2}{\partial T_{13}} = \frac{dP}{dT_{13}} = A_1$$

The indirect supply response to the tariff in partner 2 can be written,

$$\frac{\partial S_2}{\partial T_{13}} = \frac{\partial S_2}{\partial P_2} \cdot \frac{\partial P_2}{\partial T_{13}} = \frac{\partial S_2}{\partial P_2} \cdot A_1$$

$$\frac{\partial S_2}{\partial T_{13}} = \frac{S_2 \cdot \epsilon_2 \cdot A_1}{P_2}$$

$$(7.1.9) \quad \frac{\partial S_2}{\partial T_{13}} = \frac{S_2 \cdot \epsilon_2 \cdot A_1}{P_2}$$

where  $S_2$  is supply in partner 2, and  $\epsilon_2$  is the elasticity of supply in the same country. Since  $A_1$  is negative as shown earlier,  $\partial P_2 / \partial T_{13}$  is also negative.  $\partial S_2 / \partial P_2$  is positive by property of the supply curve in partner 2 but the right hand expression in (7.1.9) is negative, so that we expect domestic supply of the commodity in partner 2 to decrease. The decrease is determined by the initial supply in 2, the corresponding elasticity of supply, the impact of partner 1's tariff against partner 3 and the initial price in partner 2.

The movement along the demand curve in partner 2 brought about by partner 1's imposition of the tariff against partner 3 may be written,

$$(7.1.10) \quad \frac{\partial D_2}{\partial T_{13}} = \frac{\partial D_2}{\partial P_2} \cdot \frac{\partial P_2}{\partial T_{13}} = \frac{\partial D_2}{\partial P_2} \cdot A_1$$

$$\frac{\partial D_2}{\partial T_{13}} = \frac{D_2 \cdot \eta_2 \cdot A_1}{P_2}$$

where  $D_2$  is the demand in partner 2 initially,  $\eta_2$  is the elasticity of demand (which is negative), and  $P_2$  is the initial price in partner 2.

$\partial D_2 / \partial P_2$  is negative as is  $\partial P_2 / \partial T_{13}$ . The right hand term of (7.1.10) is therefore positive. Demand for the commodity will increase in partner 2 as the indirect tariff effects lower the price in 2.

The tariff imposition by partner 1 against partner 3 has effects on price, domestic supply and production in partner 3. We have already

observed that the tariff imposition may reduce the export price in partner

3. The movement along the demand curve in 3 may be written,

$$\frac{\partial D_3}{\partial T_{13}} = \frac{\partial D_3}{\partial P} \cdot \frac{dP}{dT_{13}} = \frac{\partial D_3}{\partial P} \cdot A_1$$

$$(7.1.11) \quad \frac{\partial D_3}{\partial T_{13}} = \frac{D_3 \cdot \eta_3 \cdot A_1}{P}$$

where  $D_3$  is demand in 3,  $\eta_3$  the elasticity of demand in 3 and  $P$  the initial price in 3. The right hand term is positive, so that we expect demand for the commodity to rise in partner 3 as the terms of trade gain by partner 1 reduces the commodity price in 3.

The supply response in partner 3 may be written,

$$\frac{\partial S_3}{\partial T_{13}} = \frac{\partial S_3}{\partial P} \cdot \frac{dP}{dT_{13}} = \frac{\partial S_3}{\partial P} \cdot A_1$$

$$(7.1.12) \quad \frac{\partial S_3}{\partial T_{13}} = \frac{S_3 \cdot \epsilon_3 \cdot A_1}{P}$$

where  $S_3$  is the initial supply in 3,  $\epsilon_3$  the elasticity of supply in 3 and  $P$  the initial price in 3. Since the term  $A_1$  of the numerator is negative, the whole right hand term is also negative. It is clear that the commodity supply in 3 decreases. It can be observed that, since it was assumed that partner 3 is a net exporter of the commodity to both partners 2 and 1, the decrease in supply of the commodity in 3 (and the corresponding increase in supply shown for the tariff-imposing partner 1) constitutes a diminution in the level of specialization for the common market as a whole. But this loss need not in every case persist in the long run. It can be counteracted under the infant industry argument often

used for tariff protection. The argument is admittedly weaker for a common market of countries with similar resource endowments.

It may be that, due to imperfections in the economy of the tariff imposing partner, or the presence of substantial unemployed resources, the tariff brings into the industry previously unemployed factors. In the event, the marginal cost curve of the industry may shift downwards over time, restoring the ability of consumers in the taxing country to consume at customs union prices. But in the static case analysed above the loss in specialization is unambiguous. The loss is reinforced by the decrease in supply in partner 2 if partner 2 produces the commodity at a domestic equilibrium price lower than that of partner 1 but higher than that of partner 3.

In order to compare the partner 1's increased production with the decrease in production in partner 3 we can write,

$$\frac{\partial S_1}{\partial T_{13}} / \frac{\partial S_3}{\partial T_{13}} = \frac{S_1 \cdot \epsilon_1 \cdot A_2 \cdot P}{P_1 \cdot S_3 \cdot \epsilon_3 \cdot A_1} = \frac{S_1 \cdot \epsilon_1 \cdot A_2}{S_3 \cdot \epsilon_3 \cdot (1 + T_{13})}$$

since  $P_1 = P (1 + T_{13})$ .

This ratio intuitively answers the question whether the production effect of the tariff in partner 1 is greater or less than the production effect in partner 3. It is a measure of the loss in specialization involved in the customs union, when partner 1 supplies a greater proportion of her domestic market for the commodity at the tariff ridden price.

Substituting the values of  $A_1$  and  $A_2$ , the above expression becomes,

$$(7.1.13) \quad \frac{\partial S_1 / \partial T_{13}}{\partial S_3 / \partial T_{13}} = - \frac{S_1 \cdot \epsilon_1 \cdot \left[ \frac{\partial X_2}{\partial P} + \frac{\partial X_3}{\partial P} \right]}{S_3 \cdot \epsilon_3 \cdot \frac{\partial X_1}{\partial P} \cdot (1 + T_{13})}$$

The above ratio is negative and will be higher as the terms of the numerator increase. Production increases less in partner 1 than it falls in partner 3. It is seen from equations (7.1.4) and (7.1.5) that the three partials in the expression constitute the ratio of partner 1's increased domestic price post-tariff, and the gain in the terms of trade from partner 3, i.e.  $dP_1/dT_{13}$  divided by  $dP/dT_{13}$ . The higher is this ratio, the higher will be the numerator and the less will be the proportion of partner 1's increase in production of the commodity to the fall in partner 3's production. The other key ratios in the determination of the above ratio are initial supplies, elasticities of supply and the price ratio. It is clear, however, that the increased production in partner 1 expressed above is not that referred to in the familiar infant industry argument. The supply curve in partner 1 has to shift downward over time in the case of the infant industry proposition. The present model does not argue that this shift will or will not occur, but shows in the above ratio, the measure of initial loss in specialization in regard to country 1 and country 3.

A similar comparison of partner 1's increased production with the decrease in production in partner 2 yields,



$$(7.1.14) \quad \frac{\partial S_1 / \partial T_{13}}{\partial S_2 / \partial T_{13}} = - \left[ \frac{S_1 \cdot \epsilon_1}{S_2 \cdot \epsilon_2 \cdot (1 + T_{13})} \right] \times \left[ \frac{\frac{\partial X_2}{\partial P} + \frac{\partial X_3}{\partial P}}{\frac{\partial X_1}{\partial P}} \right]$$

The second expression on the right hand side represents the ratio of the price increase in partner 1 and the price decrease in partner 2. Thus we conclude that, similar to partner 3, partner 2's domestic supply of the commodity decreases post-tariff.

Let us now consider two other effects, the relative production effects in partners 2 and 3 and the ratio of partner 1's production effects and the sum of the decreases in production in 2 and 3. The first concerns the relative decreases in production between partners 2 and 3. This ratio is,

$$(7.1.15) \quad \frac{\partial S_2 / \partial T_{13}}{\partial S_3 / \partial T_{13}} = \frac{S_2 \cdot \epsilon_2}{S_3 \cdot \epsilon_3} > 0, \quad \epsilon_2 > 0, \epsilon_3 > 0$$

The above ratio is positive and the key determinants are the initial supplies and the elasticities of supply in both partners.

Consider now the ratio of the production effects in partner 1 to the sum of the production effects in partners 2 and 3. We can ask the question whether partner 1's increased supply of the commodity post-tariff restores the decreases in 2 and 3 to any extent. We can write,

$$\begin{aligned}
 (7.1.16) \quad \frac{\partial S_1 / \partial T_{13}}{\partial S_2 / \partial T_{13} + \partial S_3 / \partial T_{13}} &= \frac{S_1 \cdot \epsilon_1 \cdot A_1^2 \cdot P}{P_1 \cdot A_1 \cdot [S_2 \cdot \epsilon_2 + S_3 \cdot \epsilon_3]} \\
 &= - \frac{S_1 \cdot \epsilon_1}{(1 + T_{13}) [S_2 \cdot \epsilon_2 + S_3 \cdot \epsilon_3]} \times \frac{\frac{\partial X_1}{\partial P} + \frac{\partial X_3}{\partial P}}{\frac{\partial X_1}{\partial P_1}}
 \end{aligned}$$

The second term of the right hand side is positive, and since the supply elasticities of the partners are positive, the whole term is therefore negative. We conclude that partner 1's production less than compensates for the customs union loss in production from the tariff imposition.

To summarize the results of this section,

$$\frac{dP}{dT_{13}} < 0, \quad \frac{dP_1}{dT_{13}} > 0, \quad \frac{\partial D_1}{\partial T_{13}} < 0, \quad \frac{\partial S_1}{\partial T_{13}} > 0,$$

$$\frac{dP_2}{dT_{13}} < 0, \quad \frac{\partial D_2}{\partial T_{13}} > 0, \quad \frac{\partial S_2}{\partial T_{13}} < 0,$$

$$\frac{\partial S_3}{\partial T_{13}} < 0, \quad \frac{\partial D_3}{\partial T_{13}} > 0,$$

$$\frac{\partial S_1 / \partial T_{13}}{\partial S_3 / \partial T_{13}} < 0, \quad \frac{\partial S_1 / \partial T_{13}}{\partial S_2 / \partial T_{13}} < 0,$$

$$\frac{\partial S_1 / \partial T_{13}}{\partial S_2 / \partial T_{13} + \partial S_3 / \partial T_{13}} < 0 \quad \frac{\partial S_2 / \partial T_{13}}{\partial S_3 / \partial T_{13}} > 0$$

7.2 The present section considers the case where country 2, like country 1 in 7.1, is also in overall deficit in manufacturing trade and qualifies to impose a tariff on imports of a given commodity from partner 3. As in the last section, only one commodity subject to the tariff is considered, and we abstract from substitution effects, incomes and the prices of other commodities in all three countries. In section 7.3, we come back to the effects of price changes after the tariff imposition.

Initially, no assumption is made in regard to the magnitudes of the tariffs,  $T_{13}$  and  $T_{23}$ , imposed by partner 1 and 2 against partner 3 respectively. At the end of this section, however, we examine the case of different rates of tariff imposition by 1 and 2 against 3.

Assume, as in the last section, that the commodity is wholly produced and consumed within the union. Then we have,

$$(7.2.1) \quad \sum_{i=1}^3 X_i(P_i) = 0, \quad \frac{\partial X_i}{\partial P_i} < 0$$

where  $X_i$  is the excess demand in partner  $i$  and is a function of the price. This excess demand in the single country is the difference between domestic demand and supply.

$$(7.2.2) \quad X_i(P_i) = D_i(P_i) - S_i(P_i), \quad \frac{\partial D_i}{\partial P_i} < 0, \quad \frac{\partial S_i}{\partial P_i} > 0$$

Let  $P$  be the price in partner 3 at which partner 3 is the only net exporter of the commodity to both partners 1 and 2. Again,  $P$  is

the valuation in partner 3's currency. Noting that, after the tariff imposition,  $P_1 = P(1 + T_{13})$  and  $P_2 = P(1 + T_{23})$ , equation (7.2.1) becomes,

$$(7.2.3) \quad X_1 \{ P(1 + T_{13}) \} + X_2 \{ P(1 + T_{23}) \} + X_3 (P) = 0.$$

Differentiating totally the equilibrium conditions (7.2.3) we have,

$$\begin{aligned} \frac{\partial X_1}{\partial P_1} [dP(1 + T_{13}) + PdT_{13}] + \frac{\partial X_2}{\partial P_2} [dP(1 + T_{23}) + PdT_{23}] + \frac{\partial X_3}{\partial P} dP = 0 \\ dP \left[ \frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P_2} (1 + T_{23}) + \frac{\partial X_3}{\partial P} \right] = P \left[ \frac{\partial X_1}{\partial P_1} dT_{13} + \frac{\partial X_2}{\partial P_2} dT_{23} \right] \\ dP = \frac{-P \left[ \frac{\partial X_1}{\partial P_1} dT_{13} + \frac{\partial X_2}{\partial P_2} dT_{23} \right]}{\frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P_2} (1 + T_{23}) + \frac{\partial X_3}{\partial P}} \end{aligned}$$

$$(7.2.4) \quad \frac{\partial P}{\partial T_{13}} = \frac{-\frac{\partial X_1}{\partial P_1} P}{\frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P_2} (1 + T_{23}) + \frac{\partial X_3}{\partial P}} < 0$$

$$(7.2.5) \quad \frac{\partial P}{\partial T_{23}} = \frac{-\frac{\partial X_2}{\partial P_2} P}{\frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P_2} (1 + T_{23}) + \frac{\partial X_3}{\partial P}} < 0$$

By the arguments of the last section, the signs of  $\partial P / \partial T_{13}$  and  $\partial P / \partial T_{23}$  are negative. Both tariffs act to depress the prices of the net exporter, partner 3. The total effects of the tariff impositions on domestic prices in 1 and 2 are composed of the own-country tariff effect and the cross effect from the other member's tariff imposition against partner 3. In the case of partner 1 we have,

$$\begin{aligned}
 \frac{\partial P_1}{\partial T_{13}} &= \frac{\partial [P(1 + T_{13})]}{\partial T_{13}} \\
 &= \frac{\partial P}{\partial T_{13}} (1 + T_{13}) + P \\
 &\quad - \frac{\partial X_1}{\partial P_1} P (1 + T_{13}) \\
 &= \frac{\frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P_2} (1 + T_{23}) + \frac{\partial X_3}{\partial P}}{\frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P_2} (1 + T_{23}) + \frac{\partial X_3}{\partial P}} + P \\
 (7.2.6) \quad \frac{\partial P_1}{\partial T_{13}} &= \frac{P \left[ \frac{\partial X_2}{\partial P_2} (1 + T_{23}) + \frac{\partial X_3}{\partial P} \right]}{\frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P_2} (1 + T_{23}) + \frac{\partial X_3}{\partial P}} > 0
 \end{aligned}$$

The sign of the above expression is positive, indicating that the own-tariff effect in partner 1 raises the price of the commodity domestically.

We now consider an effect we can call "the cross tariff effect," of partner 2's tariff imposition on partner 1's final price. As seen above, partner 1's price is raised by the tariff against partner 3. The question raised by an evaluation of the cross tariff effect is whether the tariff imposition by partner 2 against partner 3 affects partner 1's final price and if so, in what direction. This effect may be written,

$$\begin{aligned}
 \frac{\partial P_1}{\partial T_{23}} &= \frac{\partial P_1}{\partial P} \times \frac{\partial P}{\partial T_{23}} \\
 &= \frac{\partial [P(1 + T_{13})]}{\partial P} \times \frac{\partial P}{\partial T_{23}} \\
 &= (1 + T_{13}) \times \frac{\partial P}{\partial T_{23}}
 \end{aligned}$$

$$(7.2.7) \quad \frac{\partial P_1}{\partial T_{23}} = \frac{-\frac{\partial X_2}{\partial P_2} P(1+T_{13})}{\frac{\partial X_1}{\partial P_1}(1+T_{13}) + \frac{\partial X_2}{\partial P_2}(1+T_{23}) + \frac{\partial X_3}{\partial P}} < 0$$

The sign of the above expression is negative. The domestic price rise in partner 1 (from the 1's own tariff imposition) is influenced in an opposite direction by the cross effect from partner 2's tariff imposition against partner 3. Thus, partner 2's authorities would be lowering prices for partner 1's consumers by putting a tariff against a commodity from partner 3 which also was subject to a tariff on exportation to partner 1. This result, which is unusual in the literature, demonstrates that, in a customs union of 3 countries as assumed, with partner 3 as net exporter, any tariffs imposed by the remaining partners against partner 3 act in opposition to each other in their effects on domestic prices of the imposing partners. The case of  $\partial P_2 / \partial T_{13}$  will be shown below to confirm this proposition. This result seems consistent with the sign of equation (7.2.5). Since the imposition of the tariff by partner 2 depresses the export price in partner 3, that effect must be transmitted to partner 1 so that the tariff-inclusive price will be lower there. The effects of the tariffs imposed by 1 and 2 on the export price of partner 3 are directly related with the respective partners' excess demands for the commodity. This is shown through the ratio of terms of trade gains from (7.2.4) and (7.2.5). Observe that 1's terms of trade gain over 2's terms of trade gain may be written,

$$(7.2.8) \quad \frac{\partial P / \partial T_{13}}{\partial P / \partial T_{23}} = \frac{\partial X_1 / \partial P_1}{\partial X_2 / \partial P_2}$$

Thus, the ratio of the terms of trade gain in 1 and the terms of trade gain in 2 is equal to the ratio of the respective excess demand changes with respect to price.

The corresponding effects of the two tariffs on the price in partner 2 can now be derived.

$$(7.2.9) \quad \begin{aligned} \frac{\partial P_2}{\partial T_{13}} &= \frac{\partial [P(1+T_{23})]}{\partial T_{13}} \\ &= \frac{\partial P}{\partial T_{13}} (1+T_{23}) \\ &= \frac{-\frac{\partial X_1}{\partial P_1} P(1+T_{23})}{\frac{\partial X_1}{\partial P_1} (1+T_{13}) + \frac{\partial X_3}{\partial P_2} (1+T_{23}) + \frac{\partial X_3}{\partial P}} < 0 \end{aligned}$$

The negative sign follows from the fact that  $\partial X_i / \partial P_i$  is negative. Thus, the direction of the cross tariff effect in partner 2 is negative from the sign of the above expression. This result is symmetrical to the effect of partner 2's tariff on the domestic price in 1, i.e. equation (7.2.7). The ratio of the cross tariff effects in 1 and 2 can be expressed solely by the ratio tariff ridden changes in the two countries' excess demands. Observe that,

$$(7.2.10) \quad \frac{\partial P_1 / \partial T_{23}}{\partial P_2 / \partial T_{13}} = \frac{\frac{\partial X_2}{\partial P_2} (1+T_{13})}{\frac{\partial X_1}{\partial P_1} (1+T_{23})}$$

Let us now derive the own-tariff effect in partner 2.

$$\begin{aligned}\frac{\partial P_2}{\partial T_{23}} &= \frac{\partial [P(1+T_{23})]}{\partial T_{23}} \\ &= \frac{\partial P}{\partial T_{23}} (1+T_{23}) + P\end{aligned}$$

Substituting the right hand term of (7.2.5) and rearranging the terms, we have,

$$(7.2.11) \quad \frac{\partial P_2}{\partial T_{23}} = \frac{P \left[ \frac{\partial X_1}{\partial P_1} (1+T_{13}) + \frac{\partial X_3}{\partial P} \right]}{\frac{\partial X_1}{\partial P_1} (1+T_{13}) + \frac{\partial X_2}{\partial P_2} (1+T_{23}) + \frac{\partial X_3}{\partial P}} > 0$$

The above domestic price change in partner 2 will be positive.

Domestic prices in partner 2 must rise after the tariff imposition against partner 3.

In order to discuss the effects of the tariffs on the consumption and production within the individual customs union members, let  $\partial P / \partial T_{13}$ ,  $\partial P / \partial T_{23}$ ,  $\partial P_1 / \partial T_{13}$ ,  $\partial P_1 / \partial T_{23}$ ,  $\partial P_2 / \partial T_{13}$ ,  $\partial P_2 / \partial T_{23}$  be represented by  $A_{21} < 0$ ,  $A_{22} < 0$ ,  $A_{23} > 0$ ,  $A_{24} < 0$ ,  $A_{25} < 0$ , and  $A_{26} > 0$ , respectively. Let  $D_i(P_i)$  and  $S_i(P_i)$  be the demand and supply functions of partner  $i$ . Then,

$$\frac{\partial D_i}{\partial T_{13}} = \frac{\partial D_i}{\partial P_1} \cdot A_{23}, \quad \frac{\partial D_i}{\partial P_1} < 0, A_{23} > 0$$

The above expression yields,

$$(7.2.12) \quad \frac{\partial D_i}{\partial T_{13}} = \frac{D_i \cdot \eta_i \cdot A_{23}}{P_1} < 0$$



where  $\eta_1$  is the elasticity of demand in partner 1 and is negative. The whole expression is therefore negative and we conclude that the effect of partner 1's own tariff on domestic demand is negative. Consumers in partner 1 will demand a diminished quantity of the commodity when the tariff is imposed against 3. But this diminution in the quantities demanded is not unambiguous when partner 2 also imposes her tariff against partner 3. To see this, let us observe that the effect of partner 2's tariff on partner 3's price also affects the tariff inclusive price in partner 1 and, therefore, the quantity of the commodity demanded in 1. The effect of partner 2's tariff on domestic demand in 1 may be written,

$$\frac{\partial D_1}{\partial T_{23}} = \frac{\partial D_1}{\partial P_1} \cdot A_{24} , \quad \frac{\partial D_1}{\partial P_1} < 0, A_{24} < 0$$

Both terms of the right hand side are negative, and we conclude that the whole expression is positive. It may be written,

$$(7.2.13) \quad \frac{\partial D_1}{\partial T_{23}} = \frac{D_1 \cdot \eta_1 \cdot A_{24}}{P_1} > 0$$

The tariff imposition by partner 2 works to influence domestic demand in 1 in an opposite direction from the own tariff effect in 1. The own tariff effect in 1 reduces the equilibrium quantities demanded by increasing the tariff-ridden price, but the cross effects of partner 2's own imposition of the tariff against 3 tends to restore at least some of the quantities demanded in 1 through a further reduction of partner 3's price.

Since all terms of (7.2.12) and (7.2.13) are the same, save for

$A_{23}$  and  $A_{24}$ , the net effect on quantities demanded in 1 must depend on these two partials and also on  $dT_{13}$  and  $dT_{23}$ . This is so because the functional relationship between price in 1 and the two tariffs may be totally differentiated to yield,

$$(7.2.14) \quad dP_1 = \frac{\partial P_1}{\partial T_{13}} dT_{13} + \frac{\partial P_1}{\partial T_{23}} dT_{23}$$

The relative magnitudes of the two right hand terms are therefore significant. We conclude that demand will increase in 1 post tariff if and only if,

$$(7.2.15) \quad \frac{\partial P_1}{\partial T_{13}} dT_{13} < - \frac{\partial P_1}{\partial T_{23}} dT_{23}$$

and will decrease if and only if,

$$(7.2.16) \quad \frac{\partial P_1}{\partial T_{13}} dT_{13} > - \frac{\partial P_1}{\partial T_{23}} dT_{23}$$

Condition (7.2.15) is unusual. It describes the case where the terms of trade gain exacted by partner 2's tariff on partner 3 is great enough to counteract any price rise in partner 1 which might be expected from tariff  $T_{13}$ . The tariff inclusive price in 1 would not be greater than the initial price, so that, as a corollary, the tariff merely collects government revenue without a necessary encouragement of domestic production of the commodity.

Condition (7.2.16) is the reverse of (7.2.15) where prices in

partner 1 do rise and demand decreases, since the cross-tariff effect from partner 2's tariff is not great enough to reverse the effects of partner 1's own tariff.

Domestic production in 1 responds to the own tariff imposition through the price changes in the following way,

$$\frac{\partial S_1}{\partial T_{13}} = \frac{\partial S_1}{\partial P_1} \cdot A_{23} \quad , \quad \frac{\partial S_1}{\partial P_1} > 0, A_{23} > 0$$

from which can be derived,

$$(7.2.17) \quad \frac{\partial S_1}{\partial T_{13}} = \frac{S_1 \cdot \epsilon_1 \cdot A_{23}}{P_1} > 0$$

where  $\epsilon_1$  is the elasticity of supply in partner 1 and is positive.

The whole expression is therefore positive. Supply increases in partner 1 after the own tariff imposition. But this increase in supply is again not unambiguous and could indeed become negative through the cross effects of partner 2's tariff imposition against partner 3. Let us note that the effects of partner 2's tariff on domestic supply in partner 1 may be written,

$$\frac{\partial S_1}{\partial T_{23}} = \frac{\partial S_1}{\partial P_1} \cdot A_{24} \quad , \quad \frac{\partial S_1}{\partial P_1} > 0, A_{24} < 0$$

The first term on the right hand side is positive, but the  $A_{24}$  is negative. The whole expression is therefore negative, and we conclude that partner 2's tariff affects supply in partner 1 in an opposite direction from partner 1's own tariff. The above expression may be written as,

$$(7.2.18) \quad \frac{\partial S_1}{\partial T_{23}} = \frac{S_1 \cdot \epsilon_1 \cdot A_{24}}{P_1} < 0$$

From equations (7.2.17) and (7.2.18), we conclude again that it is the relative magnitudes of the partials  $\partial P_1 / \partial T_{13}$  and  $\partial P_1 / \partial T_{23}$  and the terms  $dT_{13}$  and  $dT_{23}$  which determine the direction of domestic supplies in partner 1. Domestic supplies increase if and only if,

$$(7.2.19) \quad \frac{\partial P_1}{\partial T_{13}} dT_{13} > - \frac{\partial P_1}{\partial T_{23}} dT_{23}$$

but will decrease if

$$(7.2.20) \quad \frac{\partial P_1}{\partial T_{13}} dT_{13} < - \frac{\partial P_1}{\partial T_{23}} dT_{23}$$

Condition (7.2.19) is the normal effect of a tariff. It raises domestic selling price and therefore domestic supplies. Condition (7.2.20) is the unusual case where prices in 1 decrease after the tariff since the price decrease brought about by partner 2's own tariff imposition reverses the effects of the tariff imposed by 1. Supply in 1 therefore decreases even though the authorities collect the tariff revenues on importations into 1.

Similar demand and supply relations can be derived for partner 2, and the net effects are also shown to depend on the direct and indirect price effects of the own tariff and partner 1's tariff re-

spectively. The own tariff and cross tariff effects of 2's demand are,

$$(7.2.21) \quad \frac{\partial D_2}{\partial T_{23}} = \frac{\partial D_2}{\partial P_2} \cdot \frac{\partial P_2}{\partial T_{23}} = \frac{D_2 \cdot \eta_2 \cdot A_{26}}{P_2} < 0$$

$$(7.2.22) \quad \frac{\partial D_2}{\partial T_{13}} = \frac{\partial D_2}{\partial P_2} \cdot \frac{\partial P_2}{\partial T_{13}} = \frac{D_2 \cdot \eta_2 \cdot A_{25}}{P_2} > 0$$

where  $\eta_2$  is the price elasticity of demand in partner 2. The middle and right hand terms in equations (7.2.21) and (7.2.22) are negative and positive, respectively. Demand change is negative with respect to the own tariff imposition and positive with respect to the cross tariff effect from partner 1's imposition. The crucial terms in the equations are again the direct and indirect tariff effects and the terms and .

If,

$$(7.2.23) \quad \frac{\partial P_2}{\partial T_{23}} dT_{23} < - \frac{\partial P_2}{\partial T_{13}} dT_{13}$$

then, demand in partner 2 increases post-tariff, notwithstanding the payments of the tariff on imports.

If,

$$(7.2.24) \quad \frac{\partial P_2}{\partial T_{23}} dT_{23} > - \frac{\partial P_2}{\partial T_{13}} dT_{13}$$

then the effect of partner 2's tariff on domestic prices will be positive and demand consequently decreases. This is the normal effect of the tariff imposition. Condition (7.2.23) can alternately be thought of

in the following way. If the terms of trade gain obtained from partner 3 through partner 1's unilateral tariff imposition exceeds the terms of trade gain to be had by partner 2's own tariff imposition, then demand increases in partner 2 regardless of the tariff imposition.

The terms for the supply relations may now be set out in the following way.

$$(7.2.25) \quad \frac{\partial S_2}{\partial T_{13}} = \frac{S_2 \cdot \epsilon_2 \cdot A_{25}}{P_2} = \frac{\partial S_2}{\partial P_2} \cdot A_{25} < 0$$

$$(7.2.26) \quad \frac{\partial S_2}{\partial T_{23}} = \frac{S_2 \cdot \epsilon_2 \cdot A_{26}}{P_2} = \frac{\partial S_2}{\partial P_2} \cdot A_{26} > 0$$

where  $\epsilon_2$  is the price elasticity of supply in partner 2. Again, the own tariff price effect influences the supply function in 2 in an opposite direction from the demand function and, similarly, the cross effects of partner 1's tariff affect the supply function in 2 in an opposite direction from the demand function. If,

$$(7.2.27) \quad - \frac{\partial S_2}{\partial T_{13}} dT_{13} > \frac{\partial S_2}{\partial T_{23}} dT_{23}$$

then domestic supply in partner 2 decreases despite the tariff imposition. This is opposite to the normal case in the literature where the tariff impact increases domestic production of the commodity. This normal case occurs only if,

$$(7.2.28) \quad - \frac{\partial S_2}{\partial T_{13}} dT_{13} < \frac{\partial S_2}{\partial T_{23}} dT_{23}$$

A consideration of the consumption and production effects of the two tariffs in partner 3 shows that there is, in this case, no ambiguity regarding trade flows and the direction in which they are influenced by the tariffs of partners 1 and 2. Under our assumptions of non-retaliation in partner 3, an upward sloping industry supply curve, and a downward sloping demand curve, prices in 3 will unequivocally decrease and production will also decrease. There will also be a corresponding increase in domestic consumption of the commodity. It can be shown that, in this instance, the tariff impositions by partners 1 and 2 reinforce each other in affecting consumption, prices and production in 3. This is opposite to the effects within the imposing partners where the own tariff and the cross tariff effects counteract each other. To see this, note that,

$$\begin{aligned}
 dD_3 &= \frac{\partial D_3}{\partial P} \cdot \frac{\partial P}{\partial T_{13}} dT_{13} + \frac{\partial D_3}{\partial P} \cdot \frac{\partial P}{\partial T_{23}} dT_{23} \\
 &= \frac{\partial D_3}{\partial P} \cdot A_{21} dT_{13} + \frac{\partial D_3}{\partial P} \cdot A_{22} dT_{23} \\
 &= \frac{D_3 \cdot \eta_3 \cdot A_{21}}{P} dT_{13} + \frac{D_3 \cdot \eta_3 \cdot A_{22}}{P} dT_{23} \\
 (7.2.29) \quad dD_3 &= \frac{D_3 \cdot \eta_3 [A_{21} dT_{13} + A_{22} dT_{23}]}{P} > 0
 \end{aligned}$$

where  $\eta_3$  is the price elasticity of demand in partner 3. The signs of the terms  $\eta_3$ ,  $A_{21}$ , and  $A_{22}$  are negative and the whole term is therefore positive. The effect of either tariff imposed by 1 and 2 increases domestic demand within the non-retaliating partner 3 through the terms of trade gains exacted by the tariffs.

The effects on the supply in partner 3 may be written

$$\begin{aligned}
 dS_3 &= \frac{\partial S_3}{\partial P} \cdot \frac{\partial P}{\partial T_{13}} dT_{13} + \frac{\partial S_3}{\partial P} \cdot \frac{\partial P}{\partial T_{23}} dT_{23} \\
 &= \frac{\partial S_3}{\partial P} \cdot A_{21} dT_{13} + \frac{\partial S_3}{\partial P} \cdot A_{22} dT_{23} \\
 (7.2.30) \quad dS_3 &= \frac{S_3 \cdot \epsilon_3 [A_{21} dT_{13} + A_{22} dT_{23}]}{P} < 0
 \end{aligned}$$

where  $\epsilon_3$  is the price elasticity of supply. The terms  $A_{21}$  and  $A_{22}$  are the only negative ones in the equation, so that the two components of the numerator are negative. We conclude that partner 1 and 2's tariffs reinforce each other in decreasing the domestic supply of the commodity within partner 3. Their relative impacts depend only on the magnitudes of  $A_{21} dT_{13}$  and  $A_{22} dT_{23}$ . If,

$$(7.2.31) \quad -A_{21} dT_{13} > -A_{22} dT_{23}$$

then supply in 3 decreases more from the imposition of the tariff by partner 1 than from the imposition by partner 2. The opposite is the case when the right hand term of (7.2.31) is greater than the left hand term. To summarize this section we have,



$$\frac{\partial P}{\partial T_{13}} < 0, \quad \frac{\partial P}{\partial T_{23}} < 0, \quad \frac{\partial P_1}{\partial T_{13}} > 0, \quad \frac{\partial P_1}{\partial T_{23}} < 0, \quad \frac{\partial P_2}{\partial T_{13}} < 0,$$

$$\frac{\partial P_2}{\partial T_{23}} > 0, \quad \frac{\partial D_1}{\partial T_{13}} < 0, \quad \frac{\partial D_1}{\partial T_{23}} > 0, \quad \frac{\partial D_2}{\partial T_{13}} > 0, \quad \frac{\partial D_2}{\partial T_{23}} < 0,$$

$$\frac{\partial S_1}{\partial T_{13}} > 0, \quad \frac{\partial S_1}{\partial T_{23}} < 0, \quad \frac{\partial S_2}{\partial T_{13}} < 0, \quad \frac{\partial S_2}{\partial T_{23}} > 0, \quad \frac{\partial D_3}{\partial T_{13}} > 0,$$

$$\frac{\partial D_3}{\partial T_{23}} > 0, \quad \frac{\partial S_3}{\partial T_{13}} < 0, \quad \frac{\partial S_3}{\partial T_{23}} < 0$$

from which other comparative results have been derived.

7.3 The present section has two aims. One is to point out briefly the effects of the relative price changes of the taxed commodity for all three partners both when the commodity is a finished good for consumption and when the good is of an intermediate nature. The latter type of good would be an input into other industries. The second aim is to examine the effects of a differential between the tariff imposed by partner 1,  $T_{13}$ , and that imposed by partner 2,  $T_{23}$ .

Recalling some of the principal results of sections 7.1 and 7.2, it was found that in the case of the former, where only partner 1 imposes the tariff against partner 3, the price in partner 3 unambiguously falls under our assumptions. Equilibrium quantities demanded increase and equilibrium quantities supplied decrease. The directional movements of these economic variables were found to be exactly the same in partner 2 as in partner 3 and the opposite in partner 1.

In the second case however, where partners 1 and 2 simultaneously imposed tariffs on partner 3, the directional movements of the above economic variables now cease to be the same in 2 and 3. Although equilibrium prices, quantities demanded and quantities supplied came under the same determinants in 1 and 2, they can no longer be said to increase or decrease unambiguously. Only in partner 3 are the results clear cut.

Suppose we take the case of partner 3 in both cases analysed in sections 7.1 and 7.2. The results indicate that consumers there will gain increased quantities of the commodity as a result of the terms of trade gains obtained by partners 1 and 2. There will also be corres-

ponding decreases in the domestic production of the commodity. As mentioned in section 7.1, if the taxed commodity is an input into an industry in partner 3, the above effects occur in a parallel fashion and the benefits accrue to the input users, shifting their product(s) supply curve(s) to the right. The upshot of these benefits is that any industries in partner 3 which use the taxed commodity as input may begin to capture the union market because of their added competitiveness unless the finished product is taxed too. Apart from the possibility of these industries' exports to the union, they may also receive the necessary competitive margin to commence exports to the rest of the world as a result of the tariff mechanism on their inputs. The ordinary microeconomic analysis relating to the adjustments by consumers (or producers) when the price of the product (input) changes, can be made in regard to the price fall brought about in partner 3.

From the signs of the demand and supply effects in partner 1 and 2, it is clear that consumers or user industries only gain decreases in the product price or costs of production under certain conditions when both countries impose the tariff against partner 3. These decreases occur only when  $dP_1$  and  $dP_2$  are negative in the equations,

$$dP_1 = \frac{\partial P_1}{\partial T_{13}} dT_{13} + \frac{\partial P_1}{\partial T_{23}} dT_{23} < 0$$

$$dP_2 = \frac{\partial P_2}{\partial T_{23}} dT_{23} + \frac{\partial P_2}{\partial T_{13}} dT_{13} < 0$$

Now consider the case where the tariffs  $T_{13}$  and  $T_{23}$  differ by a margin  $\lambda$ %. Let  $T_{23}$  be higher than  $T_{13}$ . Then,

$$T_{23} = T_{13} (1 + \lambda).$$

The following analysis may then be conducted to observe the effects of the changes in the margin  $\lambda$ . How does this change on the margin affect the terms of trade gained by partner 2 from 3 as against gains by partner 1? By substitution, the equilibrium equation of (7.2.3) becomes

$$(7.3.1) \quad X_1 [P (1 + T_{13})] + X_2 [P \{1 + T_{13} (1 + \lambda)\}] + X_3 (P) = 0.$$

Differentiating totally the equilibrium conditions, we have,

$$\frac{\partial X_1}{\partial P_1} [dP(1+T_{13}) + PdT_{13}] + \frac{\partial X_2}{\partial P_2} [dP\{1+T_{13}(1+\lambda)\} + P\{dT_{13}(1+\lambda) + T_{13}d\lambda\}] + \frac{\partial X_3}{\partial P} dP = 0$$

$$dP \left[ \frac{\partial X_1}{\partial P_1} (1+T_{13}) + \frac{\partial X_2}{\partial P_2} \{1+T_{13}(1+\lambda)\} + \frac{\partial X_3}{\partial P} \right] = - \frac{\partial X_1}{\partial P_1} PdT_{13} - \frac{\partial X_2}{\partial P_2} P \{dT_{13}(1+\lambda) + T_{13}d\lambda\}$$

$$dP = \frac{- \frac{\partial X_1}{\partial P_1} PdT_{13} - \frac{\partial X_2}{\partial P_2} P \{dT_{13}(1+\lambda) + T_{13}d\lambda\}}{\frac{\partial X_1}{\partial P_1} (1+T_{13}) + \frac{\partial X_2}{\partial P_2} \{1+T_{13}(1+\lambda)\} + \frac{\partial X_3}{\partial P}}$$

$$(7.3.2) \quad \frac{\partial P}{\partial T_{13}} = \frac{- \frac{\partial X_1}{\partial P_1} P - \frac{\partial X_2}{\partial P_2} P(1+\lambda)}{\frac{\partial X_1}{\partial P_1} (1+T_{13}) + \frac{\partial X_2}{\partial P_2} \{1+T_{13}(1+\lambda)\} + \frac{\partial X_3}{\partial P}} < 0$$

$$(7.3.3) \quad \frac{\partial P}{\partial \lambda} = \frac{- \frac{\partial X_2}{\partial P_2} P T_{13}}{\frac{\partial X_1}{\partial P_1} (1+T_{13}) + \frac{\partial X_2}{\partial P_2} \{1+T_{13}(1+\lambda)\} + \frac{\partial X_3}{\partial P}} < 0$$

We thus have the effects of the two different tariffs in terms only of one tariff,  $T_{13}$  and the differential  $\lambda$  between that tariff and the tariff  $T_{23}$ . Equations (7.3.2) and (7.3.3) give the terms of trade gains of partners 1 and 2 respectively, but (7.3.3) must be understood to be that portion of the terms of trade gain in partner 2 yielded by the differential between her tariff and partner 1's tariff. Let us now pose the question how the price in partner 1 changes as the margin changes. We should expect to reflect the cross effects which were encountered in section 7.2. Recalling that the tariff ridden price in 1 is

$P_1 = P(1 + T_{13})$ , we can write,

$$\begin{aligned} \frac{\partial P_1}{\partial \lambda} &= \frac{\partial [P(1 + T_{13})]}{\partial P} \times \frac{\partial P}{\partial \lambda} \\ &= (1 + T_{13}) \frac{\partial P}{\partial \lambda} \\ (7.3.4) \quad \frac{\partial P_1}{\partial \lambda} &= \frac{-\frac{\partial X_2}{\partial P_2} T_{13} (1 + T_{13})}{\frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P_2} \{1 + T_{13} (1 + \lambda)\} + \frac{\partial X_3}{\partial P}} < 0 \end{aligned}$$

The price in partner 1 is negatively affected by changes in the margin  $\lambda$ . This cross effect is similar to the effects found in 7.2 between  $T_{13}$  and  $T_{23}$ . The own tariff effect in partner 1 will be positive as earlier found. The effect of the differential on partner 2's price may now be written,

$$\begin{aligned} \frac{\partial P_2}{\partial \lambda} &= \frac{\partial [P\{1 + T_{13}(1 + \lambda)\}]}{\partial \lambda} \\ &= [1 + T_{13}(1 + \lambda)] \times \frac{\partial P}{\partial \lambda} + P T_{13} \end{aligned}$$

$$\frac{\partial P_2}{\partial \lambda} = \frac{-\frac{\partial X_2}{\partial P_2} T_{13} [1 + T_{13} (1 + \lambda)] P}{\frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P_2} \{1 + T_{13} (1 + \lambda)\} + \frac{\partial X_3}{\partial P}} + P T_{13}$$

$$(7.3.5) \quad \frac{\partial P_2}{\partial \lambda} = \frac{P \left[ \frac{\partial X_1}{\partial P_1} T_{13} (1 + T_{13}) + \frac{\partial X_2}{\partial P_2} T_{13} \right]}{\frac{\partial X_1}{\partial P_1} (1 + T_{13}) + \frac{\partial X_2}{\partial P_2} \{1 + T_{13} (1 + \lambda)\} + \frac{\partial X_3}{\partial P}} > 0$$

Recalling earlier arguments regarding the signs of the excess demand partials, we conclude that the right hand side of (7.3.5) is positive. Price in partner 2 increases as the tariff differential  $\lambda$  increases and vice versa.

We now have all the price changes within the respective members of the customs union expressed with respect to the changes in the tariff differential alone. Let us now attempt to find whether we can obtain the corresponding demand and supply changes within each member expressed in terms of the partials of (7.3.3), (7.3.4) and (7.3.5). For these purposes, let,

$$\frac{\partial P}{\partial \lambda} = A_{31} < 0, \quad \frac{\partial P_1}{\partial \lambda} = A_{32} < 0, \quad \frac{\partial P_2}{\partial \lambda} = A_{33} > 0$$

We can now double-check the effects of partner 2's tariff on equilibrium quantities demanded and supplies against the results in 7.2. We have that,

$$(7.3.6) \quad \frac{\partial D_1}{\partial \lambda} = \frac{\partial D_1}{\partial P_1} \cdot A_{32} = \frac{D_1 \cdot \eta_1 \cdot A_{32}}{P_1} > 0$$

$$(7.3.7) \quad \frac{\partial S_1}{\partial \lambda} = \frac{\partial S_1}{\partial P_1} \cdot A_{32} = \frac{S_1 \cdot \epsilon_1 \cdot A_{32}}{P_1} < 0$$

$$(7.3.8) \quad \frac{\partial D_2}{\partial \lambda} = \frac{\partial D_2}{\partial P_2} \cdot A_{33} = \frac{D_2 \cdot \eta_2 \cdot A_{33}}{P_2} < 0$$

$$(7.3.9) \quad \frac{\partial S_2}{\partial \lambda} = \frac{\partial S_2}{\partial P_2} \cdot A_{33} = \frac{S_2 \cdot \epsilon_2 \cdot A_{33}}{P_2} > 0$$

$$(7.3.10) \quad \frac{\partial D_3}{\partial \lambda} = \frac{\partial D_3}{\partial P} \cdot A_{31} = \frac{D_3 \cdot \eta_3 \cdot A_{31}}{P} > 0$$

$$(7.3.11) \quad \frac{\partial S_3}{\partial \lambda} = \frac{\partial S_3}{\partial P} \cdot A_{31} = \frac{S_3 \cdot \epsilon_3 \cdot A_{31}}{P} < 0$$

where  $\eta_i$  and  $\epsilon_i$  are the price elasticities of domestic demand and supply respectively in each partner. We have the final results that even with the tariff differential alone, we obtain the directional effects of partner 2's tariff upon all the common market equilibrium domestic demands and supplies. To see this, compare the above equations with the terms pertaining to the effects of tariff  $T_{23}$  on the same variables at the end of section 7.2.

## CHAPTER VIII

### CONCLUSIONS

The major conclusions of this thesis concerning the impacts of intra-customs union tariffs are contained in chapters V, VI and VII. In chapter V, where the intra-customs union tariff is operated between only two partners constituting a customs union, the changes in the locus of production, consumption and the terms of trade, are parallel to those which occur after a tariff imposition between any two countries in international trade. Namely, price and domestic production increase in the tariff-imposing partner while the import price of the commodity and domestic consumption decrease. In the taxed partner, however, the price and domestic production decrease, while domestic consumption increases. The results are significantly modified by supply and demand price elasticities and the magnitude of changes in the terms of trade.

In chapter VI, a model is devised whereby, in a customs union of three members, the tariff-imposing member can make an approximation of the change in imports from the rest of the union after tariff imposition(s).

The more general results of intra-customs union tariffs are found in chapter VII. It is shown that the determinants of changes in production, consumption and in the terms of trade become more complex. It becomes necessary for a tax-imposing partner to consider the level(s) of taxes imposed against a given member by other members. The results show that a tariff imposition by one member against a second member may produce



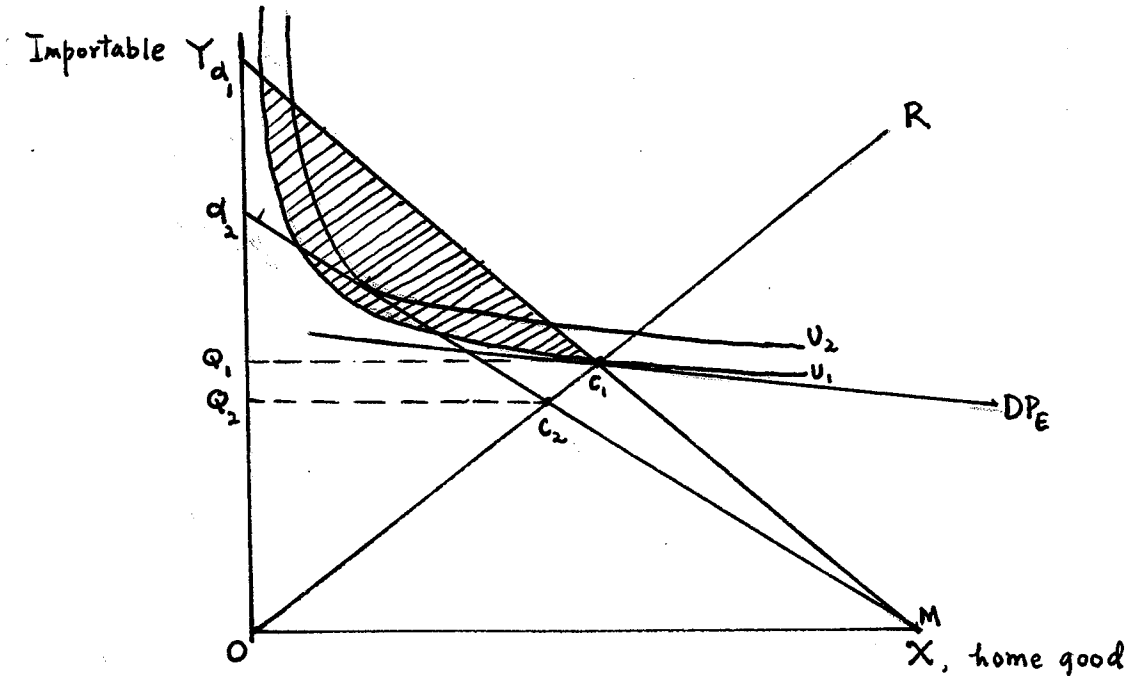
perverse effects domestically depending on a third partner's imposition of the tariff against the second member. In particular a tariff-imposing member's tariff may produce results such that post-tariff prices decrease, consumption increases and domestic supply decreases. The tariff-imposing partner may also hurt domestic industries which use the taxed product as input unless a similar tax is imposed on importations of the industries' products from the non-tax-imposing member(s).

The above results of the intra-customs union tariffs along with other supplementary results derived in chapters V, VI and VII must be understood in the light of the assumptions made concerning the partner members of the customs union. The variables with which the models operate, although significant in economic theory, are hardly the sole determinants of industrialization processes in LDCs. Domestic consumption, supplies and prices are not independent of market sizes and linkages in the national economies. The discovery of the impacts of the tariffs is made under given technology, factor endowments, transportation costs etc. for each worker and does not consider the presence of production bottlenecks. The results do not ensure that the tariffs attain the optimal second best solution in redistributing manufacturing within a common market and maintaining the union as an outlet of manufactures for LDC partners. A judgement of the optimal second-best measure can emerge only after a comparison of the efficiency-equity trade off made among alternative policy measures bearing the same objectives as the tariff. These alternatives are for instance, subsidization of industries in the less developed members or fiscal compensations.

The present thesis considers only the theoretical implications of intra-customs union tariff alternative as a means of both industrialization and international trade in manufactures by LDCs in the presence of the current barriers erected against such trade by many MDCs. The usefulness of the analysis is that it provides information concerning the economic impacts of the intra-customs union tariff alternative. This information has not heretofore been available in the comparison of the effectiveness of alternative measures to both maintain LDC common markets and impart equitable distribution of the benefits of economic integration.

APPENDIX 1

LIPSEY: COMPLETE SPECIALIZATION MODEL



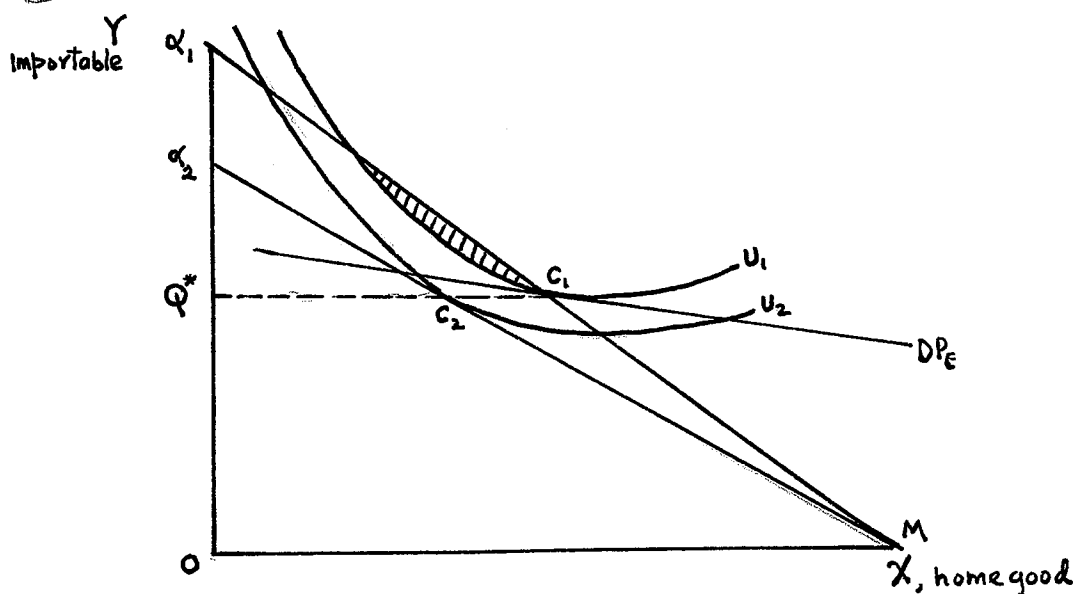
In the diagram, OR constitutes the Vinerian consumption restriction and consequently this line is both the income expansion path and the price consumption line. The international price line is  $Md_1$ , which is also the free trade terms of trade. The partner's terms of trade is  $Md_2$ . If a uniform tariff prevails before union, the domestic tariff-inclusive price ratio will be  $DP_E$  which, by virtue of fixity in consumption coefficients, revolves about  $C_1$ . But at post-CU terms of trade the equilibrium moves along OR to  $C_2$ --  $C_2 < C_1$ --so that trade diversion necessarily reduces welfare.

Now Lipsey's point is that if the consumption assumption did not hold and commodity substitution was allowed, more of the importable and less of the domestic commodity would now be consumed, so that a CU with any partner whose terms of trade pass through the shaded area would necessarily increase welfare for the country in question despite trade diversion. In the case of the potential partner offering  $M\alpha_2$  terms of trade, welfare increases such that  $U_2 > U_1$ .

But note that under the consumption assumption interpreted from Viner by Lipsey, imports fall from  $Q_1$  to  $Q_2$  if commodity substitution is not considered. This is the source of Bhagwati's analysis in Appendix 2b which shows that welfare improvement post-CU is not ruled out by the consumption assumption if production effects are considered, but that  $dM = 0$  is sufficient to ensure that a trade diverting CU will necessarily reduce welfare if production effects are taken into account.

APPENDIX 2a

BHAGWATI: COMPLETE SPECIALIZATION AND RATE OF CHANGE  
 IN IMPORTS HELD CONSTANT ( $dM = 0$ )



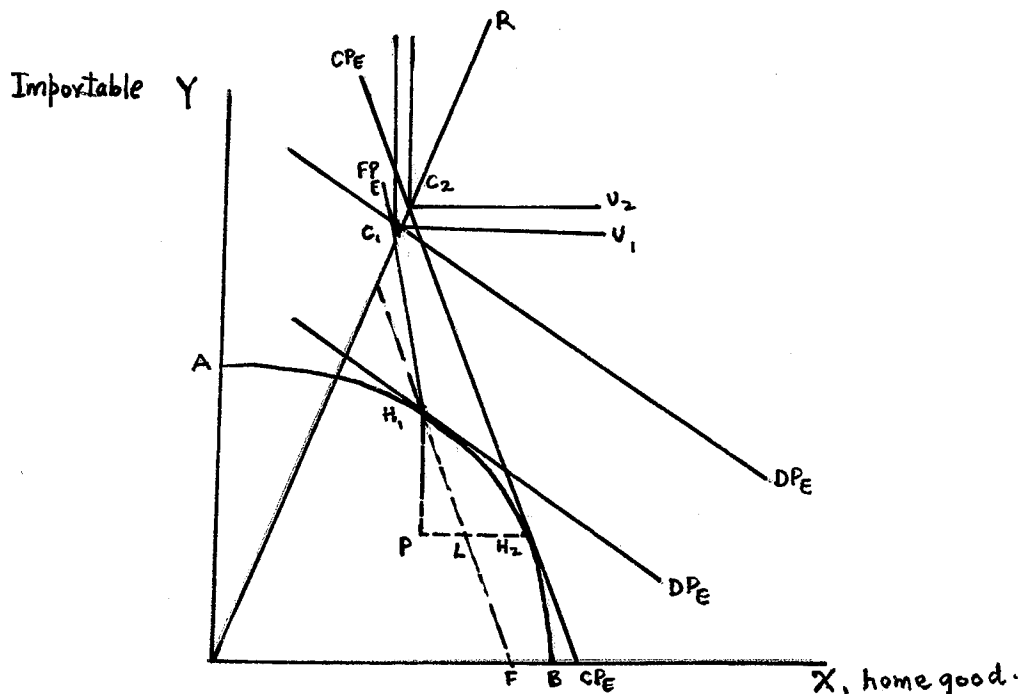
Bhagwati's model reproduces the Vinerian conditions but discards the fixity in consumption coefficients, restoring instead the condition  $dM = 0$ . Thus, when the uniform tariff-inclusive price ratio  $DP_E$  changes as a result of a CU with a partner whose terms of trade are  $M\alpha_2$ , holding imports constant yields the same outcome as the consumption assumption considered by Lipsey; i.e. it is a sufficient condition for a trade diverting CU to also reduce welfare-- $C_2 < C_1$ .

The shaded area (which, in Lipsey's analysis, would be a source of welfare gains in CU with some partners, but is ruled out by the consumption assumption) is here ruled out solely by the condition  $dM = 0$ .

APPENDIX 2b

BHAGWATI: RELAXATION OF THE FIXED COEFFICIENTS IN PRODUCTION ASSUMPTION  
AND PROOF THAT THE LIPSEY CONDITION IS INSUFFICIENT

FOR TRADE DIVERSION TO  
NECESSARILY LOWER WELFARE



Before CU, the country has a non-prohibitive uniform tariff

which places a tariff-inclusive price ratio  $DP_E$  between X and Y.

Domestic production of  $H_1$  of the importable Y is augmented with imports at free trade prices. The free trade price line is  $FP_E$  and consumption takes place at  $C_1$ . The external price line and the domestic price line are brought into equality here by the tariff. OR is once again the fixed price consumption and income expansion line.

Let the terms of trade line offered by a CU partner be  $CP_E$ .

Now after CU, the price ratio between X and Y changes to  $CP_E$ . Domestic production of the importable is reduced along the transformation curve and the commodity mix is reflected by point  $H_2$ . This movement involves re-allocation of resources from Y to X. This quantity of resources, in terms of the home good X, is the horizontal distance between L and  $H_2$  or  $FCP_E$ . Since the domestic rate of transformation between the two commodities is equalized with the CU price ratio we have that, in CU price line,  $PH_1 \equiv PH_2$ .

Note that now, with the less steep  $CP_E$  price ratio, and under the fixity of coefficients in consumption assumption, line OR, the country now consumes the importable Y and the domestic good X at a higher point on the consumption path.

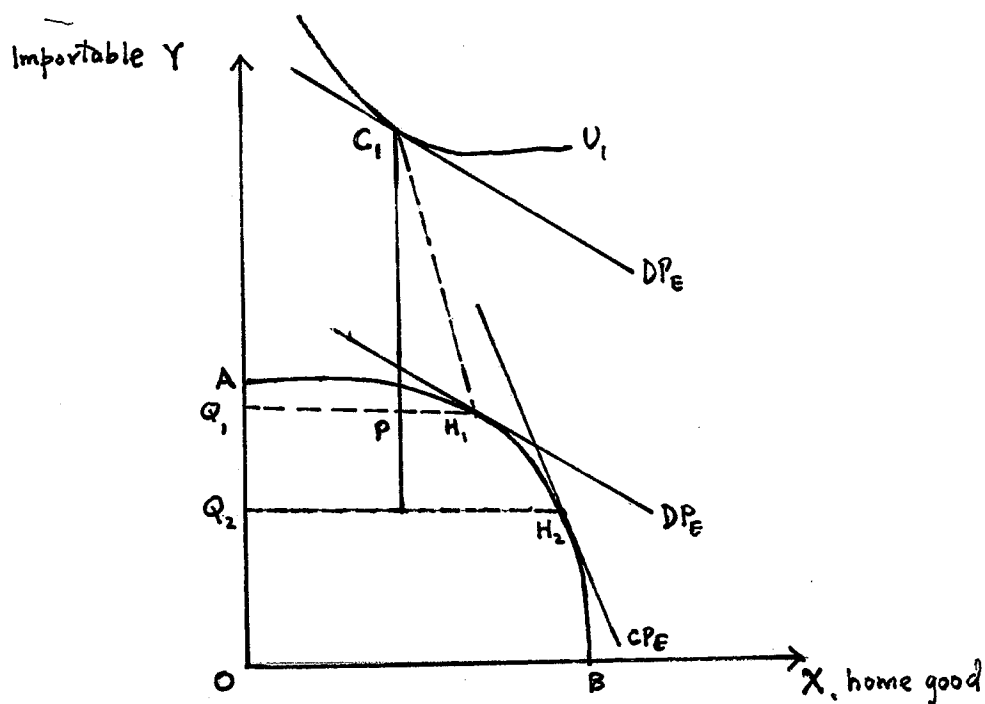
$$\text{Thus: } C_2 > C_1$$

and the price ratios of Y to X stand in the relation

$$DP_E > CP_E > FP_E.$$

The essential proff against Lipsey's assumption is tha despite the retention of the fixity in consumption coefficients assumption (which to Lipsey is sufficient for trade diversion to bring a necessary welfare loss) an increase in welfare is shown to be consistent with a trade diverting CU.

Let us now examine the outcome if the condition  $dM = 0$  is imposed.



In the above diagram, CU formation improves the price ratio from the tariff inclusive  $DP_E$  to the CU terms of trade line  $CP_E$ . Production shifts from  $H_1$  to  $H_2$  implying a reduction  $Q_1 Q_2$  in domestic supplies of the importable Y. The pre-CU domestic supplies of Y are augmented with foreign supplies  $C_1 P$  at free trade price ratio, but equalized with the domestic tariff-inclusive price ratio, so that the highest community indifference curve reached is  $U_1$ .

Now, post-CU reduction in domestic supplies of Y,  $Q_1 Q_2$  should, ceteris paribus, call forth increased imports. But, Bhagwati argues, if the condition  $dM = 0$  holds, then domestic consumption must be decreased by an equal amount to  $Q_1 Q_2$ . In the circumstances, the CU price ratio  $CP_E$  can never extend to a point beyond  $C_1$  and be tangential



to a higher indifference curve. In this case fixity of imports provides a sufficient condition for a trade diverting GU to lead to welfare loss.

## BIBLIOGRAPHY

- Balassa, B. (1965) "Tariff Protection in Industrial Countries; An Evaluation," Journal of Political Economy, 73: 573-94.
- Bhagwati, J. (1971) "Trade-Diverting Customs Unions and Welfare Improvement, A Clarification," Economic Journal, pp. 580-87.
- Bloch, H. (1974) "Prices, Costs and Profits in Canadian Manufacturing: The Influence of Tariffs and Concentration," Canadian Journal of Economics (Nov. 1974), vol. VII, No. 4, pp. 595-610.
- Bruton (1970) "The Import Substitution Strategy of Economic Development," Pakistan Development Review (summer 1970), vol. X.
- Chenery, H. B. "Industrialization and Trade Trends: Some Issues for the 1970s," in Helen Hughes, ed., op. cit., pp. 3-39.
- Cooper and Massell (1965) "Towards a General Theory of Customs Unions for Developing Countries," Journal of Political Economy (Oct. 1965), pp. 461-76.
- East African Community (1967) Treaty for East African Co-operation. Nairobi: Government Printer.
- East African Customs and Excise (1965-1973). Annual Trade Reports of Tanzania, Uganda & Kenya.
- Findlay, Ronald (1970). Trade and Specialization. Middlesex, England: Penguin Books.
- \_\_\_\_\_ (1973). International Trade and Development. New York: Columbia University Press.
- GATT, "Basic Instruments and Selected Documents," vol. I, Part III, Article XXIV, section 8(a).
- \_\_\_\_\_ (1971). International Trade, 1970. Geneva.
- Gehrels, F. "Customs Unions from a Single-Country Viewpoint," Review of Economic Studies (1956-57.), vol. 24 (1), no. 63.
- Haberler, R. (1961) "Terms of Trade and Development," in Economic Development of Latin America, Howard G. Ellis, ed.

- \_\_\_\_\_ (1964). International Trade and Development. London:
- Hagen, E. (1958) "An Economic Justification of Protectionism,"  
Quarterly Journal of Economics (Nov. 1958), 72: 496-514.
- Hazlewood, Arthur ed. (1967), African Integration and Disintegration.  
Oxford: Oxford University Press.
- \_\_\_\_\_ (1971/72) "Inter-State Trade in Transfer-Taxes Manufactures,  
1967-1970," Economic and Statistical Review (March 1972), no. 40.  
and 42.
- \_\_\_\_\_ (1973). "State Trading and the East African Customs Union,"  
Oxford Bulletin of Economics & Statistics (May, 1973).
- \_\_\_\_\_ (1975). Economic Integration: The East African Experience.  
London: Heinemann.
- Hirschmann, A. (1958) The Strategy of Economic Development. New Haven:  
Yale University Press.
- Hughes, Helen, ed. Prospects for Partnership: Industrialization and  
Trade Policies for the 1970s. IBRD.
- Johnson, H. (1960) "The Cost of Protection and the Scientific Tariff,"  
Journal of Political Economy (August 1960). 68:327-45.
- \_\_\_\_\_ (1965) "An Economic Theory of Protectionism, Tariff Bargaining  
and the Formation of Customs Unions," Journal of Political  
Economy (June 1965), pp. 256-82.
- Kenya, Republic of. Statistical Abstracts, 1973.
- Krauss, B. (1972) "Recent Developments in Customs Union Theory,"  
Journal of Economic Literature (June 1972).
- Lewis, W. A. (1954) "Economic Development with Unlimited Supplies of Labor,"  
Manchester School of Economic Social Studies (May 1954), vol. 22.
- Linder, S. B. (1961) An Essay on Trade and Transformation. New York:  
John Wiley.
- Lipsey, R. G. (1957) "The Theory of Customs Unions, Trade Diversion  
and Welfare," Economica, pp. 40-46.
- \_\_\_\_\_ (1960) "The Theory of Customs Unions: A General Survey,"  
Economic Journal 70: 496-513.

- \_\_\_\_\_ (1970) The Theory of Customs Unions: A General Equilibrium Analysis. London: Wiedenfield & Nicolson.
- Little, Scitovsky, and Scott (1970) Industry and Trade in Some Developing Countries; A Comparative Study. Organization for Economic Co-operation and Development, Oxford University Press.
- Meade, J. (1956) The Theory of Customs Unions. Amsterdam: North-Holland Publishing Co.
- Meier, G. (1958) "International Trade and International Inequality," Oxford Economic Papers, vol. 10, no. 3, pp. 277-89.
- Melvin (1969) "Comments on the Theory of Customs Unions," The Manchester School (June 1969), 39: 161-68.
- Myint, H. (1958) "The Classical Theory of International Trade and the Underdeveloped Countries," Economic Journal, 68: 317-37.
- \_\_\_\_\_ (1969) "International Trade and the Developing Countries," in P. A. Samuelson, ed. International Economic Relations. London: Macmillan.
- Myrdal, G. (1956) An International Economy. New York: Harper & Row.
- \_\_\_\_\_ (1957) Economic Theory and the Underdeveloped Regions. London: Duckworth.
- Nixson, F. (1973) Economic Integration and Industrial Location. London: Longmans.
- Nurkse (1953) Problems of Capital Formation in Underdeveloped Countries. London: Blackwell.
- Ohlin, Goran. Comment in Helen Hughes (ed.) op. cit., pp. 32-34.
- Power, J. (1972) "The Role of Protection in Industrialization Policy with Reference to Kenya," Eastern African Economic Review (June 1972), 1:4.
- Prebisch, R. (1950) The Economic Development of Latin America and its Principal Problems, ECLA, United Nations.
- \_\_\_\_\_ (1951) Economic Survey of Latin America: 1949. United Nations.
- \_\_\_\_\_ (1959) "Commercial Policy in Underdeveloped Countries," American Economic Review, vol. 45, no. 3.

- Raisman (1961). Raisman Report.
- Ricardo, David, On the Principles of Political Economy and Taxation. London: J. Murray, 1817.
- Robertson, D. H. (1954) Britain in the World Economy. London: Allen & Unwin.
- Samuelson, P. (1939) "The Gains from International Trade," Canadian Journal of Economics and Political Science, (May, 1939), vol 5.
- \_\_\_\_\_ (1964). "The Gains from International Trade Once Again," Economic Journal (Dec. 1964), vol. 74.
- Seton, F. "Productivity, Trade Balance and International Structure," Economic Journal (Dec. 1956), 66:
- Singer, H. (1968) "The Distribution of Gains between Investing and Borrowing Countries," in J. D. Theberge. New York: J. Wiley & Sons.
- Snider, D. (1958) Introduction to International Economics. Homewood, Illinois: Richard Irwin.
- Spraos, J. (1964) "The Condition for a Trade-Creating Customs Union," Economic Journal (March 1964). 74:101-108.
- United Nations (1963) World Economic Survey 1962: The Developing Countries in World Trade. New York.
- \_\_\_\_\_ (Committee for Development Planning), (1972) Attack on Mass Poverty and Unemployment. Doc. E/AC 54/L. 50, March 9, 1972.
- UNCTAD Secretariat (1971) Review in Trade in Manufactures of Developing Countries. Doc. TD/111, Dec. 20, 1971.
- \_\_\_\_\_ (1972) Commodity Problems and Policies: Access to Markets. Doc. TD/115, Jan. 27, 1972.
- Viner, J. (1950) The Customs Union Issue. New York: Carnegie Endowment for International Peace.
- \_\_\_\_\_ (1953) International Trade and Economic Development. Oxford: Oxford University Press.
- \_\_\_\_\_ (1962) International Trade: Theory and Economic Policy. Homewood, Illinois: Richard Irwin.
- Williamson, J. G. (1965) "Regional Inequality and the Process of National Development; A Description of the Pattern," Economic Development and Cultural Change.