

University of Sydney Library



0000000604118161

STORAGE

SYDNEY UNI FILE BARCODE



UNS0000292028



economics Division Working Papers

South Asia

*Welfare effects of a discriminatory
trading area in South Asia*

M. Manir Hossain and Neil Vousden

96/9

UNIVERSITY OF SYDNEY

Fisher
Research

382.0954
58

Research School of Pacific and Asian Studies

A N U

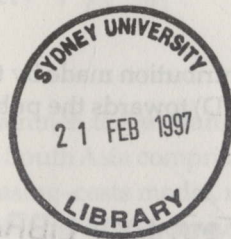
Enquiries

The Editor, Working Papers
Economics Division
Research School of Pacific and Asian Studies
The Australian National University
Canberra 0200
Australia

Tel (61-6) 249 4700
Fax (61-6) 257 2886

The Economics Division encompasses the Department of Economics, the National Centre for Development Studies and the Australia-Japan Research Centre from the Research School of Pacific and Asian Studies, the Australian National University. Its Working Paper series is intended for prompt distribution of research results. This distribution is preliminary work; work is later published in refereed professional journals or books. The Working Papers include work produced by economists outside the Economics Division but completed in cooperation with researchers from the Division or using the facilities of the Division. Papers are subject to an anonymous review process. All papers are the responsibility of the authors, not the Economics Division.

economics Division Working Papers



South Asia

Welfare effects of a discriminatory trading area in South Asia

M. Manir Hossain and Neil Vousden

96/9

© Economics Division, Research School of Pacific and Asian Studies,
The Australian National University, 1996.

This work is copyright. Apart from those uses which may be permitted under the
Copyright Act 1968 as amended, no part may be reproduced by any process without
written permission from the publisher.

Published by the National Centre for Development Studies

Printed in Australia by Better Printing Service,
1 Foster Street, Queanbeyan, NSW, 2620.

The Economics Division acknowledges the contribution made by the Australian
Agency for International Development (AusAID) towards the publication of this
working paper series.

ISBN 0 7315 2332 6

ISSN 1038-412X

UNIV. OF SYDNEY LIBRARY

Key to symbols used in tables

n.a.	Not applicable
..	Not available
-	Zero
.	Insignificant

M. Manir Hossain is completing his PhD dissertation on the possibilities of regional
trade expansion in South Asia at the National Centre for Development Studies.

Dr Neil Vousden is Director of Research at the National Centre for Development
Studies at the Australian National University.

Abstract

This paper examines the welfare implications of the proposed discriminatory trading area in South Asia comprising Bangladesh, India, Pakistan and Sri Lanka. Using an increasing-costs model, rather than the usual constant costs model, it is shown that a member loses in import trade if the external tariff is not reduced, but gains unambiguously in export trade. Values of import effects represented by trade creation and trade diversion, and the export effects represented by the terms of trade gains are calculated using area variation measures. The gains and losses are calculated for disaggregated commodities. Preliminary results yield gains for the region as a whole. However, the small partners (Bangladesh and Sri Lanka) suffer, while the bigger partners (Pakistan and India) gain from the formation of a customs union.

abbreviations

CET common external tariffs

cif cost including freight

DTA discriminatory trade area

f.o.b. free on board

MFN most favoured nation

The Economics Division acknowledges the contribution made by the Australian Agency for International Development (AID) to the research on the discriminatory trading area in South Asia comprising Bangladesh, India, Pakistan and Sri Lanka. Using an increasing-costs model, rather than the usual constant costs model, it is shown that a marginal loss in import trade if the external tariff is not reduced, but gains unambiguously in export trade. Values of import effects represented by trade creation and trade diversion, and the export effects represented by the terms of trade gains are calculated using area variation measures. The gains and losses are calculated for disaggregated commodities. Preliminary results held gains for the region as a whole. However, the small partners (Bangladesh and Sri Lanka) suffer while the larger partners (Pakistan and India) gain from the formation of a customs union.

Dr. Neil Vanden is completing his PhD dissertation on the potential for regional trade expansion in South Asia at the National Centre for Development Studies. Dr. Neil Vanden is Director of Research at the National Centre for Development Studies of the Australian National University.

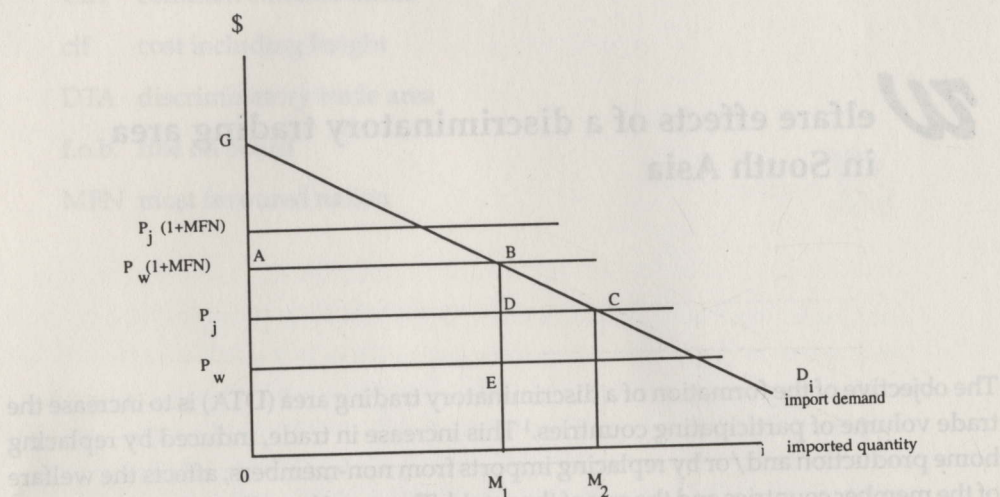
Welfare effects of a discriminatory trading area in South Asia

The objective of the formation of a discriminatory trading area (DTA) is to increase the trade volume of participating countries.¹ This increase in trade, induced by replacing home production and/or by replacing imports from non-members, affects the welfare of the member countries and the rest of the world. These welfare effects can be estimated by measuring the trade creation and trade diversion effects of the DTA. With trade creation increasing welfare and trade diversion decreasing it, the net effect of forming a DTA depends on the relative strengths of these two opposing effects. An attempt is made here to measure such welfare effects in dollar terms.

Conventional literature on the measurement of trade creation and trade diversion assumes that the goods are produced under constant-cost conditions, that is, the union members and the rest of the world have infinitely elastic export supply curves. Given the assumption that individually each country is small and hence cannot influence export prices in a global market with perfect competition, the preferential tariff reduction diverts all imports of that good by a member country from the rest of the world to the union (see Figure 1).

Before the union is formed with country *j*, country *i* purchases all its imports of a good from the rest of the world at the tariff-inclusive domestic price of *A*. When a union is formed with *j*, the tariff-free domestic price of imports from *j* falls below that of the tariff-inclusive price of imports from the rest of the world. The horizontal export supply curve of *j* ensures that all imports of the good by country *i* are diverted from the rest of the world to country *j*. The area of triangle *BDC* is the welfare gain due to trade creation and the area of the rectangle P_jDEP_w is the welfare loss due to trade diversion. Under such assumptions the DTA will be welfare improving if the area of the triangle *BDC* is greater than the area of the rectangle P_jDEP_w . As is evident in Figure 1, this model does not allow pre and post-union imports of a good from both union partners and the rest of the world, in conflict with what is commonly observed.

Figure 1 Welfare implications under constant cost conditions: the conventional approach



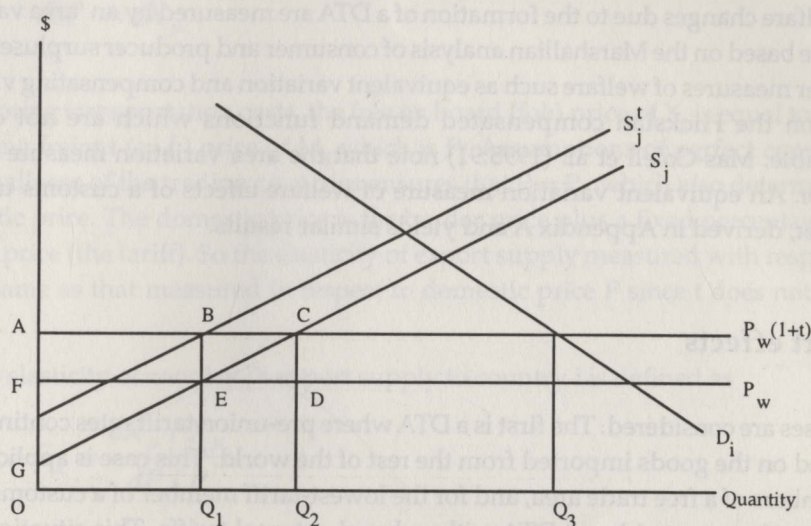
This model also requires that the supply condition of a member country is such that it can satisfy the full import requirements of its partner in the DTA.

In contrast to this model, an attempt is made here to model a DTA formed with two small countries that trade between themselves and with the rest of the world under increasing-cost conditions. For analytical simplicity the following assumptions are made.

- (i) Each member country has an upward-sloping export supply curve determined by the marginal cost of home production net of domestic demand.
- (ii) The same good may be produced at home, imported from a union partner and from the rest of the world.
- (iii) Member countries are small in terms of international trade, so the import price of the importing partner is determined by the world price.
- (iv) The proposed union abolishes tariffs in the presence of other trade restrictions. This assumption implies that price changes are caused entirely by the tariff changes.
- (v) No export subsidy or export tax exists, so the domestic price of an exported is equal to the world price.

Figure 2 depicts a case where these assumptions hold. S_j^t and $P_w(1+t)$ are the supply curves of country j and the rest of the world respectively when home country i imposes an ad valorem tariff of t .

Figure 2 Welfare implications under increasing cost conditions



At the initial stage with a most favoured nation (MFN) tariff regime, country *i* imports quantity Q_3 of a good, Q_1 from country *j* and the balance $Q_3 - Q_1$ from the rest of the world. On formation of a union between countries *i* and *j*, country *i*'s imports from partner *j* increase to Q_2 . Total imports do not change since the consumer price of the good does not change.² The importing country loses revenue equal to the area ACDE. This area may be referred to as the terms-of-trade loss to the importing country. The exporting country, however, gains unambiguously by the area of the producer's surplus equal to ACEF. This is the gain accruing as a result of improvement in the terms of trade of the preference-receiving country. The net welfare effect on the DTA as a whole is the dead-weight loss of CDE—the cost of trade diversion.

This paper measures, in dollar terms, these welfare effects of the proposed DTA in South Asia—defined in this paper as Bangladesh, India, Pakistan and Sri Lanka. First the paper formulates a model to quantify the welfare effects and then specifies the import demand and export supply functions for the union partners. This is followed by econometric estimation of these functions and calculation of the welfare effects. The conclusions are presented in the final section.

The model

The welfare changes due to the formation of a DTA are measured by an 'area variation' measure based on the Marshallian analysis of consumer and producer surpluses. There are other measures of welfare such as equivalent variation and compensating variation based on the Hicksian compensated demand functions which are not directly observable. Mas-Colell et al. (1995:91) note that the area variation measure may be superior. An equivalent variation measure of welfare effects of a customs union is, however, derived in Appendix A and yields similar results.

Import effects

Two cases are considered. The first is a DTA where pre-union tariff rates continue to be imposed on the goods imported from the rest of the world. This case is applicable for all members of a free trade area, and for the lowest-tariff member of a customs union. The second case considers a DTA with reduced external tariffs. This situation arises when members of a customs union having a higher pre-union tariff, but have to reduce tariff rates have to equal the lowest rate prevailing within the region.³

Welfare effects of a DTA with external tariffs unchanged at pre-union MFN rates

The welfare effects for country *i* when the common external tariff is unchanged at the previous MFN rate can be described with the help of Figure 2. It has been shown in the figure that country *i*'s imports from country *j* increase, but the total imports do not change. Hence, the increase in imports from *j* comes from the reduction in imports from the rest of the world. Since total imports do not change, domestic consumption also does not change and so there is no consumer surplus gain or loss. For the home country, this type of DTA only inflicts a loss from pure trade diversion due to the change in the source of imports from the lower-cost world supply to the higher-cost partner country supply.

The area ACDF is the loss of revenue of country *i* due to trade diversion which is equal to

$$dP(M_{ij} + dM_{ij})$$

In equilibrium, M_{ij} equals X_{ji} and so

$$dM_{ij} = dX_{ji}$$

Ignoring transportation costs, the free on board (fob) price of X_{ji} is equal to the cost including freight (c.i.f.) price of M_{ij} which is P_j . Assumptions of perfect competition and smallness of the trading countries ensures that $P_j = P_w$ which also determines the domestic price. The domestic price is the border price plus a fixed percentage of the border price (the tariff). So the elasticity of export supply measured with respect to P_j is the same as that measured in respect to domestic price P since t does not change with P_j .

The elasticity of country j 's export supply to country i is defined as

$$E_x = \frac{dX_{ji} / X_{ji}}{dP / P}$$

So

$$dX_{ji} = X_{ji} \cdot E_x \cdot \frac{dP}{P}$$

We have

$$P = P_w (1+t)$$

and so

$$dP = dP_w (1+t) + P_w \cdot dt$$

$$\frac{dP}{P} = \frac{dP_w (1+t) + P_w dt}{P_w (1+t)} = \frac{dP_w}{P_w} + \frac{dt}{(1+t)} = \frac{dt}{(1+t)}$$

since dP_w is zero.

Therefore, in equilibrium

$$dM_{ij} = dX_{ji} = M_{ij} \cdot E_x \cdot \frac{dt}{1+t}$$

Measurement of loss due to trade diversion

The loss due to trade diversion is the area of the rectangle ACDF which is

$$dP(M_{ij} + dM_{ij}) = dP[M_{ij} + M_{ij} \cdot E_x \cdot \frac{dt}{1+t}] = dP \cdot M_{ij} [1 + E_x \cdot \frac{dt}{1+t}]$$

By putting $M_{vij} \equiv P_w \cdot M_{ij}$ as the dollar value of imports from j, we have the value of the diverted trade (V_{TD}) as follows.

$$V_{TD} = dP \cdot \frac{M_{vij}}{P_w} [1 + E_x \cdot \frac{dt}{1+t}] = M_{vij} \cdot dt [1 + E_x \cdot \frac{dt}{1+t}]$$

since

$$\frac{dP}{P_w} = \frac{dP}{P} \cdot \frac{P}{P_w} = \frac{dt}{1+t} \cdot (1+t) = dt$$

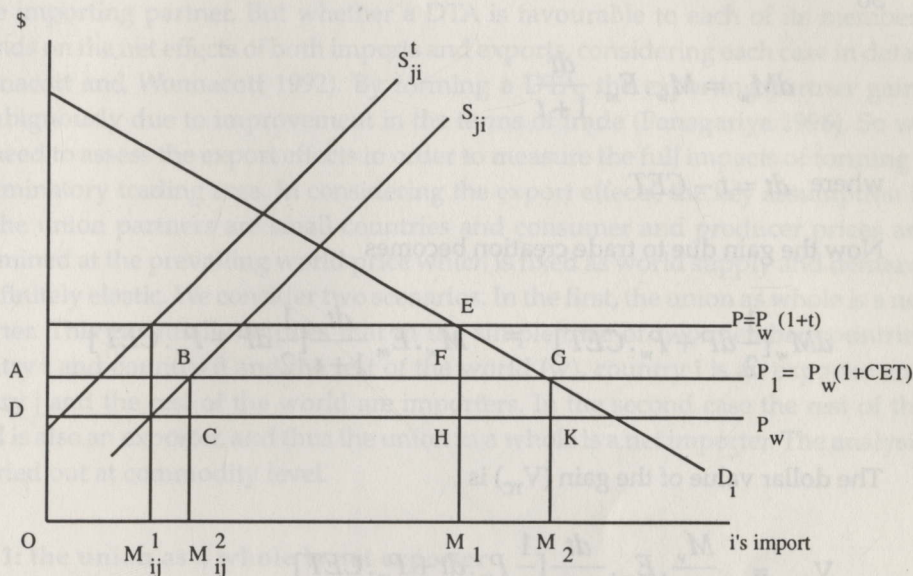
Within the customs union and free trade area, dt equals the pre-union MFN tariff rate t .

Welfare effects of a DTA when the external tariff is less than the pre-union MFN rate

In this model where the same good is imported from both the union partner and the rest of the world and the import price is determined by the world price (since the union countries are small), gains would occur due to external trade creation as the external tariff is fixed below the pre-union MFN rate, or when the common external tariff is reduced. This scenario is depicted in Figure 3.

When the external tariff is reduced from t to CET, the common external tariffs, the total imports of country i increase to M_2 . This increase comes from both union sources and from the rest of the world. The gain from such an increase in the volume of trade is the area of the triangle EFG plus the rectangle FGKH. This may be called the volume of trade effect. The trade diversion due to the preferential elimination of tariffs in trade with the partner country is reduced relative to the case where the external tariff is fixed at the pre-union MFN rate. The trade diversion now is the rectangle ABCD.

Figure 3 Welfare implications when the common external tariff is less than the pre-union MFN rate



Measurement of gains due to trade creation

The gain due to trade creation is the area EGKH which equals

$$\begin{aligned} & \frac{1}{2} \cdot dM \cdot dP + dM \cdot CET \cdot P_w \\ & = dM \left[\frac{1}{2} \cdot dP + P_w \cdot CET \right]. \end{aligned}$$

In this case, the elasticity of export supply of the rest of the world is infinite. The elasticity of import demand of the home country *i* is

$$E_m = \frac{dM_w / M_w}{dP / P} \quad (15)$$

$$\frac{dM_w}{M_w} = E_m \cdot \frac{dP}{P} = E_m \cdot \frac{dt}{1+t}$$

So

$$dM_w = M_w \cdot E_m \cdot \frac{dt}{1+t}$$

where $dt = t - CET$

Now the gain due to trade creation becomes

$$dM_w \left[\frac{1}{2} dP + P_w \cdot CET \right] = M_w \cdot E_m \cdot \frac{dt}{1+t} \left[\frac{1}{2} dP + P_w \cdot CET \right]$$

The dollar value of the gain (V_{TC}) is

$$V_{TC} = \frac{M_v}{P_w} \cdot E_m \cdot \frac{dt}{1+t} \left[\frac{1}{2} P_w \cdot dt + P_w \cdot CET \right]$$

since $M_v = M_w \cdot P_w$ and $dP = P_w dt$

$$= M_v \cdot E_m \cdot \frac{dt}{1+t} \left[\frac{1}{2} dt + CET \right]$$

Measurement of loss due to trade diversion

The loss due to trade diversion is the area represented by the rectangle ABCD which can be measured by the method used to measure the welfare effects with unchanged external tariffs. The dollar value of such a loss is derived as

$$V_{TD} = M_{vij} \cdot dt \left[1 + E_x \frac{dt}{1+t} \right]$$

Export effects

So far we have considered the welfare consequences of a DTA from the point of view of the importing partner. But whether a DTA is favourable to each of its members depends on the net effects of both imports and exports, considering each case in detail (Wonnacott and Wonnacott 1992). By forming a DTA, the exporting partner gains unambiguously due to improvement in the terms of trade (Panagariya 1996). So we also need to assess the export effects in order to measure the full impacts of forming a discriminatory trading area. In considering the export effects, the key assumption is that the union partners are small countries and consumer and producer prices are determined at the prevailing world price which is fixed as world supply and demand are infinitely elastic. We consider two scenarios. In the first, the union as whole is a net exporter. This essentially implies that in the simple case of two member countries (country i and country j) and the rest of the world (w), country i is an exporter and country j and the rest of the world are importers. In the second case the rest of the world is also an exporter, and thus the union as a whole is a net importer. The analysis is carried out at commodity level.

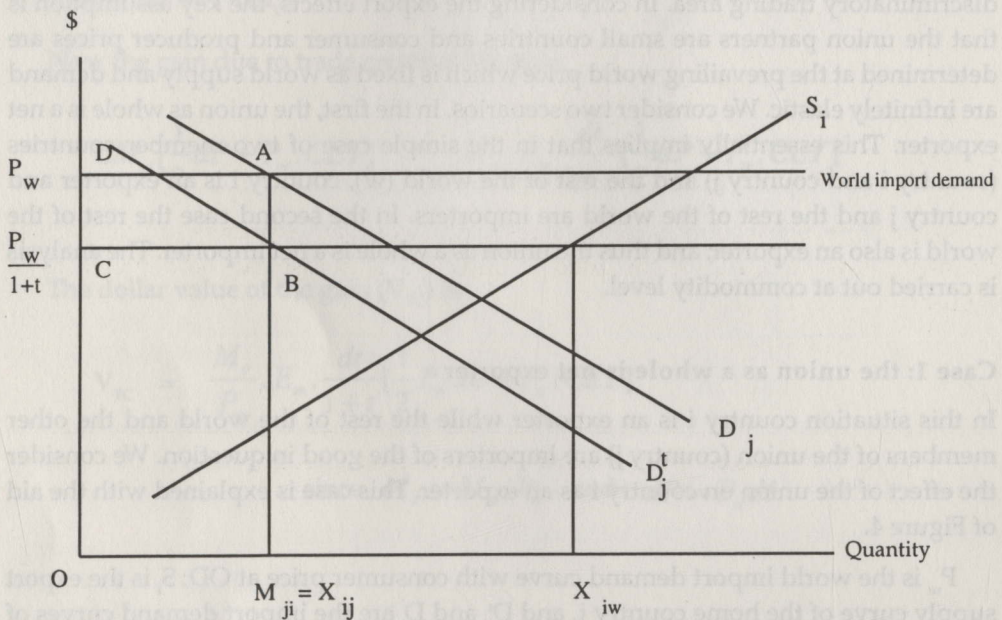
Case 1: the union as a whole is net exporter

In this situation country i is an exporter while the rest of the world and the other members of the union (country j) are importers of the good in question. We consider the effect of the union on country i as an exporter. This case is explained with the aid of Figure 4.

P_w is the world import demand curve with consumer price at OD ; S_i is the export supply curve of the home country i , and D_j^t and D_j are the import demand curves of partner country j with tariff and without tariff respectively. Country i 's exports face an equal tariff from partner j and the rest of the world w . While world consumer price is OD , the producer price is OC , the difference being the tariff. With this producer price, the export supply of home country i is X_{iw} of which M_{ji} ($= X_{ji}$) goes to partner j and the rest to w . Now suppose a DTA is formed between i and j . The imports of the partner country will not increase since the consumer price in country j does not change as it is determined by the world market. The world import demand does not change and so the world price also does not change with the formation of the union. As the world price (net of tariff) is unchanged at OC , total exports of i do not change. World producer price is higher than the price as may be determined by the intersection of the supply curve S_i and demand curve D_j . So country i will export to the world at the lower price OC . But in country j , consumer and producer prices will be equal to world consumer price OD . Hence the infra-marginal units which country i exports to j are sold at price D , higher than its export price to the rest of the world. Thus the area $ABCD$ is the gain

of the home country exporters. This is actually a transfer of tariff revenue of country j to country i 's producers via the higher export price. Thus the net loss to the union as a whole is zero.

Figure 4 Gains from exports when the union is a net exporter



Measurement of gains to the exporting country

The area ABCD represents the gains accruing to the member country due to increase in exports to the partner. This gain, though the total exports of the exporting country does not change, accrues as the producer price increases by the amount of the tariff eliminated by the importer. The area of the rectangle ABCD is $CD \cdot CB$.

$$\begin{aligned}
 \text{CD.CBI} &= X_{ij} \cdot (P_w - \frac{P_w}{1+t_j}) \\
 &= X_{ij} \cdot (\frac{P_w t_j}{1+t_j})
 \end{aligned}$$

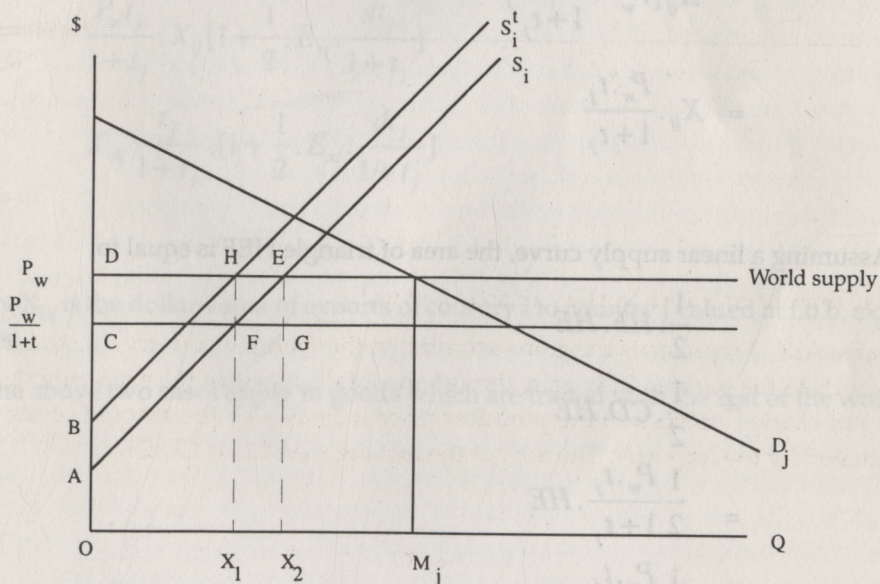
The dollar value of this terms of trade gain of country i is

$$\begin{aligned}
 &= \frac{X_{vij}}{P_w} \cdot \frac{P_w t_j}{1+t_j} \\
 &= X_{vij} \cdot \frac{t_j}{1+t_j}
 \end{aligned}$$

Case II: Union as a whole is a net importer

This case implies that country i and the rest of the world are exporters and the partner country j is an importer of the good in question. This case can be depicted as in Figure 5.

Figure 5 Gains from exports—the union as a net importer



At the initial situation (with non-discriminatory tariff imposed by country j), the consumers of j face price OD equal to the world price including the tariff, but the suppliers of country i and w face a producer price of OC (net of tariff imposed by j). S_i^t is the supply curve of country i drawn against the consumer price in j, and S_i is the supply curve drawn against the producer price in country i.

At the initial situation, country j imports a total of M_j of the good out of which X_1 is supplied by country i. Producers' surplus accruing to country i is AFC. After formation of a union between i and j, country i's supplies do not face any tariff in country j and so the producers' price in i increases to OD. Hence the supply from country i to country j increases to X_2 . With this increased trade between country i and country j due to abolition of the tariff, exporters in country i gain the amount of CDEF which is the terms of trade effect, but the importing country loses tariff revenue equal to the area CDEG. The net loss to the union is EFG which is the net trade diversion effect discussed earlier.

Measurement of gains to the exporting country

The gain for the exporter is the area CDEF which is equal to the rectangle CDHF plus the triangle EFH.

The area of rectangle CDHF is equal to CD.CF

$$\begin{aligned}
 &= X_{ij} \left[P_w - \frac{P_w}{1+t_j} \right] \\
 &= X_{ij} \cdot \frac{P_w \cdot t_j}{1+t_j}
 \end{aligned}$$

Assuming a linear supply curve, the area of triangle HEF is equal to

$$\begin{aligned}
 &\frac{1}{2} \cdot HF \cdot HE \\
 &= \frac{1}{2} \cdot CD \cdot HE \\
 &= \frac{1}{2} \frac{P_w \cdot t_j}{1+t_j} \cdot HE \\
 &= \frac{1}{2} \frac{P_w \cdot t_j}{1+t_j} \cdot dX_{ij}
 \end{aligned}$$

Now the elasticity of export supply of country i is

$$E_{xi} = \frac{dX_{ij} / X_{ij}}{dP_i / P_i}$$

$$= \frac{dX_{ij} / X_{ij}}{dt_j / (1+t_j)} \quad \text{where } \frac{dP_i}{P_i} = \frac{dt_j}{1+t_j}$$

$$\text{So } dX_{ij} = X_{ij} \cdot E_{xi} \cdot \frac{dt_j}{1+t_j}$$

Hence the area of the triangle HEF becomes

$$\frac{1}{2} \cdot P_w \cdot \frac{t_j}{1+t_j} \cdot X_{ij} \cdot E_{xi} \cdot \frac{dt_j}{1+t_j}$$

And the total effect becomes

$$\frac{P_w t_j}{1+t_j} \cdot X_{ij} + \frac{1}{2} \cdot P_w \cdot \frac{t_j}{1+t_j} \cdot X_{ij} \cdot E_{xi} \cdot \frac{dt_j}{1+t_j}$$

$$\frac{P_w t_j}{1+t_j} \cdot X_{ij} \left[1 + \frac{1}{2} \cdot E_{xi} \cdot \frac{dt_j}{1+t_j} \right]$$

$$X_{vij} \frac{t_j}{1+t_j} \cdot \left[1 + \frac{1}{2} \cdot E_{xi} \cdot \frac{dt_j}{1+t_j} \right]$$

where X_{vij} is the dollar value of exports of country i to country j valued at f.o.b. export prices.

The above two cases apply to goods which are traded with the rest of the world.

Estimation of elasticities

As has been demonstrated in the previous section, price elasticities of import demand and export supply are important parameters in measuring the welfare effects of trade creation and trade diversion. This section formulates the import demand and export supply functions.

Import demand function

From the standard constrained optimisation problem for a consumer, the aggregate import demand function can be expressed as being dependent on the income of the economy, the price of the imported good and the prices of local substitutes. Symbolically, the import demand function is $M = F(P_m, P_d, Y)$, where M is the quantity of imports, P_m is the price of the imported good, P_d is the price of domestic substitute goods and Y is real GNP.

While use of real income as an activity variable has been overwhelmingly conventional, alternative activity variables are also used. Given the import control regime in most developing countries, particularly in South Asia, the use of a measure of production or some subset of it may be more relevant than income as an activity variable. Quantitative restrictions on imports play a significant role in trade. Import controls affect domestic production capacity. Gregory (1971) argues that the demand for imports is related to pressure on domestic resources. He shows that when there is excess demand and the capacity constraints are operative, imports increase. This increase in imports cannot be predicted by the movement of prices or income. To deal with this problem we have used production capacity as an activity variable in place of real income. In addition, we have also used a variable to represent import capacity. Bautista (1978) has used export receipts of the previous year as a variable to represent capacity to import in the case of the Philippines. But developing countries' capacity to import does not always depend on the foreign exchange receipts against exports. These countries obtain significant amounts of foreign currency as remittance transfers from wage earners working overseas (in addition to the balance of payments loans received from Bretton Woods organisations). These foreign currency transfers plus any foreign aid transfers increase the capacity to import. In view of this, we use foreign exchange reserves as a scale variable in addition to production capacity.

The existence of an import control regime favouring intermediate goods over finished products entails the possibility that the imports themselves affect domestic production. This may induce simultaneity between the quantity of imports and the activity variable. Moreover, there is a controversy in the literature as to the presence of simultaneity between the quantity and prices of imports. It is argued that the price and quantity of imports may be determined by the demand and supply conditions in

the relevant product market. Price may thus be treated as an endogenous variable determined by the interactions within the system (see, Shiells 1991). So a simultaneous equation method would be appropriate. Goldstein and Khan (1978) argue, however, that it is reasonable to assume that the world supply of imports to a single country is infinitely elastic. Since imports of each South Asian country constitute a negligible share in world trade, we treat each country as a small country where importers face a fixed world price. The import demand function is, therefore, estimated here by the single equation OLS method. In the literature, there are examples of estimating import demand functions by the single equation method on the assumption of infinite import supply elasticity (for example, Noland 1989; Athukorala and Menon 1995). The import demand function thus has the following general form.

$$M_{it} = a_0 + a_1 K_{it} + a_2 P_{mit} + a_3 P_{dit} + a_4 FER_t + u_t$$

where K and FER represent the production capacity and the foreign exchange reserves, respectively, and t and i are used as time and commodity subscripts.

The dynamics in the flow of trade needs to be explained in a dynamic model instead of a static one. In order to provide for non-contemporaneous adjustment of the exports to any shock, a stochastic difference equation model is considered here. We formulate an autoregressive distributive lag model which allows for short-run adjustment towards long-run equilibrium.⁵

The first order autoregressive distributive lag formulation of the import demand function in the log-linear form is

$$M_{it} = b_0 + b_1 M_{i,t-1} + b_2 K_t + b_3 K_{t-1} + b_4 P_{mit} + b_5 M_{mi,t-1} + b_6 P_{dit} + b_7 P_{di,t-1} + b_8 FER_t + b_9 FER_{t-1} + u_t$$

Export supply function

An export supply function is derived as a result of the profit maximising objectives of the producers. It relates the total quantity of a commodity exported to the prices prevailing in domestic and foreign markets expressed in the same currency. In modeling an export supply function it is essential that the domestic price of a good differs from its international price. This is possible because the domestic price depends on the domestic demand elasticity as well as the domestic cost condition faced by the producers. But the foreign price depends on the foreign demand elasticity and the

cost conditions faced by the competitors in the export market. This leads to a theoretical question of simultaneity between export supply and export demand functions. A small country faces perfect competition in the international market and so the export price it faces is exogenous as assumed. This allows estimation of an export supply function by a single equation.

Since the price the exporters of a small country face is exogenously determined, the profit maximising problem of a producer essentially becomes a problem of determining the maximum output given the market price and the minimum cost to produce that output. The use of a domestic price variable in an export supply function is therefore required to capture the influence of domestic cost. So the export supply function can be written as

$$S = S(P_d, P_x) \quad S_1 < 0 \quad \text{and} \quad S_2 > 0$$

where P_d and P_x are domestic and export prices respectively.

Price changes do not fully explain export supply (Goldstein and Khan 1985). An activity variable is, therefore, necessary to capture this unexplained influence on export quantity. This activity variable is also required to separate the movement along the supply curve from the movement of the supply curve itself. In the absence of theoretical guidance, trend output representing capacity to export is used here as an activity variable. The rationale is that trend increase in output, increases export supply without a change in price.

The autoregressive distributive lag version of the export supply function with lag length of one period is given by

$$X_{it} = \lambda_0 + \lambda_1 X_{i,t-1} + \lambda_2 P_{xit} + \lambda_3 P_{xi,t-1} + \lambda_4 P_{dit} + \lambda_5 P_{di,t-1} + \\ \lambda_6 K_{it} + \lambda_7 K_{i,t-1} + u_{it}$$

where X , P_x , P_d and K stand for quantity of exports, price of exports, price of exportable goods in the domestic market and output, respectively, and i and t are used as commodity and time subscripts. The variables are expressed in natural logarithm.

Econometric procedure and estimated elasticities

The study uses annual time series data which are usually characterised by non-stationarity. So the econometric estimation starts with testing the presence of non-stationarity in the variables by using the augmented Dicky-Fuller test for unit roots. Having found that both stationary and non-stationary variables are present in most cases, the functions as specified cannot be estimated by simple least square methods in those cases since the dependent variables are not cointegrated with all the independent variables. A well known econometric estimation procedure with such a mix of stationary and non-stationary variables is the error correction modeling procedure which involves only a linear transformation of the autoregressive distributive lag formulation with the variables in differences. This technique integrates short-run dynamics with long-run equilibrium by incorporating the past period's disequilibrium into the specification and detrending the variables by differencing. As Inder (1993) points out, this technique is also most suitable where sample size is small, as is the case here.

The general error correction models (unrestricted) of both import demand and export supply functions are specified as follows.

Import demand function

$$\Delta M_t = \alpha_0 + \alpha_1 M_{t-1} + \alpha_2 \Delta P_t^m + \alpha_3 P_{t-1}^m + \alpha_4 \Delta P_t^d + \alpha_5 P_{t-1}^d + \alpha_6 \Delta K_t + \alpha_7 K_{t-1} + \alpha_8 \Delta FER_t + \alpha_9 FER_{t-1}$$

Export supply function

$$\Delta X_t = \beta_0 + \beta_1 X_{t-1} + \beta_2 \Delta P_t^x + \beta_3 P_{t-1}^x + \beta_4 \Delta P_t^d + \beta_5 P_{t-1}^d + \beta_6 \Delta K_t + \beta_7 K_{t-1}$$

where

M = quantum index of imports

X = quantum index of exports

P = price index (unit value index in case of imports and exports)

K = activity variable

FER = foreign exchange reserve.

Superscripts m, x, d and subscript t stand for import, export, domestic and time, respectively.

The coefficients α_1 and β_1 of the above unrestricted error correction modelling formulations measure the speed with which the dependent variables adjust to disequilibrium. Since error correction modelling is just a reparameterised autoregressive distributive log system, the stability condition remains the same as that applicable for a stochastic difference equation.⁶ The coefficients and are required to be less than unity in absolute value to have the system converge to steady state equilibrium. When the lag structure is divergent ($\beta_1 > 1$ in absolute value), it calls for an estimation with only difference terms to have the short-run effects which can be regarded as a reasonable approximation to the long-run effect.

The equations for disaggregated import demand and export supply functions for all the countries under study are estimated following the well known 'general to specific' procedure (Table 1).

Table 1 Estimated price elasticities for South Asian countries

	Bangladesh	India	Sri Lanka	Pakistan
Import demand				
Primary products				
Food	-1.09	-1.59	-1.16	-4.18
Agricultural raw materials	-0.94	-0.73	-0.94	-1.16
Crude fertilisers & mineral ores	-0.1	-0.10	-0.57	-0.10
Mineral fuels	-1.28	-0.70	-0.27	-0.60
Non-ferrous metals	-1.45	-1.45	-0.78	-1.45
Manufactured products	-1.37	-1.16	-1.64	-3.27
All products	-1.50	-0.58	-0.37	-0.77
Export supply				
Primary products				
Food	0.99	1.25	1.84	0.60
Agricultural raw materials	0.82	1.13	0.26	1.20
Crude fertilisers & mineral ores	0.86	0.86	0.86	0.86
Mineral fuels	2.92	2.92	2.92	2.92
Non-ferrous metals	2.42	2.42	2.42	2.42
Manufactured products	1.53	1.04	1.22	0.68
All products	0.97	1.14	0.81	0.86

Notes: The commodity categories are as defined in Appendix Table A1. In the case of non-availability of data for a particular commodity of a country, the elasticity for another country for that commodity is used.

Source: Authors' calculations.

Measurement of welfare effects

The measurement of welfare effects requires price elasticities of export supply and import demand functions, tariff rates and trade values. Consideration of tariff rates and trade values requires the choice of a base year. Availability of data and normalcy of the period in regard to trade flows dictate the selection of a base year. The year 1993 satisfies both criteria for all the four countries. This year also coincides with the decision taken by the South Asian Association for Regional Cooperation (which includes the four countries in this study) leaders to form a preferential trading area in South Asia.

Tariff removal or reduction of tariffs affects not only prices in the domestic market, but also the value added in domestic production. Whether effective rate or nominal rate of protection is used depends on the objectives of the research.⁸ Ethier (1977) points out that if the researcher is interested in the effects of protection on resource allocation or net output, the relevant protection measure is the effective rate. If, instead, the objectives are economic welfare, the proper measure is the nominal rate, since in that case gross output available for final demand becomes the matter of interest and the correct price to be considered is the commodity price instead of the value added per unit. Ruffin (1971) shows that with no change in the effective rate, a reduction in the nominal rate (which essentially involves lowering the tariff on intermediate goods) increases welfare by reducing consumption distortions. This leads us to the use of the nominal rate of protection. Moreover, data for the effective rate of protection for all commodities are not available for the countries in this study and the construction of such data is beyond the scope of this study. Thus, we use the nominal tariff in calculating welfare effects.

When using the nominal tariffs, a question arises on averaging the individual tariff rates for the commodity classification. Two procedures are generally followed. First, a weighted average with values of imports as weights is used. This procedure provides distorted results since the weights change with the level of tariffs. A high level of imported value due to low level of tariff is given higher weights whereas a prohibitive tariff with no imports gets a zero weight. So an import-value-weighted average tariff rate does not reflect a representative rate. On the other hand, if the availability of a commodity measured by the total of domestic production and imports is used as a weight, the average may be more representative since the opposite biases of imports and domestic production counterbalance each other. But this method requires production and import data for each commodity, and these are rarely available.

The second procedure is use of a simple average without any weight. This procedure is a better estimate for the tariff height. However, it also has deficiencies. In averaging, all commodities are given equal weights which is arbitrary. But the inaccuracy due to this deficiency may be small since aggregation of a large number of tariff lines in each

commodity category balances the deviation from the mean to some extent. In view of this we use the simple unweighted average nominal tariff rates. UNCTAD (1994) reports both weighted and unweighted average nominal tariff rates of commodities in the standard international trade classification. The average for the period 1991–93 is used here as the initial pre-union tariff rate (Table 2).

We have calculated the welfare effects due to changes in imports and exports of the aggregated goods for the members of a hypothetical South Asian Customs Union (Table 2).⁹ As the goods are aggregated, the region becomes a net importer of all categories of goods. So welfare implications for the goods in which the region may be a net exporter cannot be measured at this level of aggregation. An assumption is made here that the post-union common external tariff structure consists of the lowest pre-union tariff rate for each commodity category. Sri Lanka's tariff structure, being the lowest in the region, is taken as the post-union common external tariff for the proposed union (Table 3).

Table 2 Unweighted average nominal tariff rates for South Asian countries, 1991–93 (per cent)

	Bangladesh	India	Sri Lanka	Pakistan
Primary products				
Food articles	83.2	45.1	41.3	69.9
Agricultural raw materials	74.2	42.6	17.0	34.6
Crude fertilisers & mineral ores	45.2	49.9	13.2	38.5
Mineral fuels	55.1	26.1	13.4	47.6
Non-ferrous metals	74.3	55.6	11.4	45.9
Manufactured products	84.5	56.1	26.0	63.6
All products	81.2	53.0	26.1	61.1

Notes: The mean tariff rate within each heading is calculated by taking the simple average over all national tariff lines concorded to the heading. Commodity categories are defined in Appendix Table A1. Source: United Nations Conference on Trade and Development (UNCTAD), 1994. *Directory of Import Regimes, Part I: monitoring import regimes*, United Nations, New York.

Table 3 Summary of welfare effects of import and export changes in a South Asian customs union, base year 1993 (\$US million)

	Trade diversion	Trade creation	Net import gains	Gains from exports	GDP	welfare gains as % of GDP
Bangladesh	558.4	408.0	-150.5	18.2	23,976.0	-0.55
India	47.4	1,336.6	1,289.1	342.1	250,966.0	0.65
Pakistan	127.9	2,635.4	2,507.4	90.2	51,824.7	5.01
Sri Lanka	166.8	—	-166.8	27.4	10,472.3	-1.33
Union	900.6	4,379.9	3,479.3	477.9	336,699.0	1.17

Note: The welfare gains mentioned in the last column are the total of export gains and net import gains.
Source: UN Trade Data, UNO and World Tables, the World Bank, International Economic Databank, the Australian National University, Canberra, and authors' own calculation.

Conclusion

The results show that a hypothetical customs union in South Asia is welfare-improving for the region as a whole. The welfare gains to the region account for more than one per cent of the combined GDP of the whole region. Individually, however, the two smaller partners, Bangladesh and Sri Lanka suffer, while Pakistan and India, the larger partners, gain from the union. It is important to note that the welfare gains arise from the trade creation resulting from the reduction of tariffs on imports from the rest of the world. Sri Lanka has the lowest tariff rate in each commodity category, so it does not have to reduce its tariff rates on formation of the union (Table 2). As a result, Sri Lanka suffers from trade diversion due to its own discriminatory tariff liberalisation. The other members of the proposed union reduce the external tariff rates to the level of Sri Lanka's pre-union rates. This reduction of tariff rates creates trade for other members.

The extent of trade creation depends on the elasticity of import demand and the pre-union level of trade with the rest of the world. Since both India and Pakistan have a higher level of trade with the rest of the world and their import demands are relatively elastic, these two countries gain more from trade creation than they lose from trade diversion. However, the loss from trade diversion for Bangladesh outweighs its gain from trade creation.

Endnotes

- ¹ 'DTA' is used in this paper to mean either a free trade area or a customs union.
 - ² Consumer price is determined on the basis of world price.
 - ³ It is assumed that the initial common external tariff rate of the DTA is the lowest pre-union most favoured nation (MFN) tariff rate prevailing in the region.
 - ⁴ $P_i = P_w(1 + t_j)$
- So $dP_i = dP_w(1 + t_j) + P_w \cdot dt_j$
- $$\frac{dP_i}{P_i} = \frac{P_w \cdot dt_j}{P_w(1 + t_j)} = \frac{dt_j}{1 + t_j}$$
- ⁵ See Hendry 1995 for details of the of ADL model.
 - ⁶ See Harvey (1990) for a discussion of the stability condition.
 - ⁷ For a discussion on effective and nominal rates of tariff, see Grubel 1971.
 - ⁸ It may be noted that the model described in the second section also can be used for measurement of welfare gains/losses for a free trade area. The welfare calculations for a free trade area are not made here.
 - ⁹ In the text, home country, partner country and the rest of the world are denoted by the letters i, j and w. In this Appendix, i is used to denote commodity, and A and B are used to denote home country and the partner country respectably.
 - ¹⁰ For a detailed discussion on the equivalent variation measure, see Vousden 1990:224-5.

References

- Athukorala, Prema-Chandra and Jayant Menon, 1995. 'Modeling manufactured imports: methodological issues with evidence from Australia', *Journal of Policy Modeling*, 174: 667-75.
- Bautista, Romeo M., 1978. 'Import demand in a small country with trade restrictions', *Oxford Economic Papers*, 30:199-216.
- Ethier, W., 1977. 'The theory of effective protection in general equilibrium: Effective rate analogues of nominal rates', *Canadian Journal of Economics*, 10:233-45.
- Goldstein, M. and Khan, M.S., 1978. 'The supply and demand for exports: A simultaneous approach', *Review of Economics and Statistics* 60:190-9.
- and —, 1985. 'Income and price effects in foreign trade', in Jones, R.W. and Kenen, P.B., eds, *Handbook of International Economics*, vol II. North-Holland, Amsterdam:Chapter 20.

- Gregory, R.G., 1971. 'United States imports and internal pressure of demand: 1948-68', *The American Economic Review*, 611:28-47.
- Grossman, Gene M. and Helpman, Elhanan, 1995. 'The politics of free-trade agreements', *The American Economic Review*, 854:667-90.
- Grubel, H.G., 1971. 'Effective tariff protection: A non-specialist guide to the theory, policy implications and controversies', in Grubel, H.G. and Johnson, H. G., eds., *Effective Tariff Protection*, GATT, Geneva:1-15.
- Harvey, A.C., 1990. *The Economic Analysis of Time Series*, Philip Allan, London.
- Hendry, David F., 1995. *Dynamic Econometrics*, Oxford University Press, New York.
- Inder, Brett, 1993. 'Estimating long-run relationships in Economics: a comparison of different approaches', *Journal of Econometrics*, 571:53-68.
- Mas-Colell, A., Whinston, Michael D. and Green, J.R., 1995. *Microeconomic Theory*, Oxford University Press, New York.
- Noland, Marcus, 1989. 'Japanese trade elasticities and the J-curve', *The Review of Economics and Statistics*, 71:175-8.
- Panagariya, Arvind, 1996. APEC and the United States, Paper presented at the International Economic Association Round-Table Conference, Sydney, Australia, 15-17 July, unpublished.
- Ruffin, Roy J., 1971. 'The welfare implications of effective protection', in Grubel, H.G. and Johnson, H.G., eds, *Effective Tariff Protection*, GATT, Geneva: 85-107.
- Richardson, Martin, 1995, 'Tariff revenue competition in a free trade area', *European Economic Review* 39:1429-37.
- Shiells, Clinton, R., 1991. 'Errors in import-demand estimates based upon unit-value indexes', *The Review of Economics and Statistics* 732:378-82.
- United Nations Conference on Trade and Development (UNCTAD), 1994. *Directory of Import Regimes, Part I: monitoring import regimes*, United Nations, New York.
- Vousden, Neil, 1990. *The Economics of Trade Protection*, Cambridge University Press, New York.
- Wonnacott, Paul and Wonnacott, Ronald, 1992. 'The Customs Union issue reopened', *The Manchester School*, 402:119-35.

Appendix A: Equivalent variation measure of the welfare effect of forming a customs union in South Asia

An equivalent variation measure of the welfare effect of forming a customs union is derived below for one of the union partners, say country A.⁸ This procedure can be replicated for all other countries in the union and the results for all union partners added to obtain the welfare change for the union as a whole. Let p_i^w denote the border price of good i , t_i^c the common external tariff of the two union partners after formation of the customs union, t_i^w the external tariff of country A before forming the customs union. In what follows, goods will be divided into A's imports (group M), A's class 1 exports (group X_1 —see case I in the text for definition) and A's class 2 exports (group X_2 —see case II in the text for definition). Price and tariff vectors for each group will be denoted by M , X_1 and X_2 subscripts. The gains due to tariff liberalisation are derived using an equivalent variation (EV) measure based on the Hicksian compensated demand function. This measure is the amount of net income to be taken away from the consumers at the pre-union prices so as to make them as well off as they would be at the post-union prices.⁹ Following Vousden (1990), we define EV net of production and tariff revenue effects. In the present model, the equivalent variation measure of A's increase in welfare (EV^A) due to formation of the union is then the change in expenditure at the final (post-union) utility level net of the change in income (= the sum of the change in factor incomes and the change in tariff revenues) in A. Using expenditure and GNP functions this is given by

$$\begin{aligned}
 EV^A \equiv & E^A(p_M^w(1+t_M^c), p_{X_1}^w(1+t_{X_1}^c), p_{X_2}^w, V_2^A) - E^A(p_M^w(1+t_M^w), p_{X_1}^w, p_{X_2}^w, V_2^A) \\
 & - [g^A(p_M^w(1+t_M^c), p_{X_1}^w(1+t_{X_1}^c), p_{X_2}^w, v) - g^A(p_M^w(1+t_M^w), p_{X_1}^w, p_{X_2}^w, v)] \\
 & - \left[\sum_{i \in M} p_i^w t_i^c [E_{p_i}^A(p_i^w(1+t_i^c), V_2^A) - g_{p_i}^A(p_i^w(1+t_i^c)) - S_i^B(p_i^w(1+t_i^c))] \right] \\
 & + \left[\sum_{i \in M} p_i^w t_i^w [E_{p_i}^A(p_i^w(1+t_i^w), V_2^A) - g_{p_i}^A(p_i^w(1+t_i^w))] \right] \\
 & - \sum_{i \in X_1} p_i^w t_i^c C_i^B(p_i^w(1+t_i^c))
 \end{aligned}$$

where V_2^A is A's utility after the formation of the CU

E is A's expenditure function

g is A's GNP function

V is the usual vector of A's factor endowments (assumed fixed here)

C_i^B is the rest of the union's ('country' B) demand for A's class 1 exports

S_i^B is the rest of the union's exports into A.

The term containing C_i^B is included because under the customs union, country A does not charge the same price for group 1 goods to its union partners as to countries outside the union. This term captures the rents obtained from selling C_i^B units to the partner countries at producer price $p_i^w(1+t_i^c)$ while selling all other units to the rest of the world at producer price p_i^w . The term in S_i^B is subtracted in the post-union expression for tariff revenue since no tariff revenue is earned on units imported from countries within the union.

The above expression for the equivalent variation measure of the fall in country A's welfare associated with a customs union can be approximated by using a second order Taylor series expansion about the pre-union price vector assuming that cross-price derivatives are zero.

$$\begin{aligned}
 EV^A = & \sum_{i \in M} E_{p_i}^A(p_i^w(1+t_i^w))p_i^w(t_i^c - t_i^w) + \sum_{i \in X_2} E_{p_i}^A(p_i^w(1+t_i^w))p_i^w t_i^c \\
 & + \frac{1}{2} \sum_{i \in M} E_{p_i p_i}^A(p_i^w(1+t_i^w))(p_i^w(t_i^c - t_i^w))^2 + \frac{1}{2} \sum_{i \in X_2} E_{p_i p_i}^A(p_i^w(1+t_i^w))(p_i^w t_i^c)^2 \\
 & - \left[\sum_{i \in M} g_{p_i}^A(p_i^w(1+t_i^w))p_i^w(t_i^c - t_i^w) + \sum_{i \in X_2} g_{p_i}^A(p_i^w(1+t_i^w))p_i^w t_i^c \right] \\
 & - \frac{1}{2} \left[\sum_{i \in M} g_{p_i p_i}^A(p_i^w(1+t_i^w))(p_i^w(t_i^c - t_i^w))^2 + \sum_{i \in X_2} g_{p_i p_i}^A(p_i^w(1+t_i^w))(p_i^w t_i^c)^2 \right] \\
 & - \sum_{i \in M} [p_i^w t_i^c [E_{p_i}^A(p_i^w(1+t_i^c)) - g_{p_i}^A(p_i^w(1+t_i^c))]
 \end{aligned}$$

$$\begin{aligned}
& + \sum_{i \in M} p_i^w t_i^w [E_{p_i}^A(p_i^w(1+t_i^w)) - g_{p_i}^A(p_i^w(1+t_i^w))] \\
& + \sum_{i \in M} p_i^w t_i^c S_i^B(p_i^w(1+t_i^c)) - \sum_{i \in X_1} p_i^w t_i^c C_i^B(p_i^w(1+t_i^c)).
\end{aligned}$$

Re-arranging and collecting terms this comes to

$$\begin{aligned}
& = \sum_{i \in M} p_i^w t_i^c S_i^B(p_i^w(1+t_i^c)) - \sum_{i \in X_1} p_i^w t_i^c C_i^B(p_i^w(1+t_i^c)) + \sum_{i \in M} p_i t_i^c \{ [E_{p_i}^A(p_i^w(1+t_i^w)) \\
& - g_{p_i}^A(p_i^w(1+t_i^w))] - [E_{p_i}^A(p_i^w(1+t_i^c)) - g_{p_i}^A(p_i^w(1+t_i^c))] \} \\
& + \frac{1}{2} \sum_{i \in M} (p_i^w(t_i^c - t_i^w))^2 (E_{p_i p_i}^A - g_{p_i p_i}^A)(p_i^w(1+t_i^w)) \\
& - \sum_{i \in X_2} \{ (g_{p_i}^A - E_{p_i}^A)(p_i^w(1+t_i^w)) \cdot t_i^c p_i^w + \frac{1}{2} (g_{p_i p_i}^A - E_{p_i p_i}^A)(p_i^w(1+t_i^w)) \cdot (p_i^w t_i^c)^2 \}
\end{aligned}$$

With manipulation, this may be simplified to yield the following expression for the gain in country A's welfare due to formation of the customs union.

$$\begin{aligned}
EV^A = & \sum_{i \in M} \left\{ p_i^w t_i^w \Delta M_i^{Acomp} - \frac{1}{2} (t_i^c - t_i^w)^2 \frac{\partial M_i^{Acomp}}{\partial p_i} \right\} \bigg|_{MFN} - p_i^w t_i^c S_i^B(p_i^w(1+t_i^c)) \\
& + \sum_{i \in X_2} \left\{ t_i^c X_i^A(p_i^w(1+t_i^w)) + \frac{1}{2} (t_i^c)^2 \frac{\partial X_i^A}{\partial p_i} \right\} \bigg|_{MFN} + \sum_{i \in X_1} p_i^w t_i^c C_i^B(p_i^w(1+t_i^c)),
\end{aligned}$$

where the *MFN* after a partial derivative indicates that the derivative in question is to be evaluated at the initial MFN equilibrium prior to the formation of the customs union. M_i^{Acomp} is A's compensated demand curve for imports of good *i* and X_i^A is A's exports of good *i*. Price *p* without the superscript *w* is the domestic price.

The first two terms in the first set of parentheses capture the "trade creation" gains due to a fall in the external tariff imposed by country A. The third term is the loss due to the forgone tariff revenue on imports from the partner countries. The terms in the second set of parentheses are the gains due to increased producer surplus for country A's class 2 exports and the final term is the gain in the form of producer rents on class 1 exports to union partners.

Table A1 Definition of SITC based product categories

Product categories	SITC Rev.1
100 Primary products	(0 to 4) + 68
110 Food	0+1+22+4
120 Agricultural raw materials	2 - (22+27+28)
130 Crude fertilisers & mineral ores	27 + 28
140 Mineral fuels	3
150 Non-ferrous metals	68
200 Manufactured products	(5 to 8)-68
300 All products	0 to 9

Source: Adopted from United Nations Conference on Trade and Development (UNCTAD), 1994. *Directory of Import Regimes, Part I: monitoring import regimes*, United Nations, New York..

where the AFW after a partial derivative indicates that the derivative in question is to be evaluated at the initial MFN equilibrium prior to the formation of the customs union. $M_i^{A,0}$ is A's compensated demand curve for imports of good i and $X_i^{A,0}$ is A's exports of good i . Price p_i without the superscript w is the domestic price.

The first two terms in the first set of parentheses capture the "trade creation" gains due to a fall in the external tariff imposed by country A. The third term is the loss due to the foregone tariff revenue on imports from the partner countries. The terms in the second set of parentheses are the gains due to increased producer surplus for country A's class 2 exports and the final term is the gain in the form of producer rents on class 1 exports to union partners.

$$\Delta W_A = \sum_{i \in C_1} (p_i^w - p_i^A) X_i^{A,0} + \sum_{i \in C_2} (p_i^w - p_i^A) X_i^{A,0} - \sum_{i \in C_2} (p_i^w - p_i^A) X_i^{A,0} + \sum_{i \in C_2} (p_i^w - p_i^A) X_i^{A,0}$$

Table A1. Definition of SITC based product categories

Product categories	
100 Primary products	
110 Food	
120 Agricultural raw materials	
130 Crude petroleum & mineral ores	
140 Mineral fuels	
150 Non ferrous metals	
200 Manufactured products	
300 All products	

Source: Adapted from United Nations Conference on Trade and Development (UNCTAD), 1994. Directory of trade policies, Part A: summary report, United Nations, New York.

Recent publications

Economics Division Working Papers

ISSN 1038-412x

Development issues

- DI 96/2 *Capital flows, monetary policy and exchange rates in the Asian region*, Suiwah E. Leung, 34 pp.
- DI 96/1 *Safeguarding the future of world trade in textiles and clothing*, Yang Yongzheng, 18pp.
- DI 95/8 *Can institutional transition stimulate long-run growth?*, Yiping Huang, 22pp.
- DI 95/7 *Models of state loan insurance*, Titin Suwundi, 22pp.
- DI 95/6 *Investment liberalisation and market forces: the new OECD initiative*, David Robertson, 20pp.
- DI 95/5 *Fiscal policy and tax regimes: a cross-national analysis*, Muhammad Aslam Khan, 28pp.
- DI 95/4 *Global environment and trade: new institutions and old realities*, David Robertson, 38pp.
- DI 95/3 *Trade in telecommunications services*, Tony Warren, 24pp.
- DI 95/2 *Postgraduate education of overseas students in Australia*, David Throsby and Christopher Heaton, 108pp.

East Asia

- EA 96/2 *Grain versus food: a hidden issue in China's food policy debate*, Feng Lu, 33 pp.
- EA96/1 *China's textile and clothing exports in a changing world economy*, Yang Yongzheng and Chuanshui Zhong, 20pp.
- EA 95/6 *Technology transfer in China: adapting and upgrading imported technologies*, Xiaofeng Gong, 24pp.
- EA 95/5 *Changes in the roles of various ownership sectors in Chinese industry*, Wu Zengxian, 18pp.
- EA 95/4 *The Hong Kong/China connection: trade and the wool industry*, Won Tun-Oy and Sung Yun-Wing, 56 pp.

- EA 95/3 *The Korean wool textile industry: recent events*, Young-il Park, 24pp.

South Asia

- SA 96/9 *Welfare effects of a discriminatory trading area in South Asia*, M. Manir Hossain and Neil Vousden, 31 pp.
- SA 96/1 *Indian fiscal federalism: major issues*, M. Govinda Rao, 34pp.
- SA 95/2 *Interest rates, saving and investment in India*, Premachandra Athukorala, 28pp.
- SA 95/1 *Bangladesh and the Uruguay Round: a general equilibrium welfare analysis*, Helal Ahammad and Peter G. Warr, 30pp.

Southeast Asia

- SEA 96/1 *Regional development in Southeast Asia: the challenges of sub-national diversity*, Hal Hill
- SEA 95/6 *Explaining the Thai miracle: dragons, planners and other myths*, Peter G. Warr, 36pp.
- SEA 95/5 *Transferring new technology to village communities: a non-government organisation experience in Indonesia*, Colin Barlow and Mes Beeh, 22pp.
- SEA 95/4 *Indonesian banking post-deregulation: moral hazard and high real interest rates*, Titin Suwandi, 32pp.
- SEA 95/3 *The market for tree crop technology: a Sumatran case*, Colin Barlow, 26pp.
- SEA 95/2 *What happens to industrial structure when countries liberalise? Indonesia since the mid-1980s*, H.H. Aswicahyono, Kelly Bird and Hal Hill, 28pp.
- SEA 95/1 *Indonesia's industrial policy and performance: 'orthodoxy' vindicated*, Hal Hill, 42pp.

South Pacific

- SP 96/5 *Governance in the Pacific: the dismissal of Tuvalu's Governor-General*, Tauaasa Taafaki, 27 pp.
- SP 96/4 *Recent economic developments in smaller Pacific countries*: Cook

- Islands, Kiribati, Tuvalu and New Caledonia, Ila Temu, 30 pp.*
- SP 96/3 *The Uruguay Round and the Pacific island countries*, Roman Grynberg
- SP 96/2 *Governance and political process in Kiribati*, Barrie Macdonald, 60pp.
- SP 96/1 *Labour absorption in the Kingdom of Tonga: position, problems and prospects*, Michael Hess, 26pp.
- SP 95/9 *Governance in the Pacific: politics and policy success in the Tuvalu*, Taaasa Taafaki and Janaline Oh, 27pp.
- SP 95/8 *The impact of the Sugar Protocol on the Lomé Convention on the Fiji economy*, Roman Grynberg, 50pp.
- SP 95/7 *Health services in the Solomon Islands*, Fadia Saadah and Peter Heywood, 60pp.
- SP 95/6 *Traditional governance and sustainable development in the Pacific*, Bikenibe Paeniu, 24pp.
- SP 95/5 *Health services in Papua New Guinea: a review and remedial strategy*, Samuel Lieberman and Peter Heywood, 48pp.
- SP 95/4 *A review of the SPARTECA trade agreement*, Roman Grynberg and Matthew Powell, 18pp.
- SP 95/3 *The subsistence sector in Pacific island countries*, E.K Fisk, 32pp.
- SP 95/2 *The Pacific tuna: towards policies that support sustained investment*, Stephen Pollard, 24pp.
- SP 95/1 *Is there a need for a Pacific Islands Development Bank?*, James Mak and Seiji Finch Naya, 28pp.

Visit our new website

<http://ncdsnet.anu.edu.au/>

Find out about the National Centre for Development Studies, our research program, and coming conferences and other events. Our catalogue will be available soon on the internet.

Asia Pacific Profiles 1996

Asia Pacific Economics Group

Ross Garnaut and Peter Drysdale

A comprehensive source of data on the region, including key economic indicators, foreign investment.

- 452 pages of up-to-date statistics on GDP growth, prices, inflation rates, export and import trends, trade flows, capital flows, social and political indicators, savings and investment, for China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Papua New Guinea and the South Pacific, Philippines, Singapore, Taiwan, Asia, East Asia, Thailand, Vietnam, Australia and New Zealand.

Within Australia

A\$500

Overseas

US\$500

Pacific Policy Papers

ISSN 0817-0444

- PPP 18 *Pacific 2010: Opportunities for Non-formal Education in Melanesia*, Rodney V. Cole, 62pp.
- PPP 17 *Pacific 2010: A Sustainable Future for Melanesia?: natural resources, population and development*, Bob Thistlethwaite and Derrin Davis, 210pp.
- PPP 16 *Pacific 2010: women and employment in Solomon Islands*, Marion W. Ward, 1995, 32pp.
ISBN 0 7315 1983 3 A\$10.00
- PPP 15 *Pacific 2010: strategies for Polynesian and Micronesian agricultural development*, J. Brian Hardaker and Euan Fleming, 1995, 180pp.
ISBN 0 7315 1979 5 A\$25.00
- PPP 14 *Pacific 2010: urbanisation in Polynesia*, John Connell and John P. Lea, 1995, 178pp.
ISBN 0 7315 1954 X A\$25.00
- PPP 13 *Strategies for Melanesian Agriculture for 2010: tough choices*, Euan Fleming and J. Brian Hardaker, 1994, 162pp.
ISBN 0 7315 1931 0 A\$25.00
- PPP 12 *Women's Education and Economic Development in Melanesia*, Ken G. Gannicott and Beatrice Avalos, 1994,

PPP 11 50pp. ISBN 0 7315 1920 5 A\$10.00
Planning the Future: Melanesian cities in 2010, John Connell and John P. Lea, 1993, 172pp.
 ISBN 0 7315 1694 X A\$25.00

Pacific Issues Papers

Pacific 2010: strategies for Vanuatu, 1994, 28pp.
 ISBN 0 7315 1949 3

Pasifik 2010: Vanuatu rod blong fiuja, 1994, 18pp. ISBN 0 7315 1950 7

Pacific 2010: the future, a matter of choice, 1994, 50pp. ISBN 0 7315 1928 0 A\$10.00

Pacific Economic Bulletin

Ila Temu and Maree Tait (eds)

ISSN 0817-8038

Vol. 11, No. 2 November 1996

Contents

Economic surveys: Papua New Guinea: from stabilisation to growth?, Satish Chand • Western Samoa: recent economic developments, Kolone Vaai • Nauru: on the doorstep of a post-phosphate era, Garry Wiseman

Articles: Replicating Grameen in Papua New Guinea, Rebecca Fleischer • Unit labour costs in manufacturing in Fiji and Papua New Guinea, Ron Duncan • The 1995 Organic Law in Papua New Guinea, Desh Gupta and Henry Ivarature • Tackling environmental threats on Pacific atolls, Colin Hunt • Monetary policy in Solomon Islands Gabriel Sterne • Order in the Year of Law Enforcement: Papua New Guinea, Sinclair Dinnen

Notes: Strengthening seafood export capabilities in the South Pacific, Colin Hunt • The Papua New Guinea economy: the past record, the current dilemma, the future challenge, Sir Mekere Morauta • Empowering the region: a proposal for a Pacific Islands Investment Development Fund, Stephen Henningham and Janaline Oh • Structural adjustment in Papua New Guinea, Murray Proctor

Reviews: *Aid and remittances in small island countries* (Bernard Poirine), Patrick Laplagne • *Pacific and Caribbean Economies* (T'eo I.J. Fairbairn and DeLisle Worrell), Rodney Cole • *Sociocultural issues and economic development in the Pacific islands* (Penelope Schoeffel),

David Ambrose • *The 1992 PNG Election: change and continuity in electoral politics* (Yaw Saffu, ed.), Henry Ivarature
 South Pacific statistics at a glance, 'Alopi Latukefu and Ruel Abello

Subscriptions (2 issues, postage paid)

Australia	A\$35.00
All other countries	US\$30.00
Single issues	A\$17.50
Back issues	A\$10.00

Asian-Pacific Economic Literature

H.W. Arndt (editor)

ISSN 0818-9935

Vol. 10, No. 1, May 1996

Policy issues

The Technology Ladder in Development: the Singapore case, Goh Keng Swee

Literature surveys

Tourism in the Asian-Pacific Region, Peter Forsyth and Larry Dwyer

The Economic Position of Women in Asia, Xin Meng

Literature survey update

Continuing Demographic Transitions in Asia, Terence H. Hull

Annual subscriptions (for 2 issues)

Institutional price	A\$100
Developing country/personal price	A\$50

National Centre for Development Studies Books

The Third Revolution in the Chinese countryside, Ross Garnaut, Guo Shutian and Ma Guonan (eds), 1996, Cambridge University Press, Cambridge, 313pp.

ISBN 0 521 554 098 bnd A\$110

Third World in the First: development and indigenous peoples, Elspeth Young, 1995, Routledge, London, 366pp.

ISBN 0 415 15543 1 bnd £45.00

ISBN 0 415 11673 2 ppr £14.95

Practical Cost Benefit Analysis: basic concepts and applications, Frances Perkins, 1994, MacMillan Education Australia, Melbourne, ISBN 07329 2783 8 ppr \$34.95

ISBN 0 7329 2784 6 bnd \$69.95

Nonstationary Time Series Analysis and Cointegration, Colin P. Hargreaves (ed.), 1994, Oxford University Press, Oxford, 326pp.

ISBN 0 19 877391 9 (bnd)

ISBN 0 19 877392 7 (ppr)

Sustaining Export-oriented Development: ideas from East Asia, Ross Garnaut, Enzo Grilli and James Reidel (eds), 1995, Cambridge University Press, Cambridge, 408pp.

ISBN 0 521 48304 2

A\$59.95

The Thai Economy in Transition, Peter Warr (ed.), 1993, Cambridge University Press, Sydney, 488pp. ISBN 0 521 38186 x A\$75.00

The European Community and the Developing World, Enzo R. Grilli, 1992, Cambridge University Press, Sydney, 408pp.

ISBN 0 521 38511 3

A\$65.00

Disarray in World Food Markets: a quantitative assessment, Rodney Tyers and Kym Anderson, 1992, Cambridge University Press, Sydney, 470pp.

ISBN 0 521 35105 7

A\$59.95

The China-Hong Kong Connection: the key to China's open door policy, Yun-Wing Sung, 1991, Cambridge University Press, Sydney, 198pp.

ISBN 0 521 38245 9

A\$47.50

New Silk Roads, Kym Anderson (ed.), 1992, Cambridge University Press, Sydney, 272pp.

ISBN 0 521 39278 0

A\$59.95

Achieving Industrialization in East Asia, Helen Hughes (ed.), 1988, Cambridge University Press, Sydney, 396pp.

ISBN 0 521 35129 4

A\$75.00

Chinese Economic Association Proceedings

CPRO 5 *Chinese and East Asian Economies in the 1990s*, Papers presented at the annual conference of the Chinese Economic Association at the Australian National University, 30 November to 1 December 1993, Guonan Ma, Xin Meng and Shujuan Lin (eds), 1994, 220pp. ISBN 0 7315 1937 X A\$15.00

The Proceedings for 1989, 1990, 1992 and 1993 are also available.

Australia-Japan Research Centre Monographs

Flying High: liberalizing Civil Aviation in the Asia Pacific, Gary Clyde Hufbauer and Christopher Findlay (eds), Institute for International Economics, Washington DC and the Australia-Japan Research Centre, Canberra, 232pp, ISBN 0 88132 231 8

Corporate Links and Foreign Direct Investment in Asia and the Pacific, Edward K.Y. Chen and Peter Drysdale, HarperEducational Publishers, Sydney, 1995, 318pp.

ISBN 0 06 312178 6

A\$44.95

Asia Pacific Regionalism: readings in international economic relations, Ross Garnaut and Peter Drysdale (eds), AJRC/HarperEducational Publishers, Sydney, 1994, 452pp.

ISBN 0 06 3121 40 9

A\$39.95

Asia Pacific Economics and Politics Series

Orders

Books, journals and working papers are available from

Bibliotech, ANUTECH Pty Ltd
GPO Box 4
Canberra ACT 2601 Australia

To place a standing order for series or journals, write 'SO' in the quantity column and we will invoice you. Postage and packing charges are added to orders as follows

Australia	1st book A\$5.00, each additional book A\$1.00
Asia/Oceania (airmail)	1st book A\$8.00, each additional book A\$4.00
Elsewhere (airmail)	1st book A\$11.00, each additional book A\$6.00

Japanese Firms, Finance and Markets, Paul Sheard (ed.), Addison Wesley Longman, Melbourne and the Australia-Japan Research Centre, Canberra, 1996, 308 pp, ISBN 0 582 81108 2 A\$44.50

Changing Global Comparative Advantage: Evidence from Asia and the Pacific, Ligang Song Addison Wesley Longman, Melbourne and the Australia-Japan Research Centre, Canberra, 1996, 198 pp, ISBN 0 582 81084 1 A\$44.50

Environment and Development in the Pacific: Problems and Policy Options, Ted English and David Runnalls (eds), Addison Wesley Longman, Melbourne and the Australia-Japan Research Centre, Canberra, 1996, 242pp, ISBN 0 582 81084 1 A\$44.50

Pacific Economic Papers

ISSN 0728-8409

PEP 258 *Public Infrastructure and Regional Devt: Evidence from China*, Lu Weiguo

PEP 257 *Regional Variations in Diets in Japan*, P. Reithmuller H. Mori and R. Stroppiana

PEP 256 *Japanese FDI in Australia in the 1990s: Manufacturing, Financial Services and Tourism*, S. Nicholas, 22pp.

PEP 255 *From Osaka to Subic: APEC's challenges for 1996*, Andrew Elek, 34pp.

PEP 254 *NAFTA, the Americas, AFTA and CER: reinforcement or competition for APEC?*, Richard Snape, 16pp.

PEP 253 *Changes in East Asian food consumption: some implications for Australian irrigated agriculture*, Philip Taylor and Christopher Findlay, 26pp.

Annual subscription rate for twelve issues

Individuals A\$60

Institutions A\$100

Cost for single issues A\$15

Cost for single issues for students A\$10

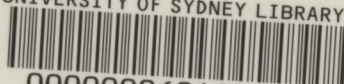


Fisher Library

This book is due for return on the latest
date shown below, **unless recalled.**

Fines accrue on overdue loans.

UNIVERSITY OF SYDNEY LIBRARY



0000000604118161

UNIVERSITY OF SYDNEY

Fisher Research

382.0954 58

0000000604118161

Welfare effects of a
discriminatory trading area
in South Asia / M. Manir
Hossain and Neil Vousden.

**Economics Division Working Papers
are divided into streams**

- Development Issues
- East Asia
- Southeast Asia
- South Pacific
- South Asia

Working Papers A\$10.00 plus postage

Order from:

Reply Paid 440
Bibliotech
ANUTECH Pty Ltd
Canberra 0200
Australia

Tel (61 6) 249 5662
Fax (61 6) 257 5088

Economics Division
Research School
of Pacific and
Asian Studies
The Australian
National University
Canberra 0200
Australia

ISSN: 1038-412X