The Sectoral Approach to Trade Liberalisation: Should we try to do better?

Allan Rae, Srikanta Chatterjee and Shamim Shakur
Department of Applied and International Economics
Massey University
Palmerston North

ABSTRACT

This paper discusses partial approaches to trade liberalisation, such as APEC's Early Voluntary Sector Liberalisation proposal and the 'zero-for-zero' approach. Distortions to resource allocation and global markets that might result from partial liberalisations are discussed, and parallels drawn to the possible trade diversion impacts and welfare losses of regional liberalisation and tariff escalation. A global CGE model is used to provide some numerical illustrations of the issues with respect to international trade in grains, oilseeds and related processed products.

Introduction

Sectoral approaches to trade liberalisation seem to be catching on amongst politicians and policy makers, and now extending to the WTO. From an economic efficiency standpoint, such schemes can create new distortions, such that their welfare implications are uncertain. The main objective of this research is to emphasise the potential negative aspects of sectoral trade reforms, such as those embedded in APEC's EVSL and WTO 'Zero-for-Zero' agreements and proposals.

The organisation of the paper is as follows. We start with a brief history of APEC, its reform agenda and 2010/2020 action plan. A review of past use of EVSL in APEC and 'zero-for-zero' in GATT/WTO is presented here. Next we summarise some simulation results obtained from earlier studies on the effects of EVSL and 'zero-for-zero' with discussion on their relevance in the context of this research. Some theoretical literature on the welfare implications of sectoral reform approaches is briefly reviewed in the following section. We then describe our methodology and experimental design involving sectoral liberalisation in grains and oilseeds as candidates for sectoral liberalisation. Data sources are also identified here. Results from experiments are then reported along with their interpretation. The final section summarises our research and suggests directions for future trade reforms in the light of this research.

APEC and its Reform Agenda

Starting in 1989 as an Australian-led initiative, the Asia-Pacific Economic Cooperation (APEC) forum has expanded from its initial twelve members to its present membership of 21. While APEC is yet to achieve any forum-wide trade reform, its members have agreed to free trade and investment in the region by 2010 for developed economies and 2020 for developing ones. Each member has prepared its own Individual Action Plan to meet the deadlines.

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At present APEC members account for 42 percent of the world's population, 57 percent of the world's economy and 46 percent of the world's merchandise trade. From New Zealand's point of view, 70 percent of its two-way trade (which includes 10 of its top 12 export markets), 70 percent of 1.5 million tourists who visit New Zealand every year, and 80 percent of New Zealand's investment originate from APEC economies. With successful implementation of APEC's goals, New Zealand's gain is estimated at 1.3 percent of GDP, and exports about four percent higher each year than they would have been otherwise (MFAT 1998a).

APEC aims to promote regional cooperation and free(r) trade initially within the forum countries. However, a unique feature of APEC is the concept of 'open regionalism,' which implies that any freeing up of trade it achieves for its members is to be extended to other, non-member, countries. There are several alternative means by which such extensions may be brought about (see Chatterjee 1999 for a summary) but, basically, the most-favoured-nation (MFN) mechanism of the WTO is likely to be an appropriate vehicle if only because it is a familiar and readily available vehicle.

APEC and EVSL

Given the composition of the APEC forum - and its geographic spread across three continents - its trade liberalisation agenda has to be a slow one, and its approach perhaps a country- and/or a commodity-specific one. With respect to trade reforms affecting agriculture, APEC's commitments so far are limited to (i) acceleration of the Uruguay Round Agreement, and (ii) agreement on sectoral liberalisation plans. The latter, dubbed 'EVSL' (early voluntary sectoral liberalisation) has been a cornerstone of APEC's market-opening initiative, and was launched by APEC Leaders at Vancouver in November 1997. Such a move, it was considered, would foster freer trade and investment, and promote economic growth in the member countries and within the region as a whole. By late 1997, a set of 41 sectors was selected for early voluntary liberalisation. Out of these 41 sectors, 15 were found to have wide support amongst forum members. These were therefore given the go-ahead for an early trial at the meeting of the leaders at Vancouver in November 1997.

Early Voluntary Sectoral Liberalisation (EVSL) at a Glance:

- Participated in by 16 economies.
- 15 sectors were selected for early voluntary liberalisation, based on widespread support from members - nine of these were selected for early action in 1998.
- Ministers may review progress of the remaining 6 sectors at the APEC Trade Ministers Meeting in June 1999.
- Member economies may implement the tariff commitments of EVSL on a voluntary basis.
- Member economies are recommended to work constructively to achieve critical mass and conclude EVSL in the WTO in 1999.

Out of the 15 selected sectors, nine ‘first tier’ sectors were identified for fast-track treatment. These are chemicals, energy, environmental goods and services, fish, forest products, gems and jewellery, medical equipment and instruments, toys, and a mutual recognition agreement in telecommunications products and systems (see Table 1 for the magnitude of liberalisation commitment and timetable). Two of them, fisheries and forestry, are of particular importance to New Zealand. New Zealand’s exports of fish and forest products to the APEC region are currently worth more than $3 billion a year. According to government estimates, tariff removal in these two sectors would save New Zealand exporters $130 million a year (MFAT 1998b). The estimate does not include the value of any additional exports that free market access would give to New Zealand exporters.

The other six ‘second tier’ sectors are oilseeds and oilseed products, food, fertiliser, autos, natural and synthetic rubber, and civil aircraft. These were to receive further preparatory treatment before being tried as sectors for voluntary liberalisation. At the next meeting in June 1999 in New Zealand, APEC Trade Ministers will review options for potential framework agreements in these six second-tier sectors.

An early attempt to achieve results under the EVSL scheme was made at the Kuala Lumpur meeting of the APEC leaders in November 1998. The result has been mixed. A number of member economies were reluctant to undertake ‘voluntary’ tariff reductions which would have to be offered to all trading partners, not just APEC members (recall the 'open regionalism' principle) prior to renewed negotiations under the World Trade Organisation (WTO). Consequently, Ministers agreed that the next step should be to invite economies beyond APEC to participate in the tariff liberalisation elements of the initiatives. Participating APEC economies are now in the process of notifying WTO members of their desire to negotiate tariff reductions in these sectors. The focus of attention for further advancement of the EVSL initiative has now shifted to the WTO, offering an opportunity for APEC to help shape trade future negotiations in that forum.

The Kuala Lumpur meeting also saw dissents in respect of removing trade restrictions in certain ‘sensitive’ sectors. The United States, supported by Canada and Australia, proposed a plan to eliminate tariffs by 2005 in all nine ‘first tier’ sectors. But the proposal to open up trade in the areas of fishery and forestry products (which had the support of many other members including New Zealand) however, got scuttled as Japan as a major importer of these products refused to free up its market any further at this time. After a lengthy and, at times, acrimonious debate the dispute was referred to the WTO for resolution. This early setback of the EVSL did nothing to help remove the perception that the national interests of the APEC members are so diverse that building a consensus on major issues must be extremely difficult. Chile and Mexico have opted out of the EVSL process altogether, claiming APEC's trade liberalisation agenda should be undertaken on a comprehensive basis. Although the reasons as to why Chile, Mexico (and to a lesser extent the US) insists on a comprehensive liberalisation scheme is complex, economic theory provides strong argument in favour of a comprehensive, global trade liberalisation, as opposed to a sectoral, regional path that the EVSL scheme strives to achieve.

'Zero-for-Zero' Initiative

The Uruguay Round 'Zero-for-Zero' Agreement by the Quad Four (United States, EU, Canada, and Japan) will first reduce, and eventually phase out important trade barriers. Under the agreement (and subsequent agreements at the Singapore Ministerials in December 1996), import tariffs, export taxes and export subsidies will be reduced to zero in a number of sectors by 2004. The Zero-for-Zero initiative with respect to the agro-food sector has been rather limited[1]. A Zero-for-Zero proposal was tabled for oilseed and related products, which was not adopted despite strong support. The issue is likely to come up in the new round of agricultural trade negotiations in the WTO, scheduled to start by the end of 1999. Moreover, both the EU and the United States are requiring more countries to comply with the 'Zero-for-Zero' agreement as a pre-condition for accession to the World Trade Organisation. The issue is very much alive, and the finding of this paper addresses the adverse effects of such sectoral liberalisation.

Previous Research

Applied research dealing with the specifics of EVSL and 'Zero-for-Zero' is rather scant. Dee, Hardin and Schuele (1998) mimic the reforms in some (but not all) of the sectors specified in EVSL. Their research makes the point that APEC's EVSL initiatives are mainly geared toward the upstream end of the processing chain, where current protection levels are already low. Leaving out the more highly protected downstream sectors from trade reform, such a partial liberalisation scheme makes imported inputs cheaper for these processing units. This augments resource misallocation in import-competing industries leading to second-best welfare losses. They also state that the EVSL plan for forestry does not come in for this criticism. The reason being that in the forestry case, reforms are planned for both upstream and downstream activities of raw logging, timber, wood, pulp and paper sectors.

Dee and Schuele (1998) did not analyse the oilseeds sector, but a Canadian study by Meilke and Wensley (1998) on similar reform filled the gap. Using a modified version of OECD's AGLINK model, they performed simulations to assess the impact of a zero-for-zero proposal with respect to oil and oilseed products. Tariff and export taxes were set to zero starting in the base year 1995, and projections were made on selected variables over a five-year period ending in 2001. Among the variants to liberalisation that were simulated were (i) zero-for-zero implementation with full participation, (ii) zero-for-zero with Japan and China not opting to join the scheme and (iii) zero-for-zero excluding ROW (rest of the world, which is dominated by India). In all simulations, the authors concluded that most developed countries and some lesser-developed countries would gain from implementing the zero-for-zero proposal. However, the magnitude of the gain depended on the number of participants in sectoral liberalisation (suggesting superiority of a global participation) and on the elasticity of demand from the crushing industry (which absorbs 80% of world demand for oilseeds) with respect to crushing margins.

[1] The only finalised Zero-for-Zero agreement, a product of the Singapore Ministerial Conference (December 1996) is a bilateral arrangement between the US and the EU, which eliminates tariffs on white distilled spirits. Within non-agricultural sectors, several Zero-for-Zero agreements were reached during the Uruguay Round negotiations in pharmaceuticals, medical instruments, and pulp and paper.

The upstream-downstream issue is picked up in this research. For example, APEC's EVSL would be applied to oilseeds and oilseed products (a 'tier two' sector). But there are important downstream issues as oilseeds and oilseed products feed into livestock farming as well as a range of processed food, which are left out of the list. For example policy-induced changes to livestock feedstuffs prices can have important consequences for the levels of protection afforded to livestock farming (Rae 1992). Some accompanying reforms in such downstream sectors could also be important from the point of view of some APEC members. New Zealand, for example, does not have a noteworthy production base for oilseeds or grains, but maintains a substantial livestock farming operation. This research illustrates such inadequacies of a selective sectoral approach and recommends reforms to be extended to the downstream sectors.

The Welfare Implications of Tariff Removal

The removal of trade barriers affects both production and consumption in the trading economies. If tariff removal is done in a non-discriminatory fashion, its benefits are greater than if discrimination is practised. It is usually the latter that is observed more often as countries enter into agreements whereby trade barriers are reduced or removed on a reciprocal basis amongst the agreement partners, but a common barrier is erected against third countries. The theory of economic integration captures these effects in terms of trade creation and trade diversion that typically arise out of the formation of a preferential trading arrangement such as a customs union. Trade creation results when the removal of barriers within the union creates new trade opportunities for the most efficient partner. Trade diversion occurs when such intra-union tariff removal plus a common tariff against third countries divert trade away from a more efficient third country to a union partner. While the former has the potential to improve welfare of the union members through allocative efficiency gains and consumer surplus gains within the union, the latter reduces global welfare. The *net* effect on global welfare therefore will depend on the balance of the welfare gains and losses of trade creating and trade diverting consequences of selective tariff removals. It is an exercise in the theory of the second best as it is only universal free trade that offers the first best Pareto optimum.

The present study attempts an *ex ante* measurement of the welfare gains and losses that may result from the removal of barriers affecting trade in grains and oilseeds within APEC. The exact method of estimating the welfare changes is discussed elsewhere in the paper, as is the rationale for selecting the two sectors. The present section goes into the sources of the gains and losses and some relevant issues concerning the approach of partial removal of barriers as embodied in the EVSL idea.

The effect of the removal of a trade barrier can be captured by observing the relative prices of goods within the protected countries and their world prices - the difference being a measure of the tariff equivalence. When a tariff is removed, the import of the good in question rises, and its price falls in the previously protecting country, while its output and price rise in the countries which are its more efficient producers. Resources will be removed from these sectors in the importing countries and reallocated to more efficient uses, giving rise to allocative efficiency gains there. Similar efficiency gains in the exporting country will result from more resources being devoted to the freed-up sectors.

The decline in the import price will lead to an increase in consumption, and a corresponding gain in consumer surplus in the importing country adding to the welfare improvement it experienced from allocative efficiency gains. The trade balance of the exporting countries will improve in respect of the freed-up sectors - another source of potential gains.

However, the changes indicated above are only the 'first round' changes. In any partial setting of tariff removal such as is envisaged in the EVSL proposal, there are several flow-on effects. For example, any reduction of prices at the upstream end resulting from a selective approach to tariff removal, may encourage using the cheaper imported inputs to produce more at the downstream end, and thereby reduce trade there. This kind of tariff escalation is quite common, and it usually has an adverse impact on global welfare levels. Several examples of the existence of escalation are cited later in the paper. Whether the allocative efficiency gains in the upstream sectors are greater or less than the allocative efficiency losses in the downstream ones is an empirical issue which the paper addresses in the reported results.

A further source of gain/loss is the expected change in the terms of trade resulting from the removal of barriers which raise the prices of some traded goods and lower those of others. The empirical findings of the paper confirm the possibility of such changes.

The exercise involving the measurement of welfare changes in terms of consumer surplus requires capturing the pure substitution effect, i.e. substitution of imports for import substitutes prompted by the change in relative prices, while the consumers' real income was held constant. The income effect of the price change is thus netted out. Typically, the assumption is made that the income effects are relatively unimportant (Corden 1975), and it is not necessary therefore to derive a compensated demand curve for estimating the welfare changes in terms of substitution effects alone.

In common with a number of other studies in this area (Khan 1997, Martin 1997), this paper uses the equivalent variation to measure the changes in welfare. This Hicksian concept is embedded in the ordinal approach to the measurement of consumer surplus, and is closely related to the concept of compensating variation alluded to above.

The theory of the second best as applied to trade policy areas confirms that partial approaches to trade liberalisation can create new distortions, and its welfare implications therefore are uncertain. Our findings help demonstrate the nature of these distortions in case EVSL is attempted in respect of the sectors we have chosen as examples.

Methodology

The GTAP applied general equilibrium model (Hertel 1997) is a relatively standard, multi-region model built on a complete set of economic accounts and detailed inter-industry linkages for each of the economies represented. The GTAP production system distinguishes sectors by their intensities in five primary production factors: land (agricultural sectors only), natural resources (extractive sectors only), capital, and skilled and unskilled labour. In trade, products are differentiated by country of origin, allowing bilateral trade to be modeled, and bilateral international transport margins are incorporated and supplied by a global transport sector. The model is solved using GEMPACK (Harrison and Pearson 1996).

In light of our interest in grains-livestock interactions, we have modified the standard GTAP model to allow for substitution between the various feedstuffs in livestock and milk production. Also, we utilize the newly developed, version 4 GTAP data base, which is benchmarked to 1995. We aggregate this data base up to the level of 11 regions and 10 commodities (see Appendix Tables 1 and 2). The regional focus is on the economies of APEC. We combine Canada and the USA into a single North America region, while Southeast Asia is an aggregation of Indonesia, Malaysia, the Philippines, Thailand, Singapore and Vietnam. Our emphasis on 'upstream-downstream' trade reforms influenced our chosen aggregations in both the grains/oilseeds and livestock systems. In the former, farm production of all grains (except rice) and oilseed crops is represented in a single sector (GRAIN_OIL), while products processed from grains and oil crops are aggregated to another sector (PROC_GRAIN). On the livestock side, farm production of animals and milk are aggregated together (RAW_ANIM), while meats and dairy products are aggregated into the downstream sector (PROC_ANIM). All other industry groups are aggregated into a manufacturing and a services sector. Three commodities (rice, grains/oil crops, and processed grains and oils) compete for use in the feedstuffs composite.

As already mentioned, protection levels are based on 1995 values. From this data, we present average tariffs in Table 2. For imports of grains and oilseeds, tariffs are by far the highest in Northeast Asia, followed by Southeast Asia. In other regions tariffs are either zero, or domestic prices are lower than world prices. Within the grains/oilseeds system, tariff escalation is apparent in eight of the 11 regions – the tariff rates on the processed products exceed those levied on the raw material. Thus tariff reform of just the raw material commodity will magnify the escalation. Several of the regions have low or zero tariffs on imports of livestock, but again for the majority of regions tariffs are higher on processed livestock products. This is especially the case in Northeast and Southeast Asia.

Removal of tariffs on imports of the 'upstream' commodity (GRAIN_OIL or RAW_ANIM) may increase the effective rate of protection on the relevant 'downstream' commodity, and encourage output expansion downstream with possible negative impacts on that region's welfare as well as international trade impacts. The extent of such impacts will depend in part on the share of the 'upstream' commodity in the total costs of the 'downstream' sector. These cost shares are shown, for a selection of regions, in Table 3. Several points can be made. The share of grains and oilseeds in the manufacture of processed grains and oils products is around 6%-12% in several regions, but much higher in the case of China. The shares of grains

and oilseeds in the livestock farming sectors reflect production and feeding systems. Thus the shares are quite low in the extensive farming systems of Australasia, but higher in the EU and USA where intensive feeding is more common. The processed grains and oilseeds commodity aggregate includes manufactured animal feeds, and this also has a relatively high share of livestock costs in Northeast and Southeast Asia, the EU and USA. In all regions shown in this table, livestock comprise 32%-67% of costs of the processed animal products sectors. Thus we might expect removal of protection on grains and oilseeds production to lead to an expansion of livestock production in regions such as Northeast and Southeast Asia.

Figure 1 indicates the flow of products within our modeled grains/oils/livestock complex. The figure is illustrated with data from Southeast Asia – the average tariffs applied at each stage are listed down the left side of the figure, while the shares of each commodity in the total costs of the product immediately 'downstream' are also shown.

Experimental Design

Experiments are conducted with a multi-country, general equilibrium closure, in which output levels, prices and income are endogenous for all regions. The experiments involve the complete removal of tariffs and tariff equivalents for various commodities. We chose this approach since APEC's EVSL proposal is limited to the removal of import tariffs only. The possible adoption of the sectoral approach to trade liberalisation within the WTO could extend negotiated reforms to other protectionist instruments related to domestic support and export competition. Such an approach could be developed as a continuation of the agricultural reforms agreed in the Uruguay Round related to domestic support, market access and export competition.

In all experiments APEC trade reform is modeled on a Most Favoured Nation (MFN) basis, with no reciprocal liberalisation in the non-APEC regions. It thus embraces the concept of 'open regionalism'. For the chosen commodities, tariffs are removed on all imports entering APEC economies whether or not they originated within APEC.

The first experiment involves the removal of import trade barriers on grains and oilseeds (GRAIN_OIL), which is the 'upstream' commodity in the grains-oilseeds complex. We move further downstream in subsequent experiments. Thus in the second, APEC barriers to import trade in processed grains and oils (PROC_GRAIN) are removed. APEC barriers affecting trade in livestock (RAW_ANIM) and then in processed livestock products (PROC_ANIM) are removed in the third and final experiments, respectively.

Results

Experiment 1

The removal of import tariffs on grains and oilseeds in APEC has a major impact on domestic prices of this aggregate commodity in Northeast and Southeast Asia, where tariffs were highest (Table 2). Output of these crops declines in both regions (Table 4), but especially in Northeast Asia. Grains and oilseeds output increases elsewhere in APEC, but most noticeably in Australia where the domestic price rises as a result of the regional liberalisation. Northeast and Southeast Asia increase imports, and several other APEC regions increase their exports of grains and oilseeds with consequent impacts on their trade balances (Table 5). In both

Northeast and Southeast Asia, outputs of the protected downstream sectors all increase, driven by the lower domestic prices of grains and oilseeds. But as a result, the size of these sectors in all other APEC regions contracts somewhat as export prices of these commodities fall. Thus the trade balances in the PROC_GRAIN and both livestock sectors improve in Northeast and Southeast Asia as these regions reduce their imports of these commodities, but the reverse occurs elsewhere in the APEC region as export volumes are reduced.

Table 5 also indicates the changes in welfare, measured as the equivalent variation. The most significant welfare improvement occurs in Northeast Asia, of US$6.8 billion. The majority of this gain is contributed through improved allocative efficiency, especially due to the contraction of the GRAIN_OIL sector. While expansion of the downstream processed grains and livestock sectors caused allocative efficiency losses, these were much less than the above gain. While Southeast Asia also experiences net welfare gains through improved allocation of resources, this gain is more than offset by a deterioration in the terms of trade. Major contributing factors are lower export prices (due mainly to lower PROC_GRAIN prices) and higher MANUF prices increasing this region's import price index). Australia is the only other APEC economy to experience a welfare increase in this experiment, primarily as a result of improved terms of trade (increased GRAIN_OIL and OTH_FARM export prices).

Experiments 2 – 4

Table 6 gives the changes in selected sectoral outputs for the remaining experiments. Starting with experiment 2, removal of tariffs on APEC's imports of processed grains and oils products (as well as on raw grains and oilseeds) produces similar reductions in domestic GRAIN_OIL prices in Northeast and Southeast Asia as in experiment 1, but compared with experiment 1 a greater fall in the PROC_GRAIN price in Southeast Asia where this sector is relatively heavily protected (Table 2). Comparing the second with the first experiment, PROC_GRAIN output expands less in Southeast Asia, and contracts by more in China. As a result, output of the protected RAW_ANIM and PROC_ANIM sectors in Southeast Asia expand more than in the first experiment (PROC_GRAIN comprises 20% - 40% of the total livestock sector cost in these regions). This in turn leads to lower livestock output in other APEC economies due to a deeper cut to export prices of these livestock commodities compared with experiment 1.

Compared with other commodities shown in Table 2, import tariffs on livestock are relatively low in Northeast and Southeast Asia. Thus even after removal of these tariffs, expansion of livestock farming (and hence output of processed livestock products) in both these regions is rather similar to those of the previous experiment But imports of processed livestock products are heavily taxed in both Northeast and Southeast Asia. Liberalisation of this import trade, on top of tariff removal on the upstream sectors, brings about some major restructuring. Despite lower feed input costs, duty free entry of processed meats and dairy products into Northeast and Southeast Asia lower domestic prices of this commodity by 5% - 7% and output by between 12% and 20%. Higher export prices encourage increased output of PROC_ANIM in Australia (12%) and New Zealand (26%). The PROC_ANIM trade balances in Northeast and Southeast Asia deteriorate by US$9.8 and $2.2 billion, respectively.

Table 7 summarises the welfare changes within APEC associated with each of the four experiments. Perhaps the most noticeable feature is that the gain in welfare to the region as a whole from tariff removal throughout the entire grains/oilseeds/livestock complex is almost double that from any of the less-complete reforms. Most of this gain is due to the increased welfare experienced in Northeast Asia, although Australia, New Zealand and Southeast Asia also benefit. It can also be noted that China and North America do not gain in welfare in this scenario, nor do they in most of the others. The reforms lead to increased output of the manufacturing in sectors in Northeast and Southeast Asia, China and North America. But declining export prices of manufactured goods provide terms of trade losses to China and North America which more than cancel out their gains from more efficient resource use.

Conclusions

While we recognise the political need for progressing APEC's trade reform agenda, our findings add weight to the argument that a global multi-commodity approach is preferred on economic grounds. Selective removal of trade barriers is quite uncertain in its consequences. It can also worsen tariff escalation, as we have demonstrated with consequent downstream trade diversion impacts. Removal of tariffs on grains and oilseeds within APEC produced the expected results for those commodities, with reduced outputs in the more protective economies and increased exports from North America and Australia. But we wish to emphasise the downstream impacts – output of the protected processing sectors expanded in both Northeast and Southeast Asia, worsening resource misallocation in those economies and reducing exports of the processed products from more efficient producers elsewhere. Consequently, most APEC economies suffered a loss in welfare. Extending tariff removal throughout the grains/livestock complex almost doubles the welfare gains to APEC economies as a whole, compared with the less-than-complete reforms implied in the EVSL initiative. Most of this gain accrues to Northeast Asia, but Southeast Asia, Australia and New Zealand also benefit. China and North America were shown not to gain in this reform, nor in most of the others that we studied. An obvious next step in our research is to extend study of our reform scenarios to a global level, as could occur within a WTO agreement.

One lesson from our analysis is that should a selective sectoral approach be taken, then sectors should not be defined in the traditional way. A wider view is required that recognises the backward and forward linkages in production. But even then the problem remains that, to refer to our case study again, extension of the reforms to the processed meats and grains sectors for example still may cause distortions due to impacts on resource flows within the wider economy and substitutions in consumption. Further, not only is the EVSL approach selective in terms of the commodities chosen for reform, but it is also voluntary and therefore member economies can elect not to implement some or all of the reforms. Therefore further pursuit of global trade liberalisation within the WTO is preferable since not only does it overcome the problem of countries choosing to not participate in reforms, but it allows the 'across-the-board' reduction in trade barriers of the Uruguay Round to be continued and also offers the possibility of reducing the tariff escalation problem.

Table 1 Tariff end rates and dates for nine 'EVSL' sectors

Sector	End Rate	End Date
Forest products	Elimination	By 1 January 2002/2004 for wood and furniture By 1 January 2000/2002 for pulp, paper and printed products
Fish and fish products	Elimination	By December 31, 2005
Toys	Elimination	By 2000-2005
Gems and jewellery	Elimination/ reduction to 5%	By 2005
Chemicals	CTHA* harmonised rates	By 2001 for rates below/ equal to 10%; by 2004 for other rates
Medical equipment and instruments	Elimination	By 2001
Environmental goods and services	Elimination	tbd
Energy	Elimination	By 2003/2004
Telecommunications MRA	N/A	N/A

*Chemical Tariff Harmonisation Agreement
Source: World Trade Organization (WTO), Geneva.

Table 2 Power of the import tax[a] on imports of selected commodities

	GRAIN_OIL	PROC_GRAIN	RAW_ANIM	PROC_ANIM
AUS	1.00	1.03	1.00	1.09
NZL	1.00	1.03	1.00	1.10
NEAsia	3.30	1.08	1.04	1.66
SEAsia	1.53	1.22	1.12	1.65
China	0.95	1.20	1.30	0.73
NthAmer	1.00	1.02	1.00	1.12
APECSthAm	0.95	1.07	1.00	0.92
CSAmer	0.95	1.13	1.07	1.02
EU14	1.04	1.02	1.06	1.10
FSU	0.96	1.11	1.07	1.09
ROW	1.10	1.23	1.29	1.44

a. Value of imports at market prices relative to value of imports at world (cif) prices

Source: GTAP version 4 database.

Table 3 Sector Cost Shares[a] (%)

Region	Share of GRAIN_OIL in:		Share of:	
	PROC_GRAIN	RAW_ANIM	PROC_GRAIN in RAW_ANIM	RAW_ANIM in PROC_ANIM
AUS	7.7	1.8	5.2	46.2
NZL	3.1	1.7	0.5	32.3
China	26.7	6.0	6.9	66.8
NEAsia	8.9	1.7	40.2	57.4
SEAsia	12.4	0.5	19.2	39.9
NthAmer	7.9	24.6	14.5	45.8
EU14	5.9	6.4	18.8	37.0

a. Percentage share of commodity i in total cost of commodity j

Source: GTAP version 4 database.

Table 4 Experiment 1: Domestic price & output impacts

Region	Change in prices (%)	Change in outputs (%)			
	GRAIN_OIL	GRAIN_OIL	PROC_GRAIN	RAW_ANIM	PROC_ANIM
AUS	3.4	21.9	-2.5	-2.1	-1.4
NZL	-0.2	0.2	-3.4	-0.4	-0.1
NEAsia	-17.8	-81.8	2.7	2.5	2.6
SEAsia	-9.1	-21.1	3.2	0.8	0.9
China	-0.2	-0.0	-1.9	-0.1	-0.2
NthAmer	0.8	2.7	-0.6	-0.4	-0.2
APECSthAm	0.5	1.6	-1.0	-0.1	-0.1

Table 5 Experiment 1: International trade & welfare effects (1995 US$millions)

	Change in trade balance			Change in welfare
	GRAIN_OIL	PROC_GRAIN	LIVESTOCK[a]	
AUS	805	-215	-196	171
NZL	3	-76	-18	-35
NEAsia	-3460	3309	832	6834
SEAsia	-1243	759	70	-102
China	96	-451	-79	-352
NthAmer	2841	-1150	-483	-312
APECSthAm	150	-209	-3	-48

a. RAW_ANIM + PROC_ANIM

Table 6 Effects of successive liberalisation of downstream sectors on output (% change)

Region	PROC_GRAIN		RAW_ANIM			PROC_ANIM			
	Exp. #1	Exp. #2	Exp. #1	Exp. #2	Exp. #3	Exp. #1	Exp. #2	Exp. #3	Exp. #4
AUS	-2.5	-0.8	-2.1	-2.3	-2.6	-1.4	-1.6	-1.5	12.3
NZL	-3.4	-0.8	-0.4	-0.6	0.1	-0.1	-0.3	-0.5	25.8
NEAsia	2.7	2.1	2.5	2.5	2.3	2.6	2.6	2.6	-11.6
SEAsia	3.2	1.7	0.8	1.4	1.4	0.9	1.8	2.0	-20.5
China	-1.9	-4.5	-0.1	0.0	-0.8	-0.2	-0.0	0.3	0.8
NthAmer	-0.6	-0.3	-0.4	-0.4	-0.1	-0.2	-0.2	-0.2	-1.5
APECSthAm	-1.0	-1.8	-0.1	-0.0	-0.0	-0.1	-0.0	-0.0	0.7

Table 7 Effects of successive liberalisation of downstream sectors on regional welfare (1995 US$ million)

Region	Welfare			
	Exp. #1	Exp. #2	Exp. #3	Exp. #4
AUS	171	239	229	725
NZL	-35	-16	-19	599
NEAsia	6834	6518	6478	10620
SEAsia	-102	-15	72	556
China	-353	-309	-264	-249
NthAmer	-312	-40	14	-384
APECSthAm	-48	-43	-43	-4
Total APEC	**6156**	**6334**	**6467**	**11862**

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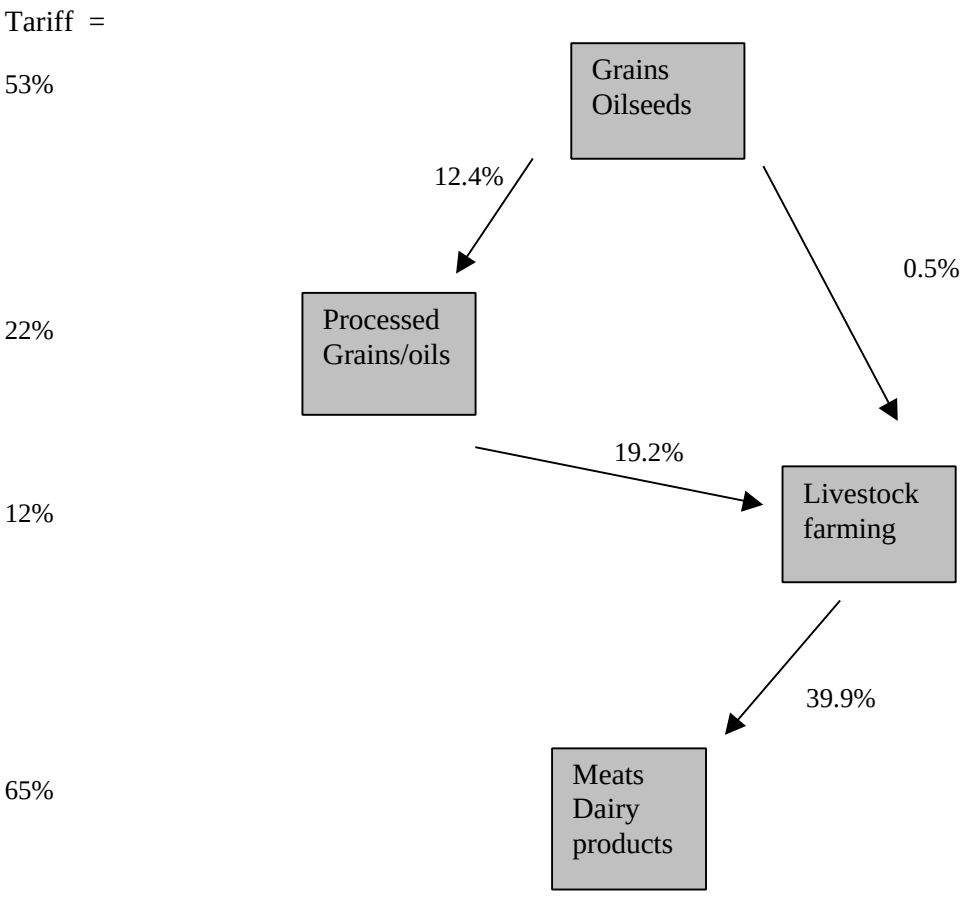

Figure 1 The Grains/Oilseeds/Livestock Complex: Southeast Asia

Appendix Table 1 Regional Aggregation

Abbreviation	GTAP aggregation
AUS	Australia
NZL	New Zealand
NEAsia	Japan, Korea, Hong Kong, Taiwan
SEAsia	Indonesia, Malaysia, Thailand Philippines, Singapore, Vietnam
China	
NthAmer	Canada, USA
APECSthAm	Mexico, Chile
CSAmer	Other Central & South America
EU14	EU15 minus Austria
FSU	Former Soviet Union
ROW	All remaining countries

Appendix Table 2 Commodity aggregation

Abbreviation	GTAP aggregation
GRAIN_OIL	Wheat, cereal grains nec, oil seeds
PROC_GRAIN	Vegetable oils and fats
	Starches and starch products
	Prepared animal feeds
	Bakery products
	Grain mill products nec
	Macaroni, noodles etc
	Other food products nec
RAW_ANIM	Bovine cattle, sheep and goats, horses
	Other animal farming
	Raw milk production
	Animal products nec
PROC_ANIM	Meat of bovine animals
	Meat products nec
	Dairy products
RICE	Paddy rice
OTH_FARM	Vegetables, fruits, nuts
	Sugar cane/beet, plant-based fibres, crops nec
	Wool
OTH_PROCF	Processed rice, sugar
	Beverages & tobacco products
NAT_RES	Forestry & fishing
	Coal, oil, gas
	Minerals nec
MANUF	All other manufacturing
SVCS	All services