CHAPTER 2
THEORIES OF PREFERENTIAL TRADE ARRANGEMENTS: A SURVEY

The literature on preferential trade arrangements has mainly been concentrated under the narrow heading of Custom Union. A customs union is a preferential arrangement under which trade among member countries faces no barriers and the members have a common external tariff (CET). In this chapter we concentrate on the theoretical evolution of the literature on preferential trade arrangements. Section 2.1 discusses the pre-Vinerian and Vinerian views of preferential trade arrangements. Section 2.2 analyzes the Meade-Vanek-Lipsey three goods model. Section 2.3 discusses problems with two and three aggregate analysis and then discusses the ideal level of aggregation. Section 2.4 studies the welfare implications of a common external tariff and external terms of trade and finally in Section 2.5 some broad conclusions are reached.

2.1.1 Vinerian and Pre-Vinerian Theory

Before Viner (1950) the literature on the theory of Customs Union or any kind of preferential trade arrangements was very limited. The main works were those of List (1885), Gregory (1921), Haberler (1936) and Beers (1941). A systematic body of literature on the theory of customs unions started to come out only after the pioneering works of Viner (1950), The Customs Union Issue. Haberler (1936) noted that "Customs unions are always to be welcomed ..... the economic advantage of customs unions can be proved by the theory of comparative costs". Viner (1950) challenged the early view that customs unions represent a move towards the right direction and that it represents a welfare gain vis-a-vis the pre-customs union situation.
He introduced the key concepts of trade creation and trade diversion and demonstrated that a customs union increases welfare to the extent it creates trade by diverting demand from higher cost domestic to lower cost partner products and decreases welfare to the extent it diverts trade from lower cost foreign to higher cost partner sources. The lack of a precise specification of the analytical model underlying Viner's discussion stimulated further research\textsuperscript{2,3}.

2.1.2 Lipsey and Bhagwati Analysis: Two Commodity Framework

Lipsey (1957, 1960), showed that a trade diverting customs union could lead to welfare improvement once substitution in consumption was allowed. It was argued that Viner over-looked the possibility of substitution in consumption and had (implicitly) assumed consumption to be of fixed proportions (Bhagwati 1971)\textsuperscript{4}. But it is now understood that even a fixed proportion in consumption is not a sufficient condition for a trade diverting customs union to be welfare reducing. This is because while trade diversion rules out consumption gains to offset the terms of trade loss, variability in production can also be a source of gain. The sufficient condition for a trade-diverting customs union to be welfare reducing is that the level of imports is fixed, and not that the pattern of consumption is fixed as shown by Bhagwati (1971) in a general equilibrium framework.

This result of Lipsey and Bhagwati can be shown in the framework of Bhagwati (1971). Assume that the home country specialises on commodity X at A and faces an external terms of trade of AE (Figure 2.1). The pre customs union equilibrium is at $C_1$ as the tariff inclusive price line is $DPE$, with an import level of $OQ_1$ of commodity Y, and the welfare level is given by $U_1$. After the customs union the tariff will be eliminated on goods from the partner country and since the partner is a costlier source of commodity Y (the internal and external price ratio given by
AP), the new equilibrium will be at $C_2$ implying an import level of $OQ_2$. Thus, at $C_2$ a higher level of welfare is achieved since $U_1 < U_2$. Lipsey had shown that, if AP passes through the shaded area the customs union would raise welfare, though the movement was trade diverting.

Viner had, however, ruled out this possibility without making any explicit assumption. Lipsey argued that this is so because Viner implicitly assumed that consumption would be characterised by fixed coefficients i.e. along the line $OC_1R$ in figure 2.1, which in turn implies that $U_2 < U_1$. Bhagwati (1971) cast doubt on this interpretation of Viner, as this requires that the level of imports be reduced, which does not match with Viner’s arithmetical example. In the example Viner kept the level of imports after the formation of the customs union at the same level as before the union. Thus Bhagwati argued the correct interpretation of Viner would be that the level of imports ($M$) should be constant as illustrated in figure 2.3.

Moreover, Lipsey’s restriction of fixed proportions in consumption is not a sufficient condition for trade a diverting customs union to be welfare reducing if the more general case of variable production rather than of fixed production is assumed. Consider figure 2.4, AB is home country’s production possibility frontier (PPF). Before the formation of a customs union the home country levies a uniform tariff on imports of $Y$ when the international price ratio is $H_1C_1E$. The home country produces at $H_1$ at the tariff inclusive price ratio of $DP_e$ and consumes at $C_1$ [along the ray $OWC_1C_2R$, since fixity of consumption pattern is assumed]. After the customs union the tariff on imports from the partner is eliminated and the production points shifts to $H_2$, at the tangency of the PPF to the partner price ratio $KH_2C_2P$. The equilibrium consumption point is $C_2$, along the ray of $OWC_1C_2R$ implying a higher level of welfare ($U_2 > U_1$).

Bhagwati argued that Lipsey’s interpretation of Viner implies imports be reduced as in
figure 2.2 from OQ₁ to OQ₂. The reason is very obvious. Because trade diversion, in the sense of a shift of imports to a higher cost source of supply, implies a terms of trade loss. The counteracting force on the other hand, is that the price-ratio facing domestic consumers and producers moves closer to the true (least cost) international price ratio which leads to a consumption gain and a production gain respectively. Thus, the net effect depends upon the extent of terms of trade loss vis-a-vis consumption and production gain. Lipsey’s assumption of fixed coefficient in consumption rules out the possibility of consumption gain leaving open the accrual of a production gain which could outweigh the terms of trade loss. Ruling out of substitution possibilities in both production and consumption ensures that a trade diverting customs union will be welfare reducing.

Consider figure 2.5. The PPF is AHB with a kink at H (implying that resources are immobile from sector to sector). The consumption pattern is fixed along the ray OR. In this case the post union consumption must be at C₂, which is necessarily below C₁ for a trade diverting customs union and hence necessarily U₁ > U₂.

The alternative sufficient condition that ensures that a trade diverting customs union would be welfare reducing is that the level of imports is fixed as is illustrated in figure 2.6. A trade diverting customs union would shift domestic production (H₁ to H₂) as production of importable would decrease by Q₁Q₂, and imports would increase. Now to hold the level of imports fixed, consumption of the importable good has to fall by the same amount as the decrease in domestic production. This restriction would however, prevent the price ratio of the partner country H₂P from crossing over to the north-east of C₁ which in turn implies that the social indifference curve tangential to H₂P cannot be higher than U₁ - hence welfare improvement
would be ruled out. Thus, intuitively the weak condition for a trade diverting customs union to be welfare reducing is $dM \leq 0$.

The above analyses are in a two commodity framework and the results depend on a number of assumptions. In the main these are, neither good is inferior and the flows of trade do not cease or are not reversed. This kind of analysis has at least two limitations: first, it assumes that there is no trade between the partner country (B) and the rest of the world (C) so that there is an asymmetry in the potential union; secondly, it assumes not only C but also B is a large country providing A with a given price ratio.

Vanek (1965) made it clear that there are two possibilities in a three-country-two-good model. Either the two partners A and B do not trade with each other but export the same product to country C (i.e. they are similar) or they trade with each other and only one of them trades with C (they are dissimilar). If they are similar, and if they keep their external tariff unchanged on imports from C, the formation of a customs union will have no effect. There is neither a trade creation nor a trade diversion. In this case, only the common external tariffs and how these compares with the initial tariffs will matter.

A relation of complementarity in demand can arise only in a model with at least three commodities. Welfare effects of a customs union in the three commodity framework were introduced by Meade (1955) and extended by Vanek (1965, Appendix) and Lipsey (1970).

2.2.1 The Three Goods Meade-Vanek-Lipsey Model

In this section we analyze a model with three countries and three goods, the Meade-Vanek-Lipsey model as developed by McMillan and McCann (1981). It is assumed that each of A, B and C produces one commodity and imports two. Now suppose both A & B import Z from
country C. A and B are small so that world prices of X, Y and Z \( (P_x^w, P_y^w, P_z^w \text{ respectively}) \) are unaffected by A & B’s action, world prices are determined by C. Let tariff rates applicable to all imports to A before the customs union be \( t_z > 0 \). After the customs union the tariff rate on Z remains unchanged at \( t_z \) but the tariff rate applicable to imports from B i.e. on good Y is reduced to \( t_y \). Therefore, post union domestic prices in A are:

\[
\begin{align*}
P_x^a &= P_x^w \quad \text{(2.1)} \\
P_y^a &= \left( 1 + t_y \right)P_y^w \quad \text{(2.2)} \\
P_z^a &= \left( 1 + t_z \right)P_z^w \quad \text{(2.3)}
\end{align*}
\]

Assume that consumers’ tastes are represented by a strictly quasi-concave utility function \( U(X,Y,Z) \). Then country A chooses \( t_y \) (which by equation 2.2 is the same as choosing \( P_y^a \)) so as to maximise its utility subject to the constrains (2.1) and (2.3) and to the following balance of trade constraint:

\[
P_x^wX + P_y^wY + P_z^wZ = P_x^wS \quad \text{(2.4)}
\]

Where \( S \) is A’s total output of its exportable commodity. This is constant because of the assumption of linear production possibility frontier and production specialisation. The expenditure function \( E(P_x^a, P_y^a, P_z^a, u) \) shows the minimum expenditure necessary at domestic prices to achieve a given level of utility \( u \). \( E \) is a concave, twice differentiable continuous function and is non decreasing with respect to prices. The partial derivatives of \( E \) with respect to \( P_x^a, P_y^a \) and \( P_z^a \) are the Hicksian compensated demand function for X, Y and Z respectively.

The balance of trade constraint can be written as

\[
P_x^wE_x + P_y^wE_y + P_z^wE_z = P_x^wS \quad \text{(2.5)}
\]

where \( E_x, E_y \) and \( E_z \) are compensated demand functions of X, Y and Z respectively. By total differentiation of equation (2.5) with respect to \( P_y^a \)(control variable of A) we get
Since demand functions are homogeneous of degree zero by applying Euler’s Theorem, we can write:

\[ p_x^*E_{xy} + p_y^*E_{yy} + p_z^*E_{yz} = 0 \] ...........................(2.7)

Using (2.1), (2.2) and (2.3), equation (2.6) can be written as the following

\[ p_x^*E_{xy} + (p_x^*E_{ux} + p_y^*E_{uy} + p_z^*E_{uz})(du/Dp_y^*) = -[p_x^*E_{xy} + p_y^*E_{yy}] \]

Substituting (2.1), (2.2) and (2.3) in equation (2.7) we get

\[ p_x^*E_{xy} + (1 + t_y)p_y^*E_{yy} + (1 + t_y)p_z^*E_{yz} = 0 \]

or,

\[ p_x^*E_{xy} = [p_x^*E_{xy} + (1 + t_y)p_y^*E_{yy}]/(1 + t_y) \] ...........................(2.8)

Substituting (2.8) in (2.6) we get

\[ du = \frac{-[t_y p_x^*E_{xy} + (t_y - t_x)p_y^*E_{yy}]}{(1 + t_y)(p_x^*E_{ux} + p_y^*E_{uy} + p_z^*E_{uz})} \] ...........................(2.9)

A number of propositions follows from this equation. The term, \((p_x^*E_{ux} + p_y^*E_{uy} + p_z^*E_{uz})\), of the denominator of equation (2.9) can be written as \(\delta(P_x^*X + P_y^*Y + P_z^*Z)/\delta u\), which is nothing but the rate of increase with respect to \(u\) of the minimum expenditure at world prices to achieve the utility level \(u\). This term must be strictly positive and hence the denominator would be strictly positive.

In the numerator of equation (2.9), the term \(E_{yy}\) is negative (since \(E_{yy}\) is the derivative with respect to \(P_y^*\) of the compensated demand for good \(Y\) i.e., slope of the compensated demand curve). \(E_{xy}\), the derivative with respect to \(P_y^*\) of the compensated demand for good \(X\) may be positive, zero or negative as commodity \(X\) is a net substitute, independent or a net complement.
for commodity Y. Therefore, it is the Hicksian substitution relations between commodities that determines whether a customs union will be beneficial or not.

2.2.2 Welfare Implications:

When is a customs union involving small tariff changes beneficial? The following propositions may be derived from the above analysis.

**Proposition 1:** A small reduction in tariff on good Y increases country A's welfare if and only if commodity X is a net substitute for commodity Y.

**Proof:** Before the union, A imposed a uniform tariff on both Z and Y. Therefore, putting $t_Y = t_Z$ in equation (2.9)

$$du/Dp_y \leq 0 \text{ as } E_{xy} \geq 0 \quad \text{............................(2.10)}$$

**Proposition 2:** The second best optimum tariff on Y is less than the fixed tariff on Z if and only if commodity X is a net substitute for commodity Y.

**Proof:** Putting $du/Dp_y = 0$ in equation (2.9) we get

$$-[t_x P_x E_{xy} + (t_y - t_Z) P_y E_{yy}] = 0$$

or $$(t_y - t_Z) = -(t_x P_x E_{xy})/(P_y E_{yy}) \quad \text{............................(2.11)}$$

Thus, $t_y \geq t_Z$ as $E_{xy} \geq 0 \quad \text{............................(2.12)}$

This result is independent of the nature of commodity Z and is independent of such variables as the size of the tariff with the rest of the world and the relative volumes of trade with the partner and the rest of the world.

**Proposition 3:** Free trade within the union is optimal if and only if the commodity imported from the partner country is neither a net complement nor a net substitute for the commodity imported from the rest of the world.

**Proof:** Meade (1955, P-110) and Lipsey (1970, P-38) pointed out that given the distortion of the fixed tariff on Z, free trade within the union will usually not maximise welfare; a partial customs union is usually preferable to a complete customs union. A necessary and sufficient condition for that can be derived by solving equation (2.11) for $t_y$ and using (2.1) and (2.2)
If the customs union is beneficial then \( E_{xy} > 0 \) i.e., commodity \( X \) is a net substitute for commodity \( Y \) (in the Hicksian sense). Now under such a situation since \( E_{yy} < 0 \), the denominator cannot be zero. The numerator by equation (2.7) is equal to \( -t_x P_x^* E_{xy} \). Therefore, \( t_y = 0 \) if and only if \( E_{xy} = 0 \). Hence proposition 3.

It also follows from equation (2.13) that if \( Y \) is a net substitute for \( X \) and \( Y \) is a net complement of \( Z \), then \( t_y \) is negative; i.e., country A should subsidise \( Y \). On the other hand if \( Y \) is a net substitute for \( Z \) and \( X \) is a net substitute for \( Y \), country A’s tariff on trade with B should be greater than zero but less than the tariff with the rest of the world.

The analysis for country B is symmetrical with that for A. Elementary calculus says that \( E_{xy} = E_{yx} \), i.e. \( X \) is a net substitute for \( Y \) if and only if \( Y \) is a net substitute of \( X \). As long as the utility functions in A and B are identical or at least similar so that condition for goods \( X \) and \( Y \) being net substitute holds the condition for B’s gain from customs union is the same as for A. Thus country A gains from customs union if and only if country B also gains.

This result contrasts with the standard 2 commodity 3 country model (as in Kemp 1969, p - 33, 72). There, the customs union benefits only country B and makes A worse off before compensation. Clearly this asymmetry of gains reflects the asymmetry of the trade pattern in the two goods model.

The greatest limitation in the two goods model is that one can not simultaneously have Vinerian trade diversion/trade creation effects and also have trade by both partners with the rest of the world. The three goods Meade model on the other hand has just the opposite virtues.
It does not have any intra-union terms of trade effect and the orthodox trade diversion effects have been replaced by the actual import pattern (no country has the potential of importing an identical product from more than one source. Collier (1979) has discussed at length the issue of choosing the appropriate model.

Collier (1979) showed that the Vinerian effects of the formation of a customs union are a subset of a wider class of effects. In the existing taxonomy developed by Gehrels (1956), Lipsey (1957, 1960 and 1970) the full schema of effects due to the formation of a customs union are (i) inter-country substitution; which may lead to trade creation and/or trade diversion and that would have an impact on production and consumption, (ii) inter-commodity substitution in consumption and production and (iii) the effect of terms of trade changes with the rest of the world. Collier argued that inter-country substitution is a superfluous concept as in the vast majority of cases production and consumption effects can be expressed as inter-commodity substitution. Inter-country substitution comes into relevance when a particular commodity ceases to be imported from its original sources and is instead imported from the union partner. But empirically this is a rare occurrence. Thus, it is better to assume that (when A and B are union partners and C the extra union country) A’s imports from B are never identical to imports from C rather than assuming that they are always identical to imports from C. The former assumption is made in the three commodity world while the later is implicit in the two goods model. The changes in the sources of production can be represented as inter-commodity substitution simply by disaggregating the commodity set. The existing literature starts with a given level of aggregation and then determines the relative price changes which can occur and hence the welfare effect. Collier argued that this sequence is invalid. The correct sequence is to start with
potential relative price changes which a customs union might give rise to and hence determine
the level of aggregation.

2.3.1 The Two-Aggregate Analysis:

In the two good aggregate framework only two outcomes are possible, either A ceases to
trade with C or B ceases to trade with C. The price changes which take place in A and B as a
result of customs union are summarised in Table 2.1.

Table 2.1
Price Changes with Two Commodity Aggregates

<table>
<thead>
<tr>
<th>Goods</th>
<th>Pre-union Price</th>
<th>Post Union Prices in A and B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in A</td>
<td>in B</td>
</tr>
<tr>
<td>X</td>
<td>1+t_{AX}</td>
<td>1+t_{BX}</td>
</tr>
<tr>
<td>Y</td>
<td>1+t_{AY}</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: @ A and C export X to B in exchange for Y and # B and C export Y to A in exchange
for X. Table adapted from Collier (1979).

Scenario 1: When B ceases to trade with C, A experiences a deterioration in its terms of trade
equal to the height of its tariff on that proportion of imports supplied by B. The reason is
simple. If the union keeps unchanged the tariff rate, that A used to impose on imports of Y, the
relative prices faced by consumers and producers in A remain unchanged but A’s terms of trade
deteriorates. Prior to union domestic price of one unit of import was 1+t_{AY} while the opportunity
cost was unity as the tariff revenues were redistributed. But after the union since B pays no duty
on exports to A the domestic price of Y in A coincides the opportunity cost of Y. On the other
hand the opportunity cost of a unit of Y supplied by C remains at unity as long as the union
follows the practice of allotting to each member nation the tariff revenue paid by its consumers.

**Scenario 2:** Analogous to scenario 1, if A ceases to trade with C then A experiences an improvement in its terms of trade equal to the height of the union tariff on X.

Thus, it follows from scenario 1 and 2 that, since in this model the terms of trade effects are liable to swamp the other effects, from a single country point of view, it would seem that the major condition for welfare gain from the union is that A's volume of trade must be smaller than B's volume of trade prior to the customs union, since A's export good will become the import of the union.

### 2.3.2 The Three Commodity Aggregate Model:

Assume that the three aggregates are X, Y and Z, which are exports of A, B and C respectively. The price changes that would take place in the three aggregate framework are summarised in Table 2.2. In the three aggregate model three outcomes are possible.

<table>
<thead>
<tr>
<th>Good</th>
<th>Pre Union price in</th>
<th>Post Union Price in A and B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>1+t_{Bx}</td>
</tr>
<tr>
<td>Y</td>
<td>1+t_{Ay}</td>
<td>1</td>
</tr>
<tr>
<td>Z</td>
<td>1+t_{Az}</td>
<td>1+t_{Bz}</td>
</tr>
</tbody>
</table>

*Table 2.2 adopted from Collier (1979).*
Case 1: when A continues to export X to C as well as B and B continues to export Y to both C and A, there would be no change in A:B terms of trade. Both X and Y will continue to be traded by A and B at their constant world prices since these are prices paid by C. But within A good Y becomes cheaper relative to other goods. Thus through substitution and income effect consumption in A switches out of X and Z to Y. Similarly production in A also switches out of Y into X and Z. The net effect will depend upon the following four substitution effects - substitution in consumption by Y of X and Z and substitution in production of Y by X and Z.

Case 2: When A continues to export X to C as well as B, B continues to export Y to A but ceases to export to C. Under this circumstance, if union tariff rates on Y and Z are the same as A’s tariff prior to customs union then A’s consumers experience no price changes as a result of the customs union. Thus, there will be no shift in production nor any shift in consumption arising from substitution effects. The sole welfare effect on A is a terms of trade loss equal to the loss of tariff revenues upon imports from B. Hence, the overall change in the pattern of consumption is solely determined by the relative income elasticities of the three goods.

Case 3: B continues to export Y to C as well as to A and A continues to export to B but ceases to export to C. This implies that the union exports Y in return for X and Z. Domestic price in A of Y falls by the extent of tariffs on Y and the domestic price in A of X rises by the extent of B’s tariff on X. These produce both a terms of trade gain for A and a shift in pattern of consumption and production. This is nothing but a shift from X to Z and the shift from X to Y is of greater magnitude. Both of these effects are due to the fall in domestic prices of Y. The fall in the prices of Y implies a terms of trade gain on all of A’s pre-union imports. The shift in consumption out of X increases the volume of A’s exports and secures an additional welfare
gain equal to the product of reduction in consumption of X and the price increase, minus the consumer surplus on the consumption of X foregone.

2.3.3 The Ideal Level of Aggregation

The ideal level of aggregation could be a case in which there will be some goods which both A and B continue to supply to C, there would be goods which A supplies to B but not to C and there will be some goods which B supplies to A but not to C. This kind of specification can be accommodated in a model with five aggregates - these are

- $X_1$ goods which A exports to both B and C
- $X_2$ goods which A exports only to B
- $Y_1$ goods which B exports to both A and C
- $Y_2$ goods which B exports only to A and
- $Z$ goods which are imported by both B and A from C.

The domestic price changes in as a result of a customs union between A and B are the following:

i) price of $X_1$ does not change
ii) price of $X_2$ rises by the extent of B's tariff
iii) price of $Y_1$ falls by the extent of A's tariff
iv) price of $Y_2$ does not change because the elimination of A's tariff is offset by an increase in B's supply price and
v) price of $Z$ does not change.

It could be deduced from the above that consumption shifts in favour of $X_1$ but against $X_2$. Consumption shifts in favour of $Y_1$ but against $Y_2$ and also there would be a shift in consumption in favour of $Z$. Shift in consumption from $X_2$ to $Y_1$ is of greater magnitude than that from $X_2$ to $X_1$ and $Z$. Similarly shift in consumption from $Y_2$ to $Y_1$ would be of greater magnitude compared to shift from $Y_2$ to $Z$. Needless to say the nature of production shift would be just the opposite.

The net effect depends on the combination of the above shifts, a complex income effect($\alpha$),
which may be positive or negative and any complementarities. The condition under which a commodity aggregate increases its share of consumption are:

For $X_1$: $\Gamma X_1 X_2 - \Gamma X_1 Y_1 > \alpha (1-Y_1)$ .....................(i)

$X_2$: $\Gamma X_2 - \Gamma X_2 Y_1 > \alpha (1-Y_2)$ ...................(ii)

$Y_1$: $\Gamma Y_1 X_2 - \Gamma Y_1 > \alpha (1-Y_2)$ ..................(iii)

$Y_2$: $\Gamma Y_2 X_2 - \Gamma Y_2 Y_1 > \alpha (1-Y_2)$ ...................(iv)

$Z$: $\Gamma ZX_2 - \Gamma ZY_1 > \alpha (1-Z)$ ....................(v)

Where $\Gamma$ is own price elasticity.

Thus, Collier (1979) is a very good exposition of the fact that the level of aggregation of the commodity set should be an independent part of the analysis. Orthodox Vinerian analysis that starts with a priori chosen level of aggregation is a mis-specification which lies at the heart of the inadequacy of the traditional taxonomy of welfare.

Berglas (1979) is the most comprehensive customs union model since Kemp (1969). Berglas argued that the Vinerian type of partial equilibrium approach frequently used may be misleading and the problems of a customs union should be analyzed in a general equilibrium framework. The modern formulations of this approach e.g. Vanek (1965) and Kemp (1969) are too simplified because the number of commodities is reduced severely and it is difficult to use their results in empirical studies. Berglas’s three goods model which could be extended to any number of commodities is something of a compromise between the two original paradigms (Corden, 1984). Suppose country A imports good 1 from both B and C, which is a key feature of a two commodity model and hence he gets various results associated with that model. On the other hand country B imports good Z from A and good 3
from C - so there can be an import pattern effect (trade diversion) as a result of B's tariff reduction on good 2.

2.4.1 The Common External Tariff

The early literature on regional trade arrangements did not pay sufficient attention to the effect of establishing a common external tariff but emphasised the effect of the formation of a free trade area. On the issue of designing the structure of the common external tariff some ready and rough measures like some kind of averaging procedure is used. This could be fixing CET at the level of A's or B's initial tariff level. Given the small union assumption the optimum CET would be zero.

Vanek (1965) introduced an important concept called the compensating common tariff (CCT). The CCT is that level of CET which would keep the rest of the world as well off as it was before the union. Thus given the small union assumption the rest of the world would not be affected by the establishment of a CET. To be clearer the CET is such that trade diversion with the rest of the world would just be compensated by trade creation keeping the volume of trade unchanged. But the union is left with trade creation.

The most important issue centering upon the establishment of a CET is the disposal of tariff revenue and the issue of compensation to the members who lose tariff revenue after the union. Theoretical literature on this issue is rare. In most of the models it is assumed that the revenue is redistributed among partners in proportion to their absorption of C's imports.

2.4.2 External Terms of Trade

So far our analysis had been under the assumption of a small union and fixed external
terms of trade. We now relax these assumptions. The analysis of welfare under such situations was pioneered by Mundell (1964) and discussed at length in Vanek (1965), Kemp (1969), Michaeley (1976), Berglas (1979) and Riezman (1979). Lloyd (1983) has summarised the earlier four three country three commodity models of trade, of which in Corden (1976), the pattern of trade is allowed to change. We make the analysis of the impact of external terms of trade under two situations.

**Situation 1: When the external tariff is kept fixed.**

In the two commodity model if we keep the external tariff fixed and lower tariff rates among members then of course the terms of trade would turn against C. This is because of the trade diversion effect. On the other hand a favourable terms of trade for the union must be added to the trade creation and diversion effects.

If C imports two or more commodities from the union then the direction of the change in terms of trade is not quite so certain. Suppose:

A exports 1 to B and C
B exports 2 to A and C
C exports 3 to B and A then

<table>
<thead>
<tr>
<th>Price of</th>
<th>in A</th>
<th>in B</th>
<th>in C</th>
<th>( \frac{P_t}{P_2} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ( P_1 )</td>
<td>( P_1(1+t_{b1}) )</td>
<td>( P_1 )</td>
<td>improves</td>
<td>-</td>
</tr>
<tr>
<td>2. ( P_2(1+t_{a2}) )</td>
<td>( P_2 )</td>
<td>( P_2 )</td>
<td>-</td>
<td>falls</td>
</tr>
<tr>
<td>3. ( P_3(1+t_{a3}) )</td>
<td>( P_3(1+t_{b3}) )</td>
<td>( P_3 )</td>
<td>-</td>
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</table>

\( P_1/P_2(1+t_{a2}) \) increases because \( t_{a2} \) falls (A reduces tariff on imports from B) and hence \( P_2/P_1 \)
improves. But $P_3$ in terms of $P_2$ falls because $P_1/P_2(1+\tau_2)$ rises. Therefore, when $C$ is importing more than one commodity from the union the direction of terms of trade in not so certain. As we see from the above example, $C$'s terms of trade improves in terms of $1$ but deteriorates in terms of $2$.

The union's favourable terms of trade is essentially a result of trade diversion. With constant domestic terms of trade this would mean a loss of welfare. There is, of course, a trade off between trade diversion and welfare gain or loss. If the original tariff level happened to be at the optimum level from the point of view of the customs union then the formation of a free trade arrangement might lead to a welfare gain because of trade creation.

In the movement towards a common external tariff let us adopt Vanek's concept of a compensating common tariff (CCT) as an intermediate step. This requires external tariff cuts such that the external terms of trade remains unchanged, trade diversion is compensated and only trade creation remains so that gain to the union is assured. The next step is a movement towards CET. Whether this step improves or lowers welfare depends on whether it is a move towards or away from the union's orthodox optimal tariff structure.

Uptil now we have assumed that the rest of the world ($C$'s) tariff remains unchanged. But after the customs union is formed the union may be strong enough to compel the outsider to reduce tariffs, possibly in return for some modification in its CET. Thus the union may have a better terms of trade with $C$. This issue has been elaborated in Arndt 1968, 1969).

Arndt (1969) breaks up the rest of the world into several heterogeneous components. The smallest version of his model contains four countries - two within union and two outside the union. Three main result follows from his analysis:
The traditional conclusion of customs union theory that terms of trade movements will lead to deterioration in the welfare of the "outside world" is of limited relevance in the multi-country situation.

When exclusion from the union involves more than a single country the incentives to choose non-membership will be increased for some countries by the final form of the union.

customs unions as a particular type of tariff policy is welfare improving.

2.4.3 The Optimality Consideration

Can a customs union be optimal? Why are customs unions formed? Is unilateral tariff reduction as good as or better than forming a customs union? These issues have long been debated, though not been resolved as yet. The early literature on the theme, Berglas (1979), Cooper and Massel (1965), Dauphin (1978), Johnson (1965), Krauss (1972) and Robson (1980), has one widely accepted proposition that in the absence of economies of scale and the effects of terms of trade, unilateral tariff reductions is necessarily better than forming a customs union or any form of preferential trade arrangements. Wonnacott and Wonnacott (1981), however, argued that if this proposition is correct then it undercuts the earlier literature and the very Vinerian argument that to consider whether a customs union represents a net gain or loss in economic efficiency becomes unimportant. The obvious question that arises then is why are customs unions formed. The typical answer to this question has been ".... in the main, unions are formed for non-economic reasons -often as a by-product of nation building - so that the purpose of the economists is simply to analyze the incidental economic effects" (Corden 1984).

Wonnacott and Wonnacott (1981), did not agree with the unilateral tariff liberalization (UTL) literature, because it started with a series of assumptions. The proponents of the proposition explicitly made two assumptions. These were: (i) there are no changes in the terms of trade and
(ii) absence of economies of scale. But these assumptions are insufficient to establish their proposition. They have implicitly made other assumptions: (iii) Partner country B has no tariffs, (iv) Outside Country C has no import tariffs nor export taxes, nor are there transportation costs in trade between C and the CU members and (v) the establishment of the CU causes no changes in the pattern of trade and finally (vi) Outside Country C trades in every good. The Cooper Massel proposition could be established by using (i) and (ii) plus (iii) or (i) and (ii) plus (iv) or (i) and (ii) plus (v) and (vi). Wonnacott and Wonnacott argued that none of these assumptions is realistic and thus the proposition is the curiosity.

The counter proposition of Wonnacott and Wonnacott has been "even in the absence of economies of scale and changes in terms of trade, a CU may be better than UTL. UTL is sometimes superior to a CU and sometimes inferior." This is possible because tariffs or transportation cost with third countries, they argued, open up a price wedge within which a CU may provide benefits not available to its members separately through UTL. The superiority of a UTL over CU can be established as already stated but only under seemingly unrealistic assumptions.

2.4.4 Relaxing the Fixed Terms of Trade Assumption:

The crucial assumption in the Cooper-Massel model was that the terms of trade are given. The Cooper Massel (1965) result is no longer valid if we relax this assumption and allow for intra-union terms of trade effect. If A unilaterally reduces tariffs rather than forming a customs union it avoids the trade diversion loss and is left with trade creation only but at the same time foregoes the gain that could accrue from B’s tariff reduction vis-a-vis A. This can turn the terms of trade in favour of A and as a result, A can be better off after the CU in spite
of trade diversion. For unilateral tariff reduction is preferable to joining a customs union. But for the union as a whole a movement to free trade will be preferable to forming a customs union with a positive external tariff as the intra-union terms of trade cancel out.

2.4.5 External Terms of Trade and Joint Welfare Maximisation:

The central point of the proposition by Vanek (1965) and by Kemp and Wan (1976) is that any group of countries can form a union and improve joint welfare if the common external tariff is adjusted appropriately. If the CET is fixed at the orthodox optimal tariff level the joint welfare is maximised and if it is fixed at the compensating common tariff level some improvement for the union is ensured with no loss for the outsiders. But to ensure gain to every member in the customs union an appropriate inter-country compensatory mechanism has to be devised. Kemp and Wan (1976) determine endogenously the external tariff structure so that welfare of the CU members improves while maintaining the welfare of the outsiders unchanged. They have shown that as long as perfect competition prevails inside the union a compensation scheme can always be designed such that every individual is better off or no worse off after the formation or enlargement of the customs union than it was before. While it is true that Kemp and Wan (1976) established the point that under any number of commodities and countries and with no restrictions on tariffs and other commodity taxes of individual countries and cost of transport fully recognised any subset of countries could form an unambiguously world welfare improving union, the problem lies in its operational significance. It is really an existence argument without any structure being put on it within the context of a specific model so that we can develop intuition about what the external tariff structure for such a Kemp-Wan customs union would be (Bhagwati, 1992).
The optimality of a customs union or any form of preferential trade arrangements could be viewed as welfare improving for the members when the members are competitive in their trade flows. This point originated in Viner and was elaborated in Arndt (1968, 1969). Countries that are competitive could form a collusive agreement to raise their tariff level and or tax exports to the rest of the world and thus achieve a terms of trade gain. Secondly, a customs union could be used as a tariff bargaining power against outsiders. A larger country or a group of country have more bargaining power relative to outsiders, to force the outsiders tariff down more compared to the home tariff reductions. It could be noted that a customs union is a special case of a reciprocal tariff arrangement. Literature on reciprocal tariff bargaining is not rare. To name a few, the pioneering works by Johnson (1965), Caves (1974) and Mayer (1981) and more recently by Kennan and Riezman (1988), Riezman (1985) and Kennan and Riezman (1990).

2.5 Concluding Remarks:

The customs unions issue comes under the broader heading of preferential trade arrangements. This is basically a protection theory. The question whether the formation of a customs union could be superior to unilateral tariff reductions is a matter still not resolved. The world trade environment now visualises two opposite forces. On the one hand multilateral trade negotiations under the GATT/WTO and growing incidence of regional trade arrangements on the other. Therefore, the issue whether a customs union or any form of preferential trade arrangement is a move on the right direction or not has been revived. Throughout the 1960s and 1970s, as in now, there were two opposite beliefs. On the one hand it was argued that in the absence of economies of scale and changes in the terms of trade unilateral tariff negotiations is necessarily superior to a customs union and hence the proposition of forming a customs union could right
away be rejected, on the other hand there is strong case for a customs union. The influential paper by Kemp and Wan (1976) went to this extreme. The Kemp and Wan proposition cited earlier, proved that there would be a case for world welfare improving customs union. Also, they suggest that "an incentive to form a customs union persists until the world is one big customs union, that is world free trade prevails". Wonnacott and Wonnacott (1992) has correctly put these two contradictions. There is in fact no contradiction, they argued, in between the two strands. The only thing is that there is a difference in emphasis. This is due to the in built assumptions in the propositions. In the next chapter we analyze regional trading arrangements both in the historical and present context and then draw on the implications for the future.
Figure 2.1
Lipsey: Trade Diverting Customs Union is Welfare
Improving as long as AP passes through the Shaded Area

Figure 2.2
Viner: Trade Diverting Customs Union is Welfare
Reducing as long as Fixed Co-efficient in Consumption is Assumed
Figure 2.3
Bhagwati: Fixity in Consumption in not Sufficient Condition rather
Fixed level of Imports (Dm=0) is Sufficient Condition for Trade Diverting
Customs Union to be Welfare Reducing

Figure 2.4
Bhagwati: As we move from Fixed to the more general case of variable production
Fixity of Consumption Co-efficient is not sufficient
for trade diverting Customs Union to be Welfare Reducing
**Figure 2.5**  
Bhagwati: Ruling out substitution possibilities in both production and consumption ensures that a trade diverting Customs Union will be Welfare Reducing.

**Figure 2.6**  
Bhagwati: Sufficient Condition for trade Diverging Customs Union to be Welfare Reducing is that $D_m=0$. This implies that partner country price ratio $H_iP$ can never cross over the northeast of $C_i$. This implies that a SIC tangential to $H_iP$ will always be at a lower welfare level.
ENDNOTES

1. This view pre-occupied the minds of both the free traders and protectionists.

2. The four assumptions of the Vinerian models are, two commodities, constant costs, no demand effects and given terms of trade.

3. For a discussion on Jacob Viner's assumptions please see Michaely (1976). Michaely has analyzed whether Viner's analysis indeed makes the assumptions about production and consumption which are attributed to it by conventional wisdom; whether the assumptions Viner did make were consistent and the possible explanations for Viner's analytical course.

4. Michaely (1965) extended the traditional approach of the theory of customs unions to show that when the assumptions of (i) a linear transformation curve and (ii) the existence of community indifference curves are relaxed the proposition that a trade diverting customs union may either increase or decrease welfare could still be established.

5. This result is consistent with Lloyd (1974). Lloyd showed that Hicksian substitution relations are good enough to judge a second-best policy in an open economy. Dixit (1975) used the expenditure function to derive results on second-best policies.

6. Pre union terms of trade in A is 1/(1+t_{AY}). Post union terms of trade in A is 1/(1+t_{UY}). Therefore, if C exports to A then price of imports is 1+t_{UY} and production in B will be expanded with its price equal to 1+t_{XY}. Whether terms of trade deteriorates or not depends on the magnitude of t_{UY} relative to t_{XY}.

7. with the assumption that t_{AY} = t_{UY}.

8. with the assumption that t_{AZ} = t_{UZ}.

9. Assumption (iii) is in Cooper and Massel (1965). Assumptions (iv), (v) and (vi) are in Berglas (1979).

10. Assumption (v), rules out trade creation in the Vinerian sense. Thus the benefit of a CU is ruled out and it is established that UTL is necessarily superior to a CU.

11. By superior UTR, Wonnacott and Wonnacott meant "necessarily weakly superior", i.e., UTL is necessarily as good as CU.

12. For example empirical works Harris and Cox (1984), Whalley (1984) and Wonnacott (1987) suggest that economies of scale will provide by far the most important single source of gain from the formation of a Canada US free trade arrangement.
13. Cooper and Massel (1965) argued that for a small country unilateral tariff reduction is always preferable to forming a customs union. The reason is that it is better to have trade creation alone rather than both trade creation and trade diversion. This in effect is nothing but establishing Viner's central proposition that customs union is a second best policy.

14. Melvin (1969) suggests "when account is taken of the fact that a tariff can improve the terms of trade, the possibility that a trade diverting customs union will result in a welfare gain is considerably reduced, for if the tariff approximates the optimum tariff any customs union will reduce welfare. Also, when a customs union is formed it is probable that the terms of trade with the union partner will deteriorate, further reducing the probability of gain".

15. See Hamilton and Whalley (1985), and Markusen and Wigle (1987) for empirical studies of whether tariff rates are at the levels that optimal theory would suggest.

16. They suggest that, "an incentive to form and enlarge customs unions persists until the world becomes one big customs union, that is, until world free trade prevails".

17. Examples of the incidence of tariff bargaining are not rare. The EC-USA agricultural subsidy issue is a case in point.