ESCP/No. 3

THE IMPACT OF THE URUGUAY ROUND ON TARIFF ESCALATION IN AGRICULTURAL PRODUCTS

Jostein Lindland

Agricultural Trade Policy Analyst

September 1997

Trade Policy Group, Commodity Policy and Projections Service
Commodities and Trade Division, Food and Agriculture Organization, Rome

Table of Contents

Annexes

List of Tables and Charts

Preface

Following FAO's study in 1995 of the impact of the Uruguay Round (UR) on agriculture, emphasis has shifted to other effects of the Round including the impact on agricultural commodities which were not analysed in great detail in the 1995 Study. Follow-up work by the Commodities and Trade Division on the impact of the UR include issues of potential loss in the value of preferences, price instability, market access and the export prospects for non-traditional agricultural commodities, and the extent of price transmission to the domestic markets of developing countries.

This study aims at broadening our knowledge about the impact of the UR on tariff escalation in the agricultural sector. Tariff escalation (i.e. higher tariffs on processed agricultural products than on their input commodities) has been one of the obstacles for developing countries in their efforts to establish processing industries for exports. The novelty of the study, compared to other studies, is that changes in tariff escalation are analysed on the basis of actual input/output processing relationships. In addition, the study takes into account both specific and ad valorem tariffs that may be applied on the input and output products.

The results of the study show that tariff escalation has been reduced as a result of the UR, creating some opportunities for developing countries to diversify their exports into higher value processed commodities. Another interesting result of the study is the widespread existence of tariff de-escalation (i.e. higher tariffs on the input than the on the output commodity). The study concludes, however, that high levels of escalation will still remain after the implementation of the UR tariff concessions.

Rome, September 1997

J.N. Greenfield
Director
Commodities and Trade Division

Acknowledgements

I am most grateful to Jim Greenfield and Panos Konandreas of the FAO's Commodities and Trade Division for guidance, support and encouragement in undertaking this study. They have reviewed the various drafts of the study and provided valuable comments and suggestions.

Gratitude also goes to Stefan Tangermann (Institut für Agrarökonomie, Göttingen), both for his previous work on tariff escalation on which parts of this study are based, and for his very careful reading of the draft. Alexander Sarris (University of Athens), Maurizio deNigris and Koji Yanagishima (FAO's Commodities and Trade Division) and the staff of the World Trade Organization have also given valuable comments. Alberto Di Chiara, Diana Paolella and Maarten van Riet of the FAO's Statistics Division have provided important statistical support, Kurt Vertucci and Gianfredi Pietrantoni of the FAO's Computer Division have improved my understanding of databases and computer tools, and Thomas C. Capehart Jr. (USDA) kindly made available detailed trade statistics of the US.

Although the study would not have been accomplished without patient support from all those that backed me with suggestions, comments and methodological help, I remain the sole responsible for any deficiencies the study may suffer from.

Rome, September 1997

Jostein Lindland

Summary

Tariffs have generally been higher on processed agricultural products than on their primary commodities. This tariff wedge between a processed commodity (e.g. orange juice) and its corresponding primary commodity (e.g. oranges) is often referred to as *tariff escalation* and has been one of the obstacles for developing countries in their efforts to establish processing industries for exports.

The Uruguay Round (UR) Agreements, concluded at Marrakech in 1994, reduces the overall protection of agricultural markets. This study assesses the changes in tariff escalation resulting from the UR tariff concessions, examining the agricultural import markets of EU, Japan and the US, which together account for 45 percent of world imports of processed agricultural products.

The approach consisted of comparing the *base* tariffs (of the base years 1986-88, resulting from the tariffication process under the UR) and *bound* tariffs (resulting from the implementation of the reduction commitments), as they are listed in the UR tariff schedules. Specific tariffs were converted into ad valorem tariff equivalents by the means of import unit values, and tariff wedges were calculated individually for the commodity pairs covered (i.e. processing relationships or input - output relationships, e.g. wheat processed to flour of wheat). A total of 377 commodity pairs have been covered by the study, involving 226 different processed commodities. Tariffs are defined as escalating if they are higher on the output than on the input commodity and de-escalating if the tariffs are higher on the input commodity.

Considering all commodity pairs and EU, Japan and US altogether, two main conclusions can be drawn from this study. First, as a result of the UR tariff concessions more than 80 % of the tariff wedges have decreased (in absolute values, i.e. positive wedges have become less positive and negative wedges have become less negative). Convergence towards zero is therefore a common feature. Second, as regards the level of tariff escalation that will prevail after the implementation of the UR, the study concludes that more than half of the commodity pairs will have positive tariff wedges (escalating tariffs), about 10% will have no tariff wedges (input and output tariffs are equal) and the remaining one-third of the commodity pairs will have negative tariff wedges (de-escalating tariffs). Considering the positive tariff wedges, these will average 17 % after the implementation of the UR (down from 23 % of the base years). Therefore, after the full implementation of the UR tariff concessions, high levels of nominal tariff escalation will still remain for a number of commodity pairs.

Among the three import markets covered and analysed, the level of tariff escalation is highest in Japan and lowest in US: considering only the positive tariff wedges, these will average 16 % in the EU market after the implementation of the UR (down from 23 % as a result of the UR), 27 % in the Japanese market (down from 35 %) and 9 % in the US market (down from 12 %).

Effective rates of protection, *ERP*, were also calculated for a selected number of commodities (limited by data availability). The *ERP* is defined as the change in value added, made possible by the tariff structure, as a percentage of the free trade value added. The concept is thus based on the relationship between input and output tariffs, and the ratio between the input cost and the output price. Selected estimates of *ERPs* suggest that in some cases tariff escalation in terms of *ERPs* exists even though nominal tariffs are de-escalating.

Finally, the study has certain methodological shortcomings, and a degree of caution is in order for countries contemplating export diversification and investing in valued-added industries. There are well known problems with "water in the tariffs" and the difference between applied and bound rates of duty that are common to all studies on this subject. In addition, a number of factors that are beyond the scope of this study should also be taken into account when export diversification is considered. These relate, *inter alia,* to the competitiveness of the export commodities or industries in question (considering costs of production, processing, marketing and distribution), availability of appropriate technologies and infrastructure, product standards and technical regulations, and a host of consumer preference issues having to do with brand recognition as well as product characteristics.

Resumé en francais

Les droits d'importation sur les produits agricoles transformés sont souvent plus élevés que les droits sur leurs composants primaires. Cette différence de taux de droits entre un produit transformé (jus d'orange par exemple) et le produit de base correspondant (oranges) est généralement désignée par l'expression progressivité des droits. Or, on estime que cette progressivité est l'un des obstacles auxquels sont confrontés les pays exportateurs de produits primaires lorsqu'ils s'efforcent de créer des industries de transformation tournées vers l'exportation.

En dernière analyse toutefois, la manière dont la structure du tarif douanier conditionne les incitations, les allocations de ressources et l'implantation des activités de transformation dépend non seulement de la différence entre les droits nominaux elle-même mais aussi de la relation entre cette différence et la valeur ajoutée au produit transformé. Cette relation est rendue par la notion de taux de protection effectif, qui est défini comme la variation de valeur ajoutée, rendue possible par la structure du tarif douanier, exprimé en pourcentage de la valeur ajoutée en cas de libre-échange.

Cette étude évalue le degré de progressivité des droits résultant des réductions de taux d'importation dans l'Union Européenne, au Japon et aux Etats-Unis, dues au Cycle d'Uruguay. L'étude porte sur 226 produits agricoles transformés, qui représentent 45 pour cent des importations mondiales de produits agricoles transformés. Les taux de droits effectifs qui seront appliqués par tel ou tel pays à l'avenir n'étant pas connus, on a fondé l'analyse sur les plafonds de droits consolidés avant et après le Cycle d'Uruguay, qui pourraient être plus élevés que les taux effectivement appliqués.

L'étude montre qu'après la mise en ouvre des prévisions du Cycle d'Uruguay plus de la moitié des différences de droits est positive, c'est-à-dire qu'il y a progressivité des droits. De même, les différences sont nulles dans 10 pour cent des cas environ et négatives (droits régressifs) dans un tiers des cas. Un droit régressif indique que l'importateur a choisi un degré de protection plus élevé pour l'intrant que pour l'extrant. D'une manière générale, les différences de droits ont diminué aussitôt dans les cas progressifs que régressifs. En conséquence, la tendance générale est une convergence vers zéro.

L'étude révèle que la moyenne des différences de taux positives après le Cycle d'Uruguay est de 17 pour cent (contre 23 pour cent avant le Cycle d'Uruguay). Par conséquent, même lorsque les concessions tarifaires consenties au titre du Cycle d'Uruguay seront pleinement appliquées, la progressivité des droits nominaux restera d'un niveau élevé.

La conclusion générale de l'étude est que la progressivité des droits a diminué en général du fait du Cycle d'Uruguay. Toutefois, il faut faire preuve d'une certaine prudence pour ce qui est des conséquences de cette conclusion sur une politique de diversification des produits au profit d'exportations à plus forte valeur ajoutée. L'expérience a montré dans de nombreux pays que le succès d'un programme de diversification dépend de nombreux facteurs en dehors d'une réduction de la progressivité des droits. Ces facteurs sont par exemple l'existence de technologies ou d'infrastructures appropriées, l'existence de normes et d'une réglementation technique pour les produits et des facteurs tels que la marque ou d'autres aspects dont on sait qu'ils influent sur les préférences du consommateur dans les pays d'importation. Les pays qui envisagent une diversification doivent donc procéder à des études précises des industries de transformation des produits agricoles avant d'engager des investissements dans ce domaine.

Resumen en español

Los aranceles de importación tienden a ser más altos en relación con los productos agrícolas elaborados que con sus componentes primarios. Esta diferencia en las tarifas arancelarias entre el producto elaborado (por ejemplo, zumo de naranja) y su correspondiente producto primario (por ejemplo, naranjas) suele denominarse progresividad arancelaria. Se considera que esta progresividad es uno de los obstáculos con que se enfrentan los países exportadores de productos primarios en sus esfuerzos por establecer industrias de elaboración para la exportación.

Sin embargo, en último término, la forma en que la estructura arancelaria influye en los incentivos, la asignación de los recursos y el emplazamiento de las actividades de elaboración depende no sólo de la misma diferencia nominal entre los aranceles, sino también de la relación entre la diferencia arancelaria y el valor añadido del producto elaborado. Esta relación se expresa mediante el concepto de Tasa Efectiva de Protección (TEP), que se define como el cambio en el valor añadido inducido por la estructura arancelaria, en porcentaje del valor añadido en el comercio libre.

Este estudio de la FAO ha calculado el grado de progresividad arancelaria resultante de los cambios en los aranceles de importación de la CE, Japón y los Estados Unidos después de la Ronda Uruguay. El estudio abarcaba 226 productos agrícolas elaborados, que representan el 45 por ciento de las importaciones mundiales de productos agrícolas elaborados. Como no se conocen los aranceles que aplicará efectivamente un país en el futuro, el análisis se basó en los tipos básicos y consolidados del derecho (antes y después de la Ronda Uruguay, respectivamente), que pueden ser más altos que los que se apliquen efectivamente.

El estudio mostró que más de la mitad de las diferencias arancelarias después de la Ronda Uruguay eran positivas, es decir, aranceles progresivos. Igualmente, las diferencias eran cero para un 10 por ciento de los casos, mientras que eran negativas (es decir, desprogresivos) en un tercio de los casos. La desprogresividad de los aranceles índica que un importador optaba por una mayor protección del producto ingrediente que del producto final. En conjunto, las diferencias arancelarias han disminuido tanto para los positivos como para los negativos y, por ello, la pauta general es hacia una convergencia cero.

El estudio señaló que las diferencias arancelarias positivas después de la Ronda Uruguay serían en promedio un 17 por ciento (frente a un 23 por ciento antes de la Ronda Uruguay). Por ello, aun después de la aplicación plena de las concesiones arancelarias de la Ronda Uruguay, quedarían altos niveles de progresividad arancelaria nominal.

La conclusión general de este estudio fue que en general se ha reducido la progresividad arancelaria como consecuencia de la Ronda Uruguay. Sin embargo, respecto a sus repercusiones en una política de diversificación de los productos básicos hacia exportaciones de mayor valor añadido, se justifica una mayor precaución. Las experiencias de muchos países han mostrado que, para que un programa de diversificación tenga éxito, se requieren muchos factores, además de la reducción de la progresividad arancelaria. Tales son, por ejemplo, la disponibilidad de tecnologías e infraestructuras apropiadas, normas y reglamentos técnicos para los productos y factores como la marca u otras características del producto que ciertamente influyen en las preferencias de los consumidores de los países importadores. Por ello, los países que estén programando una diversificación de este tipo tendrían que realizar estudios en profundidad sobre las industrias específicas de elaboración de productos agrícolas antes de empeñarse en inversiones en tales empresas.

1. Introduction

Tariffs have generally been higher on processed agricultural products than on their primary commodities. This tariff wedge between a processed commodity (e.g. orange juice) and its corresponding primary commodity (e.g. oranges) is often referred to as *tariff escalation* and has been one of the obstacles for developing countries in their efforts to establish processing industries.

However, not only the nominal tariff wedge itself, but the relationship between the tariff wedge and the value added of the processed commodity determines how the tariff structure is affecting the location of processing activities. This consideration is taken into account by the concept of effective rate of protection, *ERP*, which is defined as the change in value added, made possible by the tariff structure, as a percentage of the free trade value added. Commonly tariff escalation is used as a short hand expression to cover both nominal tariff escalation and the concept of *ERP*.[1]

The Uruguay Round (UR) Agreement on Agriculture[2], concluded at Marrakech in 1994, reduces the overall protection of agricultural markets[3]. The Agreement, which concerns all the Member countries of the WTO, came into force in 1995 with an implementation period of six years going to year 2000 (2004 for developing countries). The market access commitments of the Agreement have two main components[4]. First, the WTO Member countries had to replace all their non-tariff trade barriers (NTB) with tariffs. Second, the Member countries are, by the end of the implementation period, required to reduce their *base* period tariffs[5], including those that replaced the NTBs, by an average of 36 %.[6] These reduced tariffs are *bound*, i.e. a Member country can not, when importing from another WTO Member, increase the tariffs beyond the bound rates in the usual course of events.[7]

While tariff cuts have been quite significant, there are two caveats to bear in mind. First, the Agreement on Agriculture only requires Member countries to reduce their tariffs on a *simple average* by 36 %, as long as a minimum reduction of 15 % is applied for each tariff line. The impact of the UR on tariff escalation, therefore, depends upon the structure of tariff commitments by Member countries. Second, changes in nominal tariff wedges between primary and processed commodities do not fully explain how tariff escalation affects the location of processing industries, as noted above.

Developing countries have for many years identified tariff escalation as one of the main issues in relation to market access. In the sixties and seventies tariff escalation was extensively discussed, and empirical work was undertaken (see the bibliography). However, most of the empirical studies on the problem of tariff escalation for agricultural commodities are now outdated[8]. The main exception is the recent study on the impact of the UR on tariff escalation that has been done by the World Trade Organization (WTO)[9]. Their study measures the average base and bound tariffs of broad aggregates of

[1] See Tangermann (1987).

[2] See *The Results of the Uruguay Round of Multilateral Trade Negotiations. The Legal Texts*. WTO, Geneva, 1995, 558 pp.

[3] The commodity coverage of the Agreement is spelt out in its Annex 1. Agricultural commodities like rubber, wool tops, carded or combed hair, sisal and jute, accounting for 1.7 % of world imports in 1992-94, are not covered by the Agreement, but are covered by concessions made under the negotiations in goods.

[4] *Minimum access* provisions constitute a third element of the market access commitments, requiring the WTO Member country to provide import quotas (at lower tariffs) amounting to actual imports or to 3 percent of the consumption, whichever was the highest, during the base period of 1986-88. These quotas shall be increased to 5 percent of the consumption by the end of the implementation period. These provisions are not examined in this paper.

[5] The base period is 1986-88, and the tariff equivalents resulting from the tariffication for this period are hereinafter referred to as *base* tariffs.

[6] Developing countries are obliged to reduce their tariffs on average by only 24 %. However, when replacing NTBs with tariffs, many developing countries chose the option of offering tariff bindings with no reduction in tariff levels. Least developed countries are not required to make any reductions in tariffs, but they still have to replace their NTB with tariffs.

[7] In conformity with the denominations used in the UR tariff schedules, the maximum tariffs to be applied by the end of the implementation period are hereinafter referred to as the *bound* tariffs.

[8] See Tangermann (1987) for a review of theoretical work and empirical studies related to protection and tariff escalation.

[9] See *Tariff Escalation.* Note by the Secretariat to the Committee on Trade and Environment, WT/CTE/W/25, 22 March 1996, WTO, Geneva, 49 pp.

unprocessed, semi-processed and processed commodities, without taking into account the actual processing relationships that prevail within each commodity group. Another limitation of that study is that it is based on ad valorem tariffs only, ignoring specific tariffs which, for many commodities, are very important.

This study examines the impact of the UR on tariff escalation in three major agricultural markets; the European Union, Japan and the United States of America[10]. Together these three markets accounted for 45 % of world imports of agricultural processed commodities (excluding EU's intra-trade) during the years 1992-94.[11] The study covers 226 different agricultural processed commodities, as defined by FAOSTAT.[12] These commodities represent respectively 65.4 %, 58.8%, 59.0 % and 65.3 % of the EU, Japanese, US and world imports of agricultural processed commodities.

The approach has been to calculate individual base and bound nominal tariff wedges[13] for all possible processing relationships (i.e. input - output relationships, e.g. wheat - flour of wheat)[14]. Specific tariffs have been converted into ad valorem tariff equivalents by the means of import unit values. ERPs have also been calculated for a selected number of commodities. A more extensive coverage was not possible because of data limitations.

The structure of the study is as follows: Section 2 discusses briefly the problem of diversifying agricultural exports, revealing the low share of processed agricultural products in overall agricultural exports from developing countries. Section 3 spells out the methodology used in the study, and section 4 deals with the data limitations encountered. While the concept of ERP is a powerful tool in location theory and operational at an enterprise level, lack of reliable data makes the concept difficult to apply to a whole sector. The discussion also reveals some additional shortcomings of the statistical data that have been faced in undertaking the study. The findings of the study are presented in section 5. Finally, in section 6 there are some concluding remarks and some implications of the findings. Note that the level and structure of developing countries' exports also result from a number of factors other than tariff escalation that are beyond the scope of this study.

[10] Tariff escalation is characterising most markets, both in the developing and developed world. The three markets covered by the study have only been selected because of their importance in the world economy.

[11] Including the EU intra-trade the share would increase to 64 %. Estimates based on data from FAOSTAT, the FAO's Agricultural Statistics Database, and the Basic Data Unit (ESSB) of FAO's Statistics Division. Annex 3 contains a complete list of all processed agricultural commodities covered by FAOSTAT.

[12] Annex 1 contains a complete list of all the commodities covered. Section 4.1 spells out the reasons for why a number of commodities have been excluded from the study.

[13] A tariff wedge between the *base* tariffs of the input and the output commodity is hereinafter referred to as a *base* tariff wedge; the tariff wedge between *bound* tariffs ir referred to as a *bound* tariff wedge.

[14] Processing relationships consisting of only one input and one output commodity are in the following referred to as commodity pairs.

2. The Problem of Diversifying Exports

Although Table 1 shows that the share of processed agricultural products in overall agricultural exports is relatively high for developing countries as a whole, the figures mask important differences within the group of developing countries and between developing and developed countries. First, the share is very low for the least developed countries, LDC (less than one third of the share of developing countries as a whole in 1994). Second, the processed agricultural exports of developing countries are largely characterised by intermediate processed commodities, while developed countries to a larger extent export final processed agricultural commodities.

Table 1: Shares of processed agricultural exports (in per cent) in total agricultural exports

	Years				
Group	**1964**	**1974**	**1984**	**1994**	**Change 1964-94**
Developed	48.8	52.2	55.6	67.3	38.0
Developing	41.7	51.2	46.3	54.1	29.7
LDC	27.0	24.4	18.0	16.9	-37.2

If the first stage processed commodities are excluded, the remaining processed commodities make up only 5 and 16.6 per cent of total agricultural exports of respectively LDC and developing countries as a whole, against 32.5 per cent for developed countries, see Table 2.

Table 2: Shares of advanced processed agricultural exports (excluding first stage processed commodities) in total agricultural exports (in per cent)

	Years				
Group	**1964**	**1974**	**1984**	**1994**	**Change 1964-94**
Developed	18.6	20.9	22.4	32.5	74.7
Developing	8.4	9.8	9.8	16.6	97.2
LDC	5.1	5.9	4.6	5.0	-2.4

There are a number of reasons preventing developing countries from establishing value-added industries and increasing their share of processed agricultural exports. For some commodities tariff escalation constitutes probably one of the major constraints to vertical diversification of agricultural exports from developing countries. This study measures the impact of the UR on tariff escalation: it does not estimate the importance of tariff escalation compared to other constraints to vertical diversification.

3. Tariff Escalation Theory

3.1. Nominal Tariff Escalation

Nominal tariff escalation is measured by nominal *tariff wedges*, i.e. the difference in nominal tariffs between the output commodity and the input commodity:

$TW = T - t$

where
TW = Tariff wedge
T = Tariff in ad valorem equivalent of the output commodity
t = Tariff in ad valorem equivalent of the input commodity

Nominal tariff escalation occurs when TW > 0, nominal tariff de-escalation takes place when TW < 0 and tariff parity is defined as TW = 0.

The impact of the UR on nominal tariff escalation is simply measured by
$\Delta TW = TW_{bound} - TW_{base}$

where
ΔTW = The change in the tariff wedge due to the UR
TW_{bound} = The tariff wedge of bound tariffs of year 2000, the final year of the implementation period
TW_{base} = The tariff wedge of base tariffs (tariff equivalents of the base years 1986-88)

Changes in nominal tariff escalation can now be defined as follows:
$TW > 0$ and $\Delta TW < 0$ = a *decrease* in nominal tariff escalation
$TW > 0$ and $\Delta TW > 0$ = an *increase* in nominal tariff escalation
$TW < 0$ and $\Delta TW < 0$ = an *increase* in nominal tariff de-escalation
$TW < 0$ and $\Delta TW > 0$ = a de*crease* in nominal tariff de-escalation

3.2. Effective Rates of Protection

The ERP takes into account how tariffs affect the value-added of the processed commodity. The concept was first developed in the mid-sixties by Balassa (1965), Johnson (1965) and Corden (1966). It is defined as the change in value added, made possible by the tariff structure, as a percentage of the free trade value added:

(1) $$ERP = \frac{VA_T - VA_{FT}}{VA_{FT}} \times 100, \qquad VA_{FT} \text{ and } VA_T > 0$$

where
VA_{FT} = Free trade value added (in absence of tariffs)
VA_T = Value added in presence of tariffs[15]

[15] Note that the ERP is only defined for positive values of VA_{FT} and VA_T, although especially the VA_{FT} could be negative.

The *ERP* can be explained by three examples of wheat flour processed from imported wheat:

Positive *ERP*

If wheat flour sells at 250 $/MT in the world market, and the wheat necessary to produce one MT of wheat flour costs 200 $, the VA_{FT} (ignoring other inputs) per MT of wheat flour is 50 $. Supposing that a tariff of 10 % is imposed on wheat flour while the imported wheat remains free of duty, wheat now sells at 275 $/MT and the VA_T per MT of wheat flour equals 75 $. Whereas the *TW* amounts to 10 %, the *ERP* will be 100*(75-50)/50 which is 50 %. This means that, with the given prices, the free trade value added of wheat flour can be increased by 50 % when tariffs of zero and 10 % are imposed on respectively wheat and wheat flour.

Negative *ERP*

The introduction of tariffs results in a decrease in the free trade value added ($ERP < 0$). If wheat flour of the example above remains free of duty while a tariff of 10 % is imposed on wheat, the *TW* would be -10 % (nominal tariff de-escalation). The cost of wheat necessary to produce one MT of wheat flour will now increase to 220 $/MT, and the VA_{FT} will decrease to 30 $/MT of wheat flour. In such a case the *ERP* will be 100*(30-50)/50 which is - 40 %.

ERP equal to zero

Finally, the introduction of tariffs might have no impact on the free trade value added ($ERP = 0$). Using the prices above and tariffs of 10 % and 12.5 % imposed on respectively wheat flour and wheat, the *ERP* will be 100*(50-50)/50 which is 0 %.

Finally, equation (1) can be used to calculate the base and bound *ERP*s. The impact of the UR on tariff escalation is simply measured by

(2) $\Delta ERP = ERP_{bound} - ERP_{base}$

where

ΔERP = The change in the Effective Rate of Protection due to the UR
ERP_{base} = The *ERP* of equation (1) using base period tariffs
ERP_{bound} = The *ERP* of equation (1) using bound tariffs of year 2000, the final year of the implementation period

3.2.1. Multiple Input and Single Output

Output commodities, especially at more advanced processing levels, often require more than one input commodity (e.g. frozen pizza could be made of flour of wheat, onions, olives, tomatoes and cheese). With *m* input commodities and a single output commodity the free trade value added per unit of the output commodity can be written[16]:

[16] Observe that several assumptions have been made. First, we have assumed the value added to be the difference between the output unit price and the value of the agricultural commodity inputs (referred to as *partial rate of effective protection* by Tangermann, 1987), neglecting other bought-in inputs and services. However, this is justifiable since our purpose is to examine the agricultural sector and compare the ERP of the same products at two different points of time (pre- and post-UR), rather than the ERP of different products at one point of time. Second, we have assumed fixed input coefficients.

$$(3) \qquad VA_{FTm} = P - \sum_{i=1}^{m} q_i r_i$$

where

VA_{FTm} = Free trade value added with m input commodities, per unit of the output commodity
P = Price of the output commodity in the absence of tariffs
q_i = Quantity of input commodity i necessary to produce one unit of the output commodity
r_i = Unit price of input commodity i in the absence of tariffs

The value added in presence of tariffs can be written:

$$(4) \qquad VA_{Tm} = P(1 + \frac{T}{100}) - \sum_{i=1}^{m} q_i r_i (1 + \frac{t_i}{100})$$

where

VA_{Tm} = Value added in presence of tariffs, with m input commodities, per unit of the output commodity
T = Tariff in ad valorem equivalent of the output commodity
t_i = Tariff in ad valorem equivalent of agricultural input commodity i

Using (3) and (4), the *ERP* of (1) can be rewritten as:

$$(5) \qquad ERP_m = \frac{PT - \sum_{i=1}^{m} q_i r_i t_i}{P - \sum_{i=1}^{m} q_i r_i}$$

Equation (5) can be illustrated by the example of orange marmalade made from sugar and oranges. The following assumptions are made:

P = 1500 \$/MT (the unit price of orange marmalade in the absence of tariffs)
$q_{refined\ sugar}$ = 0.3 MT (the quantity of refined sugar necessary to produce one ton of orange marmalade)
$q_{oranges}$ = 3.3 MT (the quantity of oranges necessary to produce one ton of orange marmalade)
$r_{refined\ sugar}$ = 450 \$/MT (the unit price of refined sugar)
$r_{oranges}$ = 250 \$/MT(the unit price of oranges)
T = 40 % (the tariff imposed on orange marmalade)
$t_{refined\ sugar}$ = 35 % (the tariff imposed on refined sugar)
$t_{oranges}$ = 5 % (the tariff imposed on oranges)

The ERP_m will be [1500*40 - (0.3*450*35 + 3.3*250*5)] / [1500 - (0.3*450 + 3.3*250)] which equals to 94.7 %.

The conceptual superiority of the *ERP*, compared to *TW*, can be illustrated by setting t_i equal to T. Using the TW approach, this gives a nominal tariff escalation equal to zero. On the contrary, by applying the *ERP* approach it can be seen that ERP_m equals to T (replace t_i with T in equation (5)).
Given the input tariffs, what would the output tariff need to be in order to have zero ERP_m? By setting the ERP_m equal to zero and solving equation (5) for T we get[17]:

$$(6) \qquad T = \frac{\sum_{i=1}^{m} q_i r_i t_i}{P}$$

[17] Tariffs are bound according to the UR Agreement on Agriculture. Therefore, in order to eliminate the protection of a processed commodity, a country can not increase the tariff of the input commodity, but must instead decrease the tariff of the output commodity.

In the example above, the tariff imposed on orange marmalade must be (0.3*450*35 + 3.3*250*5) / 1500 = 5.9 % in order to have zero *ERP*.

3.2.2. Single Input and Multiple Output

More than one output commodity are often processed simultaneously of one input commodity. This is commonly the case at early processing stages (e.g. flour of wheat, bran of wheat and germ of wheat as joint outputs of wheat). With *n* output commodities and a single input commodity the free trade value added of the entire set of joint products of the process can be written:

$$(7) \qquad VA_{FTn} = \sum_{j=1}^{n} P_j Q_j - r$$

where
VA_{FTn} = Free trade value added with *n* outputs, per unit of the input
P_j = Price of output commodity *j* in the absence of tariffs
Q_j = Quantity of output commodity *j* obtained from one unit of the input commodity
r = Unit price of the input commodity in the absence of tariffs

The value added in presence of tariffs can be written:

$$(8) \qquad VA_{Tn} = \sum_{j=1}^{n} P_j Q_j (1 + \frac{T_j}{100}) - r(1 + \frac{t}{100})$$

where
VA_{Tn} = The value added in presence of tariffs, with *n* outputs, per unit of the input
T_j = Tariff in ad valorem equivalent of output commodity *j*
t = Tariff in ad valorem equivalent of the input commodity

Using (7) and (8), the *ERP* of (1) can be rewritten:

$$(9) \qquad ERP_n = \frac{\sum_{j=1}^{n} P_j Q_j T_j - rt}{\sum_{j=1}^{n} P_j Q_j - r}$$

Equation (9) can be illustrated by the example of oil of soybeans and cake of soybeans processed from soybeans. The following assumptions are made:
P_{oil} = 600 \$/MT (the unit price of oil of soybeans in the absence of tariffs)
P_{cake} = 250 \$/MT (the price of cake of soybeans in the absence of tariffs)
Q_{oil} = 0.2 MT (the quantity of oil of soybeans obtained from one ton of soybeans)
Q_{cake} = 0.8 MT (the quantity of cake of soybeans obtained from one ton of soybeans)
r = 270 \$/MT (the unit price of the soybeans in the absence of tariffs)
T_{oil} = 15 % (the tariff imposed on oil of soybeans)
T_{cake} = 5 % (the tariff imposed on the cake of soybeans)
t = 3 % (the tariff imposed on soybeans)
The overall ERP_n will be [(600*0.2*15 + 250*0.8*5) - 270*3] / [(600*0.2 + 250*0.8) - 270] which equals to 39.8 %.

Note again from equation (9) that when all the *TW*s are equal to zero (i.e. all $T_j = t$), the ERP_n will be as high as the tariffs (replace all T_j with t in the equation).

Setting the ERP_n equal to zero and rewriting equation (9) it can be seen that there are infinite combinations of tariffs of the output commodities in order to have zero ERP_n. However, if all T_j are equal, then the solution is unique. Thus

$$(10) \qquad T = \frac{rt}{\sum_{j=1}^{n} P_j Q_j} \qquad , T = T_1 = T_2, \ldots\ldots, = T_n$$

In the example above, the tariff imposed on oil and cake of soybeans must be 270*3 / (600*0.2 + 250*0.8) = 2.53 % in order to have zero *ERP*.

If however a country would like to differentiate the tariffs of the output commodities, while the ERP_n equals zero, equation (9) can be written:

$$(11) \qquad T_k = \frac{rt - \sum_{j=1}^{n} P_j Q_j T_j}{P_k Q_k} \qquad , \mathrm{j} \neq \mathrm{k}$$

In the example of oil and cake of soybeans, supposing that the country would like to have the tariff of soybean oil as high as possible while the tariff imposed on soybeans remains at 3 %. By setting the tariff of soybean cake to zero, the tariff of soybean oil can amount to (270*3 - 250*0.8*0) / (600*0.2) = 6.75 % without causing a positive ERP_n .

3.3. Nominal versus Effective Protection

The tariff wedge approach is the simplest measure of tariff escalation, and it is easy to operate since it relies on generally available data. However, this method has several limitations. First, nominal tariffs wedges do not fully represent the protection level caused by the tariff structure. The approach does not provide information about the impact of tariffs on the value added of processed products, needed for decision making at both enterprise and national level. Second, since tariff wedges do not take into account the value added, they can not be compared across commodities. Third, the concept of tariff wedges can hardly be applied to processing relationships with multiple input and/or multiple output. For such tariff wedges to be measured, tariffs of multiple outputs (or inputs) would have to be weighted on the relative output values (or input costs).

The limitations of the tariff wedges can be overcome through the approach of Effective Rates of Protection. The problem with this approach, however, is that it depends on accurate data of prices and technical coefficients, which are generally not available.

Nevertheless, when *ERP*s cannot be calculated, tariffs alone can provide some information about the *ERP*. With only one input and one output, equation (9) can be rewritten as[18]:

[18] Since only processing relationships of one input and one output are considered, it does not matter whether if we use equation (5) or (9) as point of departure.

(12) $$ERP = \frac{T - t\alpha}{1 - \alpha} \qquad \text{where } \alpha = \frac{r}{PQ} \qquad , 0 < \alpha < 1$$

α is only introduced for simplicity reasons and expresses the relationship between the input costs *r* and the output price per unit of input, *PQ*.[19] If α is 0.7, it simply means that the input costs are 70 % of the output price, while the value added (ignoring other inputs than the input commodity) is 30 %. We assume that α is lower than 1, in other words that the value added is positive.

Equation (12) gives the following information about the relationship between *TW*s and *ERP*s:

- When TW > 0 (nominal tariff escalation), then ERP > 0

From $TW > 0$ follows that $T > t$, the nominator of equation (12) therefore becomes positive and we see that $ERP > 0$.

- When TW < 0 (nominal tariff de-escalation), then ERP < 0 or ERP > 0 or ERP = 0

In this case $T < t$. From the nominator of equation (12) it can be seen that $ERP < 0$ when $T < t\alpha$ (or $T/t < \alpha$), $ERP > 0$ when $T > t\alpha$ (or $T/t > \alpha$) and finally $ERP = 0$ when $T = t\alpha$ (or $T/t = \alpha$). Therefore, in the case of nominal tariff de-escalation, when the ratio between output and input tariffs exceeds the ratio between input cost and the output price, then the *ERP* is positive[20], if not it is negative (or zero).

Tariff wedges can also provide information about the *direction of change* in *ERP*s. Using equation (2) and (12) the impact of the UR on tariff escalation can be rewritten as:

(13) $$\Delta ERP = \frac{(T_{bound} - T_{base}) - \alpha(t_{bound} - t_{base})}{1 - \alpha}$$

where

T_{base} = the ad valorem base tariff of the output commodity
T_{bound} = the ad valorem bound tariff of the output commodity
t_{base} = the ad valorem base tariff of the input commodity
t_{bound} = the ad valorem bound tariff of the input commodity

Equation (13) can be rewritten as:

(14) $$\Delta ERP = \frac{\Delta T - \alpha \Delta t}{1 - \alpha}$$

where

ΔT = T_{bound} - T_{base} (the change in output tariffs due to the UR)
Δt = t_{bound} - t_{base} (the change in input tariffs due to the UR)

From equation (14) some important conclusions can be drawn about the relationship between the *change* in *TW* and the *change* in *ERP*:

- When the change in TW is negative ($\Delta TW < 0$), then the change in ERP is negative ($\Delta ERP < 0$)

When nominal tariff escalation is decreased or nominal tariff de-escalation is increased, then the *ERP* is decreased. From $\Delta TW < 0$ follows that $\Delta T - \Delta t < 0$. This implies that $\Delta T < \Delta t$, the nominator of equation (14) therefore becomes negative[21] and $\Delta ERP < 0$ becomes true.

[19] Using equation (5), α would be equal to qr/P, which is the same as r/PQ.

[20] See Tangermann, 1987.

[21] Remember that in the case of the UR, ΔT and Δt will always be negative or zero.

- When the change in TW is positive ($\Delta TW > 0$), then the change in ERP can be both positive ($\Delta ERP > 0$) or negative ($\Delta ERP < 0$) or zero ($\Delta ERP = 0$)

When nominal tariff escalation is increased or nominal tariff de-escalation is decreased, then it can be seen from the nominator of equation (13) that the direction of change of *ERP* will depend on the relationship between the input tariff, the output tariff and α. If $\Delta T/\Delta t < \alpha$, then $\Delta ERP > 0$. On the contrary, if $\Delta T/\Delta t > \alpha$, then $\Delta ERP < 0$. Finally, if $\Delta T/\Delta t = \alpha$, then $\Delta ERP = 0$.

4. Availability and Quality of the Data

In the following, we will discuss the availability and the quality of the data needed to measure the impact of the UR on tariff escalation in the agricultural sector, both in terms of nominal tariff wedges and effective rates of protection. For further details, we refer to Annex 2 which contains a full list of assumptions and explanations of methodological character.

4.1. Commodity Coverage and Classification Systems

The study has dealt with two different classification systems, the Harmonised Commodity Description and Coding System (HS)[22] and the FAOSTAT classification system.[23] The analysis has been based on the latter because FAOSTAT provides input-output relationships, and this system generally represents appropriate aggregations of agricultural commodities.[24] Tariff data available in HS had therefore to be converted to FAOSTAT commodity codes.

A number of processed commodities produced in developed countries have not been covered by the study because they were either considered to be too heterogeneous or data were missing (Annex 3 lists all FAOSTAT commodities, including those that are not covered by the study). Thus the study covers 226 processed FAOSTAT commodities, accounting for an estimated 60.6 % of the value of all processed FAOSTAT commodities produced in developed countries.[25]

4.2. Processing Relationships

Processing relationships are required in order to calculate *TW*s or *ERP*s. The 226 different processed commodities covered by the study make 377 commodity pairs (processing relationships of one input commodity and one output commodity). These commodity pairs have been extracted from FAOSTAT (see Annex 1).

In practice, agricultural processing often consists of processing relationships with multiple inputs (e.g. sugar and grapefruits as inputs to sweetened grapefruit juice) and/or multiple outputs (e.g. wheat as input to flour of wheat, bran of wheat and germ of wheat). One output commodity can also be made of different input commodities when the processed commodity is more aggregated than the input commodity (e.g. vegetables in vinegar with the inputs cabbage or artichokes or other vegetables). For the purpose of calculating *ERP*s, single input - multiple output relationships have been established (some of them are presented in Table 11 below). Multiple input - single output relationships have not been identified for the purpose of this study, nor have *ERP*s for this type of processing relationships been computed.

[22] The HS codes are country-specific beyond the 6 digits level of HS.

[23] The FAOSTAT commodities are listed in Annex 3. For further details on their definitions, see the FAO publication *Definition and Classification of Commodities*.

[24] FAOSTAT is the most comprehensive agricultural database, and it is probably the only one that gives commodity pairs and extraction rates for complete sets of data. Although the FAOSTAT commodity definitions are adequate for most agricultural research, its *processed* commodities tended to be too aggregated for the purpose of this study.

[25] FAOSTAT world import unit values and production quantities of 1992-94 have been used in order to estimate the production value of the processed commodities covered by the study.

4.3. Tariffs (*T* and *t*)

The impact of the UR on tariff escalation have been measured using the *base* and *bound* tariffs as specified in the UR schedules of each country covered. NTBs are automatically covered by the study since these have been tariffied and are hence included in both base and bound tariffs.[26] It should be noted that these tariffs are ceiling rates. Applied rates may be considerably lower than the ceiling rates. It has been claimed that several countries practised "dirty tariffication" tariffying and binding the base tariffs at unreasonably high levels in order to allow for tariff reductions in bound tariffs without affecting the actual applied rates. However, applied tariffs vary from year to year, and any selection of year could be judged as arbitrary. And more important, since it is not possible to know the actual rates that will be applied in year 2000 and beyond, it is impossible to compare applied pre-UR tariffs with applied post-UR tariffs.

Moreover, the study focuses only on import protection and excludes other types of subsidies that can influence the profitability and hence the trading position of countries. It should also be acknowledged that in cases of "water in the tariff" (i.e. tariffs are redundant), tariff reductions resulting from the UR would not necessarily improve the market access conditions. "Water in the tariff" would occur when the domestic price is lower than the world price plus tariffs. This could be the case where a country is self-sufficient and imports are zero or if the country is an exporter of the commodity in question and export subsidies, if used, are significantly lower than the tariff level. However, these issues go well beyond the scope of this study.

Both for the purpose of calculating *TW*s and *ERP*s, all specific tariffs had to be converted into ad valorem tariff equivalents.[27] [28]

There exist several ways of weighing the tariffs, but these methods are either inappropriate or depend on unavailable data: trade-weighed averages implies that high tariffs get low weights (because commodities with high tariffs are generally less traded) while low tariffs get high weights. Weighing the tariffs on production or, even better, consumption is not possible because production or consumption data are not available at this disaggregated level of HS. Thus, HS tariff lines have been aggregated to FAOSTAT commodities through simple averages.[29]

4.4. Extraction Rates (*Q* and *q*)

Extraction rates (or technical coefficients) are required in order to calculate *ERP*s. Country-specific extraction rates are provided by FAOSTAT (see Annex 2.2 for details).

---

[26] The EU and US tariff schedules were submitted at 8 digits HS codes, while the Japanese schedules were submitted at 6 digits HS codes. However, many Japanese 6 digits HS tariff lines were further disaggregated without indicating the HS codes of these sub-levels.

[27] The ad valorem tariff equivalent equals 100 * specific tariff / unit value. In the case of the EU and US, country-specific import unit values were derived from HS trade data (EU imports at 8 digits of HS, US imports at 9 digits of HS, aggregated to 8 digits). Where no country-specific import unit value existed, or in the case of Japan where it was deemed too difficult to match 9 digits HS import unit values with the different disaggregated tariff lines within one 6 digit HS code, world import unit values of the corresponding FAOSTAT commodity was used to convert the specific tariff.

However, many tariff lines of the three countries did not contain straightforward ad valorem or specific tariffs (e.g. specific tariffs and unit values of different units, or tariffs related to the nutritional content of the commodity). The assumptions made in order to convert these tariffs into ad valorem, are spelled out in Annex 2.1.

[28] Of the 322 FAOSTAT commodities covered by the study, 582 of 1049 HS tariff lines had specific tariffs in the case of EU (equal to 56 %), 533 of 876 HS tariff lines in the case of US (61 %) and 152 of 665 tariff lines in the case of Japan (23 %).

[29] One of the problems that might arise from simple averages is related to the fact that the aggregation level of the tariff schedules differs among countries and commodities. If for instance high disaggregation levels happen to be linked to high tariffs, the averages will be biased. The H column of Table A.1 gives information on the number of HS tariff lines that make up the FAOSTAT commodity in question.

4.5. Unit Prices (*P* and *r*)

Unit prices of input and output commodities are needed both in order to convert specific tariffs (required for both the TW and the ERP approach) and to calculate *ERP*s. Country-specific HS import data and FAOSTAT world imports of the years 1992-94 were used to derive unit values. However, further examination revealed that the available unit values were too variable for the fine-tuned ERP approach.[30] With the available unit values, a number of commodity pairs had negative value added.[31] This may be explained as follows: the FAOSTAT commodities might be very heterogeneous, and as quality and hence price vary considerably within one commodity, the average unit value might differ a lot from the actual prices that the processing industries are facing (or would be facing if such industry would be established). Moreover, in some cases the unit values reflect preferential import conditions and might for that reason be out of line with "normal" world market prices[32]. The ERP approach therefore turned out to be too demanding given the type of data available. Section 5 therefore concentrates on nominal tariff wedges. *ERP*s are only presented for a few selected commodities in order to demonstrate the approach.

Nevertheless, for the purpose of converting specific tariffs into ad valorem tariffs, the use of the available unit values can be partly justified since a possible error would apply systematically to both base and bound tariffs, although a unit value very much out of line would of course affect the conversion considerably. For further notes on the unit values, see Annex 2.4.

4.6. The Matching of Data

FAO country specific conversion tables have been used to convert the commodities of the tariff schedules into FAOSTAT codes.[33] However, a number of commodities have different HS codes for trade and tariffs. In such cases the conversion tables did not contain a link between the tariff commodity and its corresponding FAOSTAT code, and such a connection had to be established for the purpose of this study.

[30] Unit values of all FAOSTAT commodities imported simultaneously by the EU, Japan and the US during 1992-94 were examined and the dispersion was calculated. Annex 2.3. presents the commodities with highest dispersion, measured in coefficients of variance. As we see, the unit value of palm kernels range from 193 $/MT (EU) to 11086 $/MT (US). The unit value of pigs ranges from 92 $/MT (US) to 3133 $/MT (Japan).

[31] According to equations (2) and (7) of section 3.2.

[32] This is for instance the case with sugar and beef imported to EU.

[33] These tables, originally used to convert HS import data into FAOSTAT codes, have been obtained from the Basic Data Unit of FAO's Statistics Division (ESSB).

5. The Findings

5.1. Tariff Wedges

The complete results are presented in Annex 1 for each country and commodity pair. Charts 1-3 and Table 3 give a global overview of the findings.[34] The horizontal axes of the Charts indicate the size of tariff wedge while the vertical axes give the number of commodity pairs that fall within the interval of +/- 5 of the indicated tariff wedge (e.g. 102 EU commodity pairs have TWs_{base} ranging from -5 to 5, while this number is increased to 131 with respect to TWs_{bound}).

In Table 3 the individual commodity pairs have been grouped into 9 categories according to the status of the base tariff wedges (nominal tariff escalation, de-escalation or parity) and their direction of change due to the UR.

Table 3: Commodity pairs in numbers (N) and % grouped according to base tariff wedge and direction of change as a result of the UR

Situations	EU		Japan		US		Total	
	N	%	N	%	N	%	N	%
Escalation increased ($TW_{base} > 0$, $\Delta TW > 0$)	6	2	16	4	11	3	33	3
Escalation, no change ($TW_{base} > 0$, $\Delta TW = 0$)	0	0	0	0	1	0	1	0
Escalation decreased ($TW_{base} > 0$, $\Delta TW < 0$)	200	54	176	48	208	55	584	53
Tariff escalation, subtotal	206	56	192	53	220	59	618	56
Parity, tariffs get escalating ($TW_{base} = 0$, $\Delta TW > 0$)	1	0	0	0	0	0	1	0
Parity, tariffs, no change ($TW_{base} = 0$, $\Delta TW = 0$)	24	7	42	12	32	9	98	9
Parity, tariffs get de-escalating ($TW_{base} = 0$, $\Delta TW < 0$)	1	0	1	0	0	0	2	0
Tariff parity, subtotal	26	7	43	12	32	9	101	9
De-escalation decreased ($TW_{base} < 0$, $\Delta TW > 0$)	117	32	119	33	102	27	338	31
De-escalation, no change ($TW_{base} < 0$, $\Delta TW = 0$)	1	0	0	0	0	0	1	0
De-escalation increased ($TW_{base} < 0$, $\Delta TW < 0$)	19	5	9	2	21	6	49	4
Tariff de-escalation, subtotal	137	37	128	35	123	33	388	35
Total	369	100	363	100	375	100	1107	100

Based on Table 3 and the Charts some broad conclusions can be drawn:

1. The tariff wedges of all three countries have converged towards zero as a result of the UR, meaning that positive *TW*s have become less positive and negative tariff wedges less negative. This is the case in 86 %, 81 % and 83 % of the EU, Japanese and US commodity pairs (the rest is, broadly speaking, equally made up of *TW*s diverging from zero and *TW*s not subject to any change).
2. Nominal tariff escalation was the case in 56 % of the commodity pairs in the base period (down to 54 % due to the UR), see Chart 4.
3. Nominal tariff de-escalation (negative *TW*s) is also widespread. On average 35 % of the base tariff wedges were de-escalating (the figure remains the same with respect to the TWs_{bound}), see Chart 4.
4. High levels of both nominal tariff de-escalation and escalation still prevail for a number of commodity pairs after implementing the tariff reductions of the UR. In the case of nominal tariff escalation, average TW_{bound} of EU, Japan and US were 16 % (down from 23 % as a result of the UR), 27 % (down from 35 %) and 9 % (down from 12 %) respectively.

[34] For presentation purposes, tariff wedges falling outside the range from -100 to 100 are not covered by the Charts. 5 % of 369 available *TW*s of EU, 13 % of 363 available Japanese *TW*s and 1 % of 375 available *TW*s of US fall outside this range. These percentages refer to TWs_{base} (less TWs_{bound} fall outside the range).

Chart 1-3: The distribution of base and bound tariff wedges of EU, Japan and US

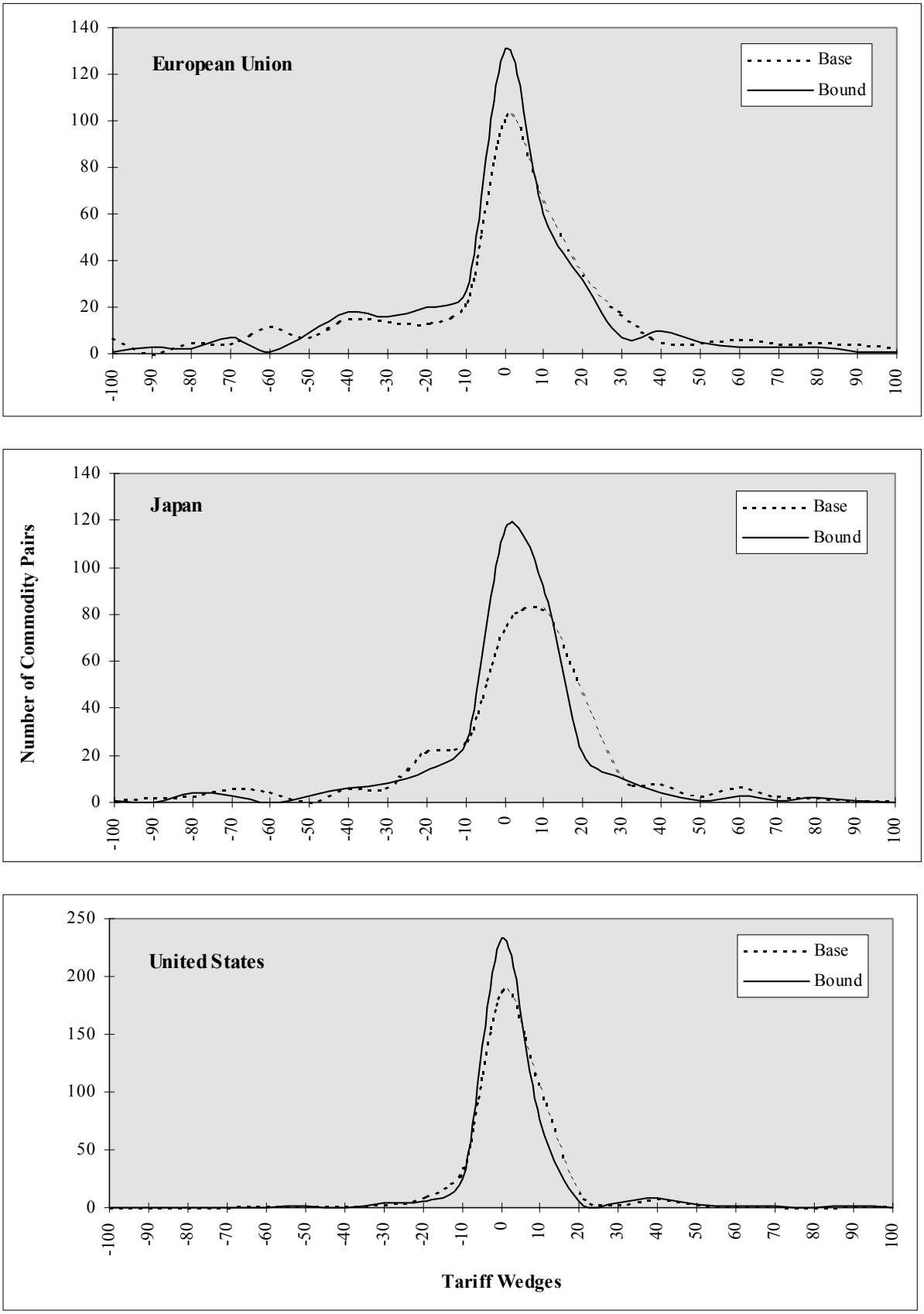


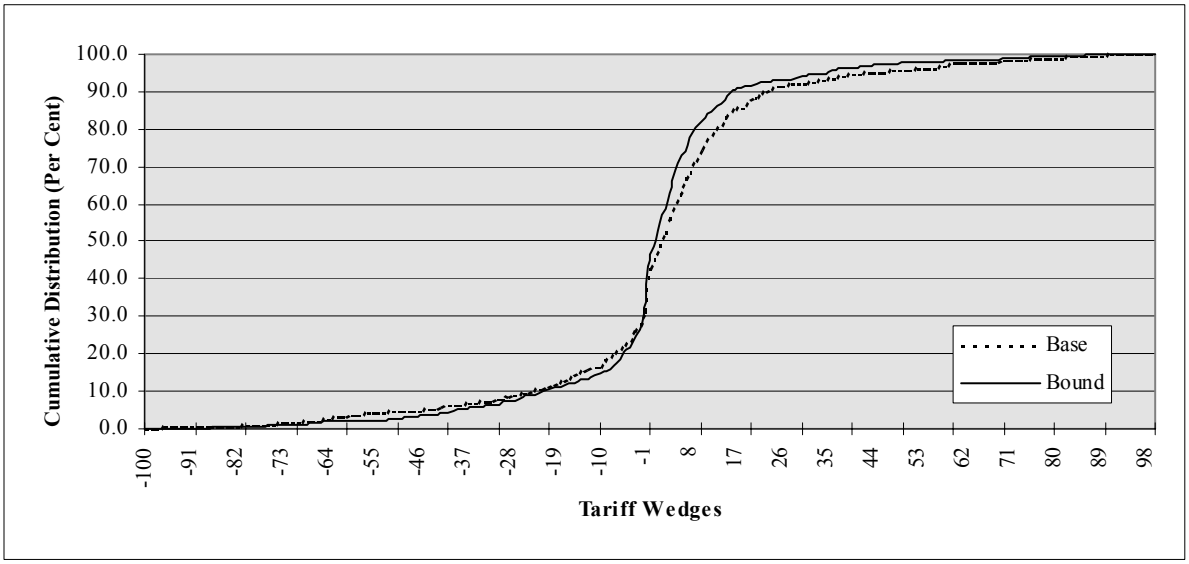
Table 4: Tariff wedges of processed agricultural commodities, 1995-2000, of EU, Japan and US, aggregated on commodity groups and processing levels

Commodity Group	European Union							Japan							United States of America						
	Input tariffs		Output tariffs		Tariff wedges			Input tariffs		Output tariffs		Tariff wedges			Input tariffs		Output tariffs		Tariff wedges		
	Base	Bound	Base	Bound	Base	Bound	ΔTW	Base	Bound	Base	Bound	Base	Bound	ΔTW	Base	Bound	Base	Bound	Base	Bound	ΔTW
Meat products and edible offals																					
1st stage	52.1	33.2	43.3	27.1	-8.8	-6.0	2.7	22.4	19.1	29.8	21.0	7.4	1.9	-5.5	1.0	0.5	6.4	4.6	5.4	4.2	-1.2
2nd stage	101.0	64.2	45.1	28.7	-55.9	-35.5	20.4	80.7	54.5	69.9	52.2	-10.8	-2.3	8.5	16.0	13.5	6.2	3.7	-8.0	-8.3	-0.3
3rd stage	149.7	95.8	36.4	23.3	-113.3	-72.5	40.8	93.0	50.0	25.0	10.0	-68.0	-40.0	28.0	31.1	26.4	6.3	3.3	-24.9	-23.1	1.8
Average	75.7	48.2	43.8	27.7	-31.9	-20.5	11.4	49.2	34.9	46.5	33.7	-2.7	-1.2	1.4	8.3	6.8	6.3	4.2	-1.0	-1.7	-0.7
Dairy and egg products																					
1st stage	81.4	52.1	78.0	50.0	-3.4	-2.1	1.3	100.2	85.4	137.1	114.5	36.9	29.1	-7.7	1.8	1.6	41.5	35.2	39.7	33.6	-6.1
2nd stage	48.1	30.8	99.7	65.2	51.6	34.4	-17.3	85.8	73.3	278.7	233.4	192.9	160.1	-32.8	12.1	10.3	58.5	49.7	46.4	39.5	-7.0
3rd stage	70.8	45.3	74.4	47.6	3.6	2.3	-1.3	42.5	29.7	79.7	40.0	37.3	10.3	-26.9	40.9	34.5	59.1	50.1	18.2	15.6	-2.6
Average	67.7	43.3	86.5	56.0	18.9	12.7	-6.2	92.2	78.3	191.5	159.1	99.3	80.8	-18.5	7.5	6.4	49.0	41.6	41.5	35.2	-6.3
Cereal products																					
1st stage	60.9	49.2	51.7	35.2	-9.2	-14.0	-4.8	81.8	67.6	47.2	39.3	-34.6	-28.3	6.3	2.5	1.3	6.8	3.9	4.3	2.6	-1.7
2nd stage	77.4	53.8	60.7	40.6	-16.7	-13.2	3.5	166.5	141.6	84.6	70.5	-81.9	-71.1	10.8	4.8	2.6	7.3	4.5	2.5	1.9	-0.6
3rd stage	75.2	48.1	39.4	25.2	-35.8	-22.9	12.9								1.8	1.1	3.4	2.6	1.6	1.4	-0.2
Average	69.0	51.0	54.3	36.5	-14.6	-14.5	0.2	119.8	100.7	64.0	53.3	-55.8	-47.5	8.3	3.4	1.8	6.7	4.0	3.3	2.2	-1.1
Vegetable products																					
1st stage	14.5	11.2	24.4	18.7	9.9	7.5	-2.4	5.4	3.4	16.2	10.1	10.8	6.7	-4.0	11.1	7.3	10.0	6.7	-1.1	-0.6	0.4
Fruit products																					
1st stage	24.3	18.9	41.2	31.1	17.0	12.2	-4.7	16.5	11.2	32.2	20.5	15.8	9.3	-6.4	2.4	1.9	11.8	9.2	9.4	7.3	-2.1
2nd stage	98.2	75.0	200.6	159.8	102.5	84.8	-17.7	71.0	26.6	38.0	24.4	-32.9	-2.3	30.7	9.3	4.2	16.1	10.7	6.8	6.6	-0.3
Average	27.0	21.0	47.1	35.9	20.1	14.9	-5.2	18.5	11.7	32.4	20.6	14.0	8.9	-5.1	2.7	2.0	12.0	9.3	9.3	7.3	-2.0
Nut products																					
1st stage	4.4	2.9	7.7	5.0	3.3	2.1	-1.2	10.3	4.3	13.4	7.0	3.1	2.7	-0.5	5.9	3.8	8.6	6.2	2.7	2.4	-0.3
2nd stage	3.1	2.0	15.1	10.0	12.0	8.0	-4.0	7.6	4.0	21.5	10.8	13.9	6.8	-7.2	4.9	3.6	9.9	6.7	5.0	3.1	-1.9
Average	3.7	2.4	11.8	7.8	8.2	5.4	-2.8	8.8	4.2	17.9	9.1	9.1	5.0	-4.2	5.4	3.7	9.3	6.4	4.0	2.8	-1.2
Sugar products and sweeteners																					
1st stage	370.2	295.6	71.8	57.4	-298.4	-238.2	60.2	0.0	0.0	96.9	82.2	96.9	82.2	-14.8	1.5	0.7	37.6	31.8	36.1	31.2	-4.9
2nd stage	87.5	61.4	47.0	33.6	-40.5	-27.9	12.6	192.8	163.9	110.0	76.3	-82.8	-87.5	-4.8	19.7	16.5	48.5	44.2	28.8	27.7	-1.1
3rd stage	60.5	42.2	30.5	20.8	-30.0	-21.4	8.6	171.9	146.0	50.2	33.1	-121.6	-112.9	8.8	31.7	26.3	28.7	25.5	-2.9	-0.8	2.1
4th stage	34.0	21.8	73.8	59.0	39.8	37.2	-2.6	84.9	49.3	54.8	36.2	-30.2	-13.1	17.0	40.1	38.0	34.7	31.6	-5.4	-6.4	-1.0
Average	116.7	87.4	50.1	37.5	-66.6	-49.9	16.7	134.6	109.5	74.9	53.1	-59.7	-56.4	3.3	25.7	22.3	36.9	33.0	11.2	10.7	-0.5
Cocoa and coffee products																					
1st stage	5.8	2.1	14.8	8.7	9.0	6.6	-2.4	2.5	1.5	20.0	13.3	17.5	11.8	-5.7	0.5	0.0	2.0	1.6	1.5	1.6	0.1
2nd stage	15.0	9.6	13.8	8.3	-1.3	-1.4	-0.1	10.0	5.0	11.7	5.8	1.7	0.8	-0.9	0.0	0.0	0.5	0.2	0.5	0.2	-0.3
Average	8.1	4.0	14.6	8.6	6.4	4.6	-1.8	4.4	2.4	17.9	11.4	13.6	9.0	-4.5	0.4	0.0	1.7	1.3	1.3	1.3	0.0

Table 4: (Continued)

Commodity Group	European Union							Japan							United States of America						
	Input tariffs		Output tariffs		Tariff wedges			Input tariffs		Output tariffs		Tariff wedges			Input tariffs		Output tariffs		Tariff wedges		
	Base	Bound	Base	Bound	Base	Bound	ΔTW	Base	Bound	Base	Bound	Base	Bound	ΔTW	Base	Bound	Base	Bound	Base	Bound	ΔTW
Oils and fats of vegetable and animal origin																					
1st stage	18.0	11.7	20.4	14.6	2.3	2.9	0.6	16.3	13.8	10.5	6.0	-5.8	-7.8	-2.0	1.4	0.9	6.0	4.1	4.6	3.2	-1.4
2nd stage	14.4	9.5	25.1	17.0	10.6	7.4	-3.2	23.4	17.1	10.8	7.6	-12.6	-9.5	3.0	10.3	7.8	8.8	6.4	-1.5	-1.4	0.1
3rd stage	42.3	31.9	20.0	12.8	-22.3	-19.1	3.1	10.7	4.6	10.9	8.7	0.2	4.2	3.9	5.2	3.3	10.5	7.4	5.3	4.1	-1.3
4th stage	29.1	18.2	20.1	12.5	-9.0	-5.6	3.3	5.7	4.6	15.0	12.8	9.4	8.3	-1.2	11.7	6.5	12.1	8.3	0.4	1.8	1.4
Average	24.0	16.9	22.5	15.1	-1.4	-1.8	-0.4	17.6	12.2	10.9	7.8	-6.7	-4.4	2.3	7.2	5.1	8.9	6.3	1.8	1.2	-0.6
Non-oil products of oil-bearing crops																					
1st stage	2.1	1.4	5.9	3.7	3.8	2.4	-1.4	37.0	31.0	49.0	39.8	12.0	8.8	-3.2	29.1	24.6	26.7	20.4	-2.4	-4.2	-1.8
2nd stage	0.0	0.0	17.7	12.4	17.7	12.4	-5.3	290.4	246.8	25.8	16.8	-264.7	-230.1	34.7	155.0	131.8	155.0	131.8	0.0	0.0	0.0
Average	1.6	1.1	8.5	5.7	6.9	4.6	-2.3	93.3	79.0	43.9	34.7	-49.5	-44.3	5.2	57.1	48.4	55.2	45.1	-1.9	-3.3	-1.4
Pulse products																					
1st stage	3.6	1.2	12.0	7.7	8.4	6.5	-1.9	492.5	417.4	16.0	13.6	-476.5	-403.8	72.7	3.2	1.4	13.0	8.3	9.8	6.9	-2.9
Average	3.6	1.2	12.0	7.7	8.4	6.5	-1.9	492.5	417.4	16.0	13.6	-476.5	-403.8	72.7	3.2	1.4	13.0	8.3	9.8	6.9	-2.9
Root and tuber products																					
1st stage	14.0	9.0	45.0	28.8	31.0	19.8	-11.2	5.0	4.3	66.1	54.6	61.1	50.3	-10.8	3.3	2.1	4.8	3.4	1.6	1.3	-0.3
Animal feeds																					
1st stage	32.3	24.7	19.3	13.4	-13.0	-11.2	1.8	169.3	142.2	0.0	0.0	-169.3	-142.2	27.1	3.0	1.9	2.3	1.1	-0.8	-0.7	0.0
2nd stage	28.5	19.2	22.4	14.3	-6.1	-4.9	1.2	44.4	37.7	0.0	0.0	-44.4	-37.7	6.6	20.0	14.7	2.4	1.4	-17.5	-13.3	4.2
3rd stage	60.0	38.4	47.4	30.4	-12.6	-8.1	4.5	10.0	7.6	0.0	0.0	-10.0	-7.6	2.4	3.9	2.5	1.7	0.8	-2.2	-1.7	0.5
Average	34.7	25.0	23.4	15.7	-11.3	-9.4	2.0	124.1	104.3	0.0	0.0	-124.1	-104.3	19.8	7.2	5.0	2.2	1.1	-4.9	-3.8	1.1
Beverages																					
1st stage	32.9	29.2	45.9	29.1	12.9	-0.1	-13.0	24.4	17.8	54.0	19.0	29.6	1.1	-28.4	1.1	0.4	5.2	2.6	4.1	2.2	-1.9
2nd stage	43.4	28.4	28.9	6.7	-14.5	-21.7	-7.2	41.3	26.6	25.4	8.0	-16.0	-18.6	-2.7	5.3	2.8	2.1	0.5	-3.2	-2.3	0.9
3rd stage	69.1	47.7	20.1	5.5	-49.0	-42.2	6.8	100.1	83.2	17.1	5.8	-83.0	-77.5	5.5	21.7	17.7	4.6	3.0	-17.0	-14.7	2.3
4th stage	34.0	21.8	24.5	16.9	-9.4	-4.9	4.5	84.9	49.3	19.2	11.5	-65.7	-37.8	27.9	40.1	38.0	13.3	11.3	-26.8	-26.7	0.1
Average	48.6	34.5	29.9	12.7	-18.7	-21.7	-3.0	52.4	37.5	31.7	11.2	-20.7	-26.4	-5.7	12.6	10.1	4.7	2.8	-7.9	-7.3	0.6
Tobacco and pyrethrum																					
1st stage	11.7	8.4	49.0	22.6	37.3	14.1	-23.1	6.7	4.0	12.8	10.1	6.1	6.1	0.0	12.2	8.6	9.7	4.7	-2.5	-4.0	-1.4
Fibres of vegetal and animal origin																					
1st stage	0.3	0.0	1.3	0.0	1.1	0.0	-1.1	13.0	11.1	23.0	19.6	10.0	8.5	-1.5	4.9	4.1	3.4	2.7	-1.6	-1.5	0.1
2nd stage	0.0	0.0	1.7	1.3	1.7	1.3	-0.3	0.0	0.0	0.5	0.0	0.5	0.0	-0.5	2.7	1.5	6.3	3.6	3.5	2.1	-1.4
Average	0.1	0.0	1.5	0.6	1.3	0.6	-0.7	7.4	6.3	13.4	11.2	5.9	4.9	-1.1	4.0	3.0	4.6	3.1	0.6	0.1	-0.5
Hides and skins																					
1st stage	51.0	32.4	0.0	0.0	-51.0	-32.4	18.7	21.2	18.0	0.4	0.0	-20.8	-18.0	2.8	0.4	0.2	0.0	0.0	-0.4	-0.2	0.2
2nd stage	0.0	0.0	2.5	2.3	2.5	2.3	-0.3	0.0	0.0	21.8	10.9	21.8	10.9	-10.9	0.0	0.0	1.5	1.0	1.5	1.0	-0.5
3rd stage	0.0	0.0	3.8	3.5	3.8	3.5	-0.3	0.0	0.0	60.0	30.0	60.0	30.0	-30.0	0.0	0.0	3.8	2.3	3.8	2.3	-1.5
Average	20.9	13.2	1.6	1.5	-19.3	-11.8	7.5	8.7	7.4	16.5	8.2	7.9	0.8	-7.0	0.2	0.1	1.1	0.7	0.9	0.6	-0.3
Total	36.7	25.7	32.6	22.0	-4.1	-3.7	0.4	59.7	48.4	37.1	27.9	-22.6	-20.6	2.1	8.4	6.3	12.2	9.3	3.8	3.0	-0.8

Chart 4: Total cumulative distribution (in per cent) of all base and bound tariff wedges of EU, Japan and US[35]



The overall results as presented in Annex 1 have been aggregated by commodity groups and processing levels and are presented[36] in Table 4. These aggregates are simple averages of tariffs and tariff wedges of commodity pairs.[37] The prevalence of negative tariff wedges as for instance indicated in the case of EU and Japan by the overall averages given in the end of Table 4 seems striking. However, the detailed results presented in Annex 1 show that negative tariff wedges are particularly widespread in case of commodity pairs whose output commodities are joint by-products of processing relationships with multiple output[38]. Excluding these by-products the overall average base and bound tariff wedges become positive, amounting to 1.4 % and 0.2 %, respectively, in case of EU, 4.1 % and 1.7 %, respectively, in case of Japan[39], 5.0 % and 3.9 %, respectively, in case of US and 3.5. % and 1.9 %, respectively, in case of all three markets on average.

[35] As with Charts 1-3, tariff wedges falling outside the range of -100 to 100 have been ignored.

[36] The column headings of Table 4 correspond fully to the notation introduced in section 3. The stages of the Table refer to the processing stage of the output commodities. For instance the 1st stage line of cereal products gives the aggregated tariffs, tariff wedges and changes in tariff wedges of all commodity pairs where the output commodity is a 1st stage processed cereal product, e.g. Wheat flour, that have been processed from the corresponding primary cereals commodity, i.e. Wheat (the t therefore refers to tariffs of these primary commodities while the T concerns the tariffs of the 1st stage processed output commodities in question). The 2nd stage line of cereal products refers to aggregated data and results of processed output commodities, e.g. Macaroni, having a 1st stage processed cereal commodity, e.g. Wheat flour, as input commodity. Note that the output tariffs of a given processing stage are in most cases not equal to the input tariffs of the following stage because not all the output commodities of one stage are necessarily used as input commodities to the next processing stage. The 1st stage of the cereal group is for instance an aggregate of 18 input output relationships while the 2nd and 3rd stages are aggregates of respectively 16 and 3 input output relationships.

[37] If consumption data had been available, averages weighted according to market- and commodity-specific consumption values would have been preferable.

[38] Examples of such by-products are (the main output of the processing relationship is indicated in parenthesis):

- bran and gluten of cereals processed from cereals (flour);
- hides, fat and offal processed from livestock (meat);
- cake of soy beans processed from soy beans (oil of soy beans); and
- olive residues processed from olives (olive oil).

[39] The figures of Japan also exclude commodity pairs involving flour of pulses as output, which has extremely negative tariff wedges.

In the following three sections the most noteworthy part of these findings (as presented in Table 4 and Annex 1) are highlighted country by country. Both the changes resulting from the UR and the remaining bound tariff wedges are examined.

5.1.1. The European Union

As an indicator of the general agricultural protection level, the average EU bound tariff of all agricultural input and output commodities covered by the study[40] is 22 %, down from 32 % as a result of the UR. This is above the US average and below the Japanese average.

Table 5 highlights the five highest reductions in nominal tariff escalation and de-escalation, as well as the highest bound tariff wedges, of the European Union. It is worth noting that the commodity groups having the highest TWs_{bound} also have undergone the highest reductions (except for the 4th processing stage of sugar products and sweeteners whose average *TW* is only slightly reduced).

Table 5: The *Top 5* of nominal tariff escalation (aggregated groups), the European Union

Commodity Group	Processing Stage	TW_{base}	TW_{bound}	ΔTW
1. Highest reductions in nominal tariff escalation (ΔTW)				
Tobacco and pyrethrum	1st stage	37.3	14.1	-23.1
Fruit products	2nd stage	102.5	84.8	-17.7
Dairy and egg products	2nd stage	51.6	34.4	-17.3
Beverages	1st stage	12.9	-0.1	-13.0
Root and tuber products	1st stage	31.0	19.8	-11.2
2. Highest reductions in nominal tariff de-escalation (ΔTW)				
Sugar products and sweeteners	1st stage	-298.4	-238.2	60.2
Meat products and edible offals	3rd stage	-113.3	-72.5	40.8
Meat products and edible offals	2nd stage	-55.9	-35.5	20.4
Hides and skins	1st stage	-51.0	-32.4	18.7
Cereal products	3rd stage	-35.8	-22.9	12.9
3. Highest post-UR tariff escalation (TW_{bound})				
Fruit products	2nd stage	102.5	84.8	-17.7
Sugar products and sweeteners	4th stage	39.8	37.2	-2.6
Dairy and egg products	2nd stage	51.6	34.4	-17.3
Root and tuber products	1st stage	31.0	19.8	-11.2
Tobacco and pyrethrum	1st stage	37.3	14.1	-23.1

Source: Table 4

[40] Information on the average input and output tariff is not provided by Table 4 and Annex 1.

Table 6 presents individual commodity pairs of the EU with the 10 highest reductions in nominal tariff escalation and de-escalation, as well as the 10 highest bound tariff wedges. In order to highlight the most significant commodities, only those commodity pairs have been selected whose processed commodities have a share of at least 0.1 % in world trade of processed agricultural commodities[41].

Table 6: The *Top 10* of nominal tariff escalation (individual commodity pairs), EU

Input Commodity	Processed Commodity	*%M*	TW_{base}	TW_{bound}	ΔTW
1. Highest reductions in nominal tariff escalation (ΔTW)					
0903 Whey, Fresh	0900 Dry Whey	0.20	236.1	151.1	-85.0
0826 Tobacco Leaves	0828 Cigarettes	4.31	73.9	29.1	-44.8
0061 Cake Of Maize	0846 Gluten Feed And Meal	0.52	118.6	75.9	-42.7
0015 Wheat	0017 Bran Of Wheat	0.12	85.2	45.2	-40.0
0015 Wheat	0016 Flour Of Wheat	0.93	83.5	43.8	-39.7
0560 Grapes	0562 Grape Juice	0.13	182.0	146.8	-35.3
0059 Bran Of Maize	0846 Gluten Feed And Meal	0.52	69.9	44.7	-25.2
0866 Cattle	0867 Beef And Veal	2.74	65.9	42.2	-23.7
0826 Tobacco Leaves	0829 Cigars And Cheroots	0.21	35.9	13.3	-22.5
0976 Sheep	0977 Mutton And Lamb	0.86	62.3	39.9	-22.4
2. Highest reductions in nominal tariff de-escalation (ΔTW)					
0157 Sugar Beets	0169 Beet Pulp, Dry	0.13	-370.2	-295.6	74.6
0157 Sugar Beets	0165 Molasses	0.28	-364.1	-290.7	73.4
0867 Beef And Veal	0875 Beef Preparations	0.59	-136.0	-87.0	48.9
0157 Sugar Beets	0162 Sugar (Centrifugal, Raw)	2.45	-232.8	-185.7	47.1
0027 Rice, Paddy	0028 Rice, Husked	0.52	-96.3	-51.2	45.1
0027 Rice, Paddy	0031 Milled Paddy Rice	1.73	-41.1	-1.8	39.3
1079 Turkeys	1080 Turkey Meat	0.34	-105.5	-67.5	38.0
0274 Oil Of Olive Residues	1276 Fatty Acids Oils	0.45	-194.6	-156.6	38.0
0866 Cattle	0920 Hides, Wet-Salted, Cattle	0.94	-104.4	-66.8	37.6
0274 Oil Of Olive Residues	1275 Oils, Hydrogenated	0.30	-184.4	-150.1	34.3
3. Highest post-UR tariff escalation (TW_{bound})					
0903 Whey, Fresh	0900 Dry Whey	0.20	236.1	151.1	-85.0
0560 Grapes	0562 Grape Juice	0.13	182.0	146.8	-35.3
0449 Mushrooms	0451 Canned Mushrooms	0.31	109.7	87.7	-22.1
0563 Must Of Grapes	0562 Grape Juice	0.13	102.5	84.8	-17.7
0260 Olives	0261 Olive Oil	0.71	102.0	82.2	-19.8
0061 Cake Of Maize	0846 Gluten Feed And Meal	0.52	118.6	75.9	-42.7
0515 Apples	0519 Apple Juice, Concentrated	0.22	66.6	49.6	-17.0
0028 Rice, Husked	0029 Milled And Husked Rice	0.14	55.2	49.4	-5.8
0015 Wheat	0017 Bran Of Wheat	0.12	85.2	45.2	-40.0
0059 Bran Of Maize	0846 Gluten Feed And Meal	0.52	69.9	44.7	-25.2

Source: Annex 1

Explanations:

%M = the share of the processed commodity (in per cent) in world imports of processed agricultural commodities (1992-94).

[41] During 1992-94 a total of 377 processed agricultural commodities were traded at a total value of US 240 billion (amounting to 62 % of total world agricultural trade). Only 137 processed commodities had a share of at least 0.1 % (equal to US $ 240 million) in world trade of processed agricultural commodities. However, the remaining 240 processed agricultural commodities traded in this period altogether only represent 5 % of total world trade of processed agricultural commodities.

5.1.2. Japan

The agricultural market of Japan is the most protected of the markets studied. The average Japanese bound tariff of all agricultural input and output commodities covered by the study is 52 %, down from 65 % as a result of the UR.

Table 7 highlights the five highest reductions in nominal tariff escalation and de-escalation, as well as the highest bound tariff wedges. Note that some of the commodity groups having the highest TWs_{bound} have also in the case of Japan undergone the highest reductions.

Table 7: The *Top 5* of nominal tariff escalation (aggregated groups), Japan

Commodity Group	Processing Stage	TW_{base}	TW_{bound}	ΔTW
1. Highest reductions in nominal tariff escalation (ΔTW)				
Dairy and egg products	2nd stage	192.9	160.1	-32.8
Hides and skins	3rd stage	60.0	30.0	-30.0
Beverages	1st stage	29.6	1.1	-28.4
Dairy and egg products	3rd stage	37.3	10.3	-26.9
Sugar products and sweeteners	1st stage	96.9	82.2	-14.8
2. Highest reductions in nominal tariff de-escalation (ΔTW)				
Pulse products	1st stage	-476.5	-403.8	72.7
Non-oil products of oil-bearing crops	2nd stage	-264.7	-230.1	34.7
Fruit products	2nd stage	-32.9	-2.3	30.7
Meat products and edible offals	3rd stage	-68.0	-40.0	28.0
Beverages	4th stage	-65.7	-37.8	27.9
3. Highest post-UR tariff escalation (TW_{bound})				
Dairy and egg products	2nd stage	192.9	160.1	-32.8
Sugar products and sweeteners	1st stage	96.9	82.2	-14.8
Root and tuber products	1st stage	61.1	50.3	-10.8
Hides and skins	3rd stage	60.0	30.0	-30.0
Dairy and egg products	1st stage	36.9	29.1	-7.7

Source: Table 4

Table 8 presents individual commodity pairs of Japan with the 10 highest reductions in nominal tariff escalation and de-escalation, as well as the 10 highest bound tariff wedges. In order to highlight the most significant commodities, only those commodity pairs have been selected whose processed commodities have a share of at least 0.1 % in world trade of processed agricultural commodities

Table 8: The *Top 10* of nominal tariff escalation (individual commodity pairs), Japan

Input Commodity	Processed Commodity	*%M*	TW_{base}	TW_{bound}	*ΔTW*
1. Highest reductions in nominal tariff escalation (*ΔTW*)					
0903 Whey, Fresh	0900 Dry Whey	0.20	572.3	486.6	-85.8
0560 Grapes	0564 Wine	3.56	59.5	17.9	-41.5
0891 Yoghurt	0892 Yoghurt, Concentrate Or Not	0.21	190.3	154.2	-36.2
0866 Cattle	0867 Beef And Veal	2.74	28.7	-4.6	-33.4
0882 Cow Milk, Whole, Fresh	0886 Butter Of Cow Milk	1.35	215.7	183.3	-32.4
0116 Potatoes	0119 Potato Starch	0.11	205.4	174.5	-30.9
0920 Hides, Wet-Salted, Cattle	2002 Finished Light Leather From B	0.12	60.0	30.0	-30.0
0958 Hides, Wet-Salted, Buffalo	2002 Finished Light Leather From B	0.12	60.0	30.0	-30.0
0049 Malt Of Barley	0172 Glucose And Dextrose	0.30	42.4	13.1	-29.3
0058 Flour Of Maize	0064 Starch Of Maize	0.11	180.2	153.1	-27.1
2. Highest reductions in nominal tariff de-escalation (*ΔTW*)					
0243 Groundnuts, Shelled	0246 Prepared Groundnuts	0.12	-263.9	-224.3	39.7
0015 Wheat	0017 Bran Of Wheat	0.12	-245.0	-207.3	37.7
0243 Groundnuts, Shelled	0244 Oil Of Groundnuts	0.12	-276.6	-239.9	36.7
0016 Flour Of Wheat	0024 Wheat Gluten	0.11	-231.0	-196.1	34.9
0016 Flour Of Wheat	0018 Macaroni	0.49	-231.3	-197.6	33.6
0015 Wheat	0041 Breakfast Cereals	0.42	-220.8	-187.4	33.4
0016 Flour Of Wheat	0020 Bread	0.23	-241.0	-208.4	32.6
0563 Must Of Grapes	0562 Grape Juice	0.13	-32.9	-2.3	30.7
0172 Glucose And Dextrose	0168 Sugar, Confectionery	1.15	-63.3	-33.0	30.3
0016 Flour Of Wheat	0022 Pastry	1.92	-224.2	-195.5	28.7
3. Highest post-UR tariff escalation (TW_{bound})					
0903 Whey, Fresh	0900 Dry Whey	0.20	572.3	486.6	-85.8
0882 Cow Milk, Whole, Fresh	0886 Butter Of Cow Milk	1.35	215.7	183.3	-32.4
0116 Potatoes	0119 Potato Starch	0.11	205.4	174.5	-30.9
0891 Yoghurt	0892 Yoghurt, Concentrate Or Not	0.21	190.3	154.2	-36.2
0058 Flour Of Maize	0064 Starch Of Maize	0.11	180.2	153.1	-27.1
0882 Cow Milk, Whole, Fresh	0885 Cream, Fresh	0.25	161.1	136.8	-24.3
1035 Pig Meat	1038 Pork	0.16	155.0	131.8	-23.2
0157 Sugar Beets	0162 Sugar (Centrifugal, Raw)	2.45	150.4	127.8	-22.6
0882 Cow Milk, Whole, Fresh	0897 Dry Whole Cow Milk	1.10	108.0	91.7	-16.3
0882 Cow Milk, Whole, Fresh	0892 Yoghurt, Concentrate Or Not	0.21	102.1	79.1	-23.0

Source: Annex 1

Explanations:

%M = the share of the processed commodity (in per cent) in world imports of processed agricultural commodities (1992-94).

5.1.3. The United States of America

The average US bound tariff of all agricultural input and output commodities covered by the study is 8 %, down from 11 % due to the UR. This is the lowest general agricultural protection level of the countries examined.

Table 9 highlights the five highest reductions in nominal tariff escalation and de-escalation, as well as the highest bound tariff wedges. Observe that the list of the commodity groups having the highest TWs_{bound} and the one with the highest reductions is almost identical.

Table 9: The *Top 5* of nominal tariff escalation (aggregated groups), the United States

Commodity Group	Processing Stage	TW_{base}	TW_{bound}	ΔTW
1. Highest reductions in nominal tariff escalation (ΔTW)				
Dairy and egg products	2nd stage	46.4	39.5	-7.0
Dairy and egg products	1st stage	39.7	33.6	-6.1
Sugar products and sweeteners	1st stage	36.1	31.2	-4.9
Pulse products	1st stage	9.8	6.9	-2.9
Dairy and egg products	3rd stage	18.2	15.6	-2.6
2. Highest reductions in nominal tariff de-escalation (ΔTW)				
Animal feeds	2nd stage	-17.5	-13.3	4.2
Beverages	3rd stage	-17.0	-14.7	2.3
Sugar products and sweeteners	3rd stage	-2.9	-0.8	2.1
Meat products and edible offals	3rd stage	-24.9	-23.1	1.8
Beverages	2nd stage	-3.2	-2.3	0.9
3. Highest post-UR tariff escalation (TW_{bound})				
Dairy and egg products	2nd stage	46.4	39.5	-7.0
Dairy and egg products	1st stage	39.7	33.6	-6.1
Sugar products and sweeteners	1st stage	36.1	31.2	-4.9
Sugar products and sweeteners	2nd stage	28.8	27.7	-1.1
Dairy and egg products	3rd stage	18.2	15.6	-2.6

Source: Table 4

Table 10 presents individual commodity pairs of the US with the 10 highest reductions in nominal tariff escalation and de-escalation, as well as the 10 highest bound tariff wedges. In order to highlight the most significant commodities, only those commodity pairs have been selected whose processed commodities have a share of at least 0.1 % in world trade of processed agricultural commodities.

Table 10: The *Top 10* of nominal tariff escalation (individual commodity pairs), US

Input Commodity	Processed Commodity	*%M*	TW_{base}	TW_{bound}	ΔTW
1. Highest reductions in nominal tariff escalation (ΔTW)					
0882 Cow Milk, Whole, Fresh	0886 Butter Of Cow Milk	1.35	102.8	87.3	-15.5
0903 Whey, Fresh	0900 Dry Whey	0.20	102.9	87.5	-15.4
0882 Cow Milk, Whole, Fresh	0885 Cream, Fresh	0.25	86.3	73.3	-13.0
0157 Sugar Beets	0162 Sugar (Centrifugal, Raw)	2.45	73.1	62.7	-10.4
1096 Horses	1097 Horse Meat	0.19	10.0	0.0	-10.0
0882 Cow Milk, Whole, Fresh	0892 Yoghurt, Concentrate Or Not	0.21	60.3	51.2	-9.1
0882 Cow Milk, Whole, Fresh	0897 Dry Whole Cow Milk	1.10	54.6	46.3	-8.2
0888 Skim Milk Of Cows	0898 Dry Skim Cow Milk	1.48	54.3	46.1	-8.2
0891 Yoghurt	0892 Yoghurt, Concentrate Or Not	0.21	42.3	36.0	-6.3
0882 Cow Milk, Whole, Fresh	0901 Cheese (Whole Cow Milk)	3.58	38.8	32.7	-6.2
2. Highest reductions in nominal tariff de-escalation (ΔTW)					
0243 Groundnuts, Shelled	0244 Oil Of Groundnuts	0.12	-147.5	-125.4	22.1
0251 Copra	0252 Oil Of Coconuts	0.34	-13.9	0.0	13.9
0366 Artichokes	0471 Vegetables In Vinegar	0.22	-14.4	-4.2	10.3
0366 Artichokes	0473 Vegetables, Frozen	0.67	-15.3	-5.3	9.9
0366 Artichokes	0474 Vegetables, Temporarily Preser	0.17	-14.6	-4.8	9.8
0164 Sugar, Refined	0633 Beverages, Non-Alcoholic	0.94	-60.5	-51.4	9.1
0367 Asparagus	0471 Vegetables In Vinegar	0.22	-14.4	-6.0	8.4
0367 Asparagus	0473 Vegetables, Frozen	0.67	-15.3	-7.2	8.1
0367 Asparagus	0474 Vegetables, Temporarily Preser	0.17	-14.6	-6.6	8.0
0164 Sugar, Refined	0168 Sugar, Confectionery	1.15	-40.6	-34.8	5.8
3. Highest post-UR tariff escalation (TW_{bound})					
0903 Whey, Fresh	0900 Dry Whey	0.20	102.9	87.5	-15.4
0882 Cow Milk, Whole, Fresh	0886 Butter Of Cow Milk	1.35	102.8	87.3	-15.5
0882 Cow Milk, Whole, Fresh	0885 Cream, Fresh	0.25	86.3	73.3	-13.0
0157 Sugar Beets	0162 Sugar (Centrifugal, Raw)	2.45	73.1	62.7	-10.4
0882 Cow Milk, Whole, Fresh	0892 Yoghurt, Concentrate Or Not	0.21	60.3	51.2	-9.1
0882 Cow Milk, Whole, Fresh	0897 Dry Whole Cow Milk	1.10	54.6	46.3	-8.2
0888 Skim Milk Of Cows	0898 Dry Skim Cow Milk	1.48	54.3	46.1	-8.2
0882 Cow Milk, Whole, Fresh	0889 Whole Milk, Condensed	0.13	49.2	41.8	-7.4
0129 Cassava Starch	0172 Glucose And Dextrose	0.30	40.1	38.0	-2.1
0049 Malt Of Barley	0172 Glucose And Dextrose	0.30	38.1	36.9	-1.2

Source: Annex 1

Explanations:

%M = the share of the processed commodity (in per cent) in world imports of processed agricultural commodities (1992-94).

5.2. Effective Rates of Protection

As noted in section 4.5., available data on import unit values are too aggregated to allow a meaningful calculation of *ERP*s. However, in order to demonstrate the difference between the concepts of nominal and effective protection, Table 11 presents *ERP*s for 15 selected commodity pairs (including single input - multiple output relationships) of the EU, Japan and the US. Several observation can be made from Table 11:

1. The *ERP* can differ considerably from the *TW*

See for instance the commodity pairs Sugar beets - Sugar of EU, Raw sugar - Refined sugar of Japan and Apricots - Homogenised cooked fruit, prepared of US.

2. The findings illustrate the relationship between *ERP*s and *TW*s as described in section 3.3

In case of nominal tariff escalation ($TW > 0$), the *ERP* is also positive (e.g. Green coffee - Roasted coffee of Japan), while in case of nominal tariff de-escalation ($TW < 0$), the *ERP* might be positive (when $T/t > \alpha$, e.g. Flour of wheat - Macaroni of EU,) or negative (when $T/t < \alpha$, e.g. Bananas - Flour of fruit of EU).

The change in *TW* also provide useful information on the *direction* of the change in *ERP*. Whenever $\Delta TW < 0$ (decreasing nominal tariff escalation or increasing de-escalation), then $\Delta ERP < 0$ (e.g. Oranges - Orange juice of EU). If $\Delta TW > 0$ (increasing nominal tariff escalation or decreasing de-escalation), then ΔERP is positive when $\Delta T/\Delta t < \alpha$ (e.g. Sugar beets - Raw sugar of EU) and negative when $\Delta T/\Delta t > \alpha$ (e.g. Flour of wheat - Macaroni of EU).

3. When the *TW* is zero, the *ERP* equals the tariffs

When the input and output tariffs are equal (i.e. $TW = 0$), the *ERP* is equal to the tariffs (set T = t in equation 9 of section 3). This is illustrated by the US commodity pair Shelled groundnuts - Peanut butter where the *TW*s are zero and the *ERP*s are equal to the tariffs of 155 and 132 % respectively.

4. The ERP approach allows estimating the protection level for complex processing relationships

ERP can measure the protection level of processing relationships with multiple outputs (or inputs) while *TW*s can only be calculated between one input commodity and one output commodity of the processing relationship (see for instance the Japanese processing relationship Cattle going to Beef and veal, Fat of cattle, Wet-salted cattle hides and Edible offal of cattle). There is no way to aggregate these partial *TW*s into an overall *TW* for the entire processing relationship without weighing by their relative values.

Table 11: *ERP*s and nominal *TW*s for selected processing relationships

Commodity Code	Description	Unit	*Q*	Tariffs (%) pre	Tariffs (%) post	*r* and *P* ($)	ERPs and TWs (%) pre	ERPs and TWs (%) post	ERPs and TWs (%) Δ
European Union									
0015	Wheat	MT		26.8	26.8	178	**306**	**172**	**-134**
0016	Flour Of Wheat	MT	0.76	110.2	70.6	278	83	44	-40
0017	Bran Of Wheat	MT	0.22	111.9	71.9	139	85	45	-40
0019	Germ Of Wheat	MT	0.01	8.4	5.4	616	-18	-21	-3
0016	Flour Of Wheat	MT		110.2	70.6	278	**23**	**15**	**-8**
0018	Macaroni	MT	1.00	46.4	29.7	1032	-64	-41	23
0157	Sugar Beets	MT		370.2	295.6	61	**-3962**	**-3160**	**802**
0162	Sugar (Centrifugal Raw)	MT	0.16	137.4	109.9	405	-233	-186	47
0486	Bananas	MT		194.7	155.7	531	**-1564**	**-1274**	**289**
0624	Flour Of Fruit	MT	0.22	15.0	9.6	2650	-180	-146	34
0490	Oranges	MT		12.8	10.2	539	**308**	**240**	**-68**
0491	Orange Juice	MT	0.50	44.9	35.2	1221	32	25	-7
Japan									
0162	Sugar (Centrifugal, Raw)	MT		150.4	127.8	530	**1734**	**1476**	**-258**
0164	Sugar, Refined	MT	0.92	185.2	157.4	589	35	30	-5
0329	Cottonseed	MT		0.0	0.0	277	**218**	**109**	**-109**
0331	Oil Of Cotton Seed	MT	0.20	17.6	8.8	846	18	9	-9
0332	Cake Of Cotton Seed	MT	0.51	0.0	0.0	207	0	0	0
0770	Cotton Linters	MT	0.02	0.0	0.0	745	0	0	0
0656	Coffee, Green	MT		0.0	0.0	2527	**39**	**24**	**-16**
0657	Coffee, Roasted	MT	0.95	20.0	12.0	5403	20	12	-8
0866	Cattle	NO		64.3	54.6	824	**103**	**40**	**-64**
0867	Beef And Veal	MT	0.39	93.0	50.0	4141	29	-5	-33
0869	Fat Of Cattle	MT	0.02	0.0	0.0	827	-64	-55	10
0920	Hides, Wet-Salted, Cattle	MT	0.02	0.0	0.0	2486	-64	-55	10
0868	Offal Of Cattle, Edible	MT	0.04	39.1	24.2	3387	-25	-30	-5
0920	Hides, Wet-Salted, Cattle	MT		0.0	0.0	2486	**74**	**37**	**-37**
2001	Finished Heavy Leather, Bovine	MT	0.57	60.0	30.0	23421	60	30	-30
United States									
0015	Wheat	MT		5.6	3.5	175	**-5**	**-4**	**1**
0016	Flour Of Wheat	MT	0.74	2.6	1.4	273	-3	-2	1
0017	Bran Of Wheat	MT	0.25	0.0	0.0	136	-6	-4	2
0019	Germ Of Wheat	MT	0.01	10.0	4.5	604	4	1	-3
0236	Soybeans	MT		0.0	0.0	277	**73**	**57**	**-17**
0237	Oil Of Soya Beans	MT	0.18	15.5	12.7	609	16	13	-3
0238	Cake Of Soya Beans	MT	0.79	3.1	2.0	248	3	2	-1
0243	Groundnuts, Shelled	MT		155.0	131.8	838	**155**	**132**	**-23**
0247	Peanut Butter	MT	0.95	155.0	131.8	1737	0	0	0
0526	Apricots	MT		0.3	0.2	1227	**677**	**546**	**-131**
0626	Homogenised Cooked Fruit, Prep.	MT	0.70	15.0	12.0	1791	15	12	-3
0882	Cow Milk, Whole, Fresh	MT		2.1	1.8	506	**772**	**656**	**-117**
0889	Whole Milk, Condensed	MT	0.33	51.3	43.6	1616	49	42	-7

Explanations

- Output commodities are indented under their corresponding input commodity.
- The units relate to the extraction rates, *Q*, and the unit values, *P* and *r*.
- The last three columns give *ERP*s and *TW*s. The *ERP*, referring to the whole processing relationship, is presented in bold on the line of the input commodity, while the *TW*s, which relate to the individual commodity pairs, are given at the line of the output commodity.
- Further information related to the headings is given in section 3.2.

6. Conclusions and Implications

The study has estimated the impact of the Uruguay Round on tariff escalation in the agricultural sector. Base and bound nominal tariff wedges, including both specific and ad valorem tariffs, have been measured between 226 agricultural processed products and their input commodities. Effective rates of protection have been only been calculated for a selected number of commodities due to lack of reliable price data.

Findings

Based on the findings some general observations can be made:

1. Most tariff wedges have decreased as a result of the UR. Convergence towards zero is therefore a common feature for both negative and positive tariff wedges. On one hand, these results are somewhat expected. The absolute tariff wedge (in percentage points) of course decreases if tariffs on output and input commodities are both reduced by the same rate, as has often happened. Moreover, the Agreement on Agriculture required a minimum decrease of 15 % per tariff line and since base tariffs of several input commodities already were low and no tariffs can be reduced below zero, the tariff wedges would tend to diminish. On the other hand, these decreasing tariff wedges are noteworthy as countries had a tendency to use the scope for differentiated tariff reductions as a way of decreasing high tariffs by lower rates than low tariffs[42].
2. More than one third of the base and bound tariff wedges are *negative* (de-escalating tariffs)[43], signifying that the importer country in these cases has opted for a higher protection level of the input commodity than for the output commodity.[44]
3. Around 10 % of the base and bound tariff wedges are zero (equal tariffs).
4. More than half of the base and bound tariff wedges are positive (escalating tariffs). In these cases of nominal tariff escalation, the bound tariff wedges of all three countries average 17 % (down from 23 %). After the implementation of the UR, high levels of nominal tariff escalation will therefore still remain for a number of commodity pairs.
5. Tariff escalation in terms of *ERP* can occur even though the nominal tariffs are de-escalating. Moreover, a reduction in nominal tariff de-escalation may in some cases imply increased *ERP*s, depending on the relationship between the input tariff, the output tariff and the ratio between the input cost and the output price. However, whenever the change in the *TW* is negative (increased nominal tariff de-escalation or decreased escalation), the change of the *ERP* is also negative.

Statistical and Methodological Issues

There are also some conclusions of statistical and methodological character that are worth noting:

1. It has been difficult to use the available import unit values. As a proxy for prices we have used unit values to convert specific tariffs into ad valorem tariffs and to calculate *ERP*s. But the unit values available, either provided by each country at its most disaggregated HS level or by FAOSTAT, do not seem to correspond adequately to the prices that the processing industries face for their input and output commodities. Therefore *ERP*s have only been presented for illustration purposes for selected commodities. However, the tariff wedge approach is also affected by this uncertainty to some extent since it relied on import unit values in order to convert specific tariffs into ad valorem equivalents.

[42] See Tangermann, 1995.

[43] However, note that tariff de-escalation is widespread among commodity pairs whose output commodities are joint by-products. If these are excluded, tariff escalation and de-escalation would be the case in 60 % and 32 %, respectively, of the commodity pairs.

[44] Observe that an input commodity can itself be a processed commodity. All processing stages along a given processing chain rarely benefit from nominal tariff escalation. The results indicate that the importer country has often decided to give special protection to one of the stages of particular importance for domestic agriculture or industry, leaving the following stage subject to nominal tariff de-escalation (e.g. escalating tariffs in the case of wheat - flour of wheat, while the commodity pair flour of wheat - bread is subject to tariff de-escalation).

2. The study is based on *bound*, not *applied* tariffs, and as noted in section 4.3, applied rates may be considerably lower than the bound tariffs ceilings. However, this was the only practical approach since we can not know the actual rates that will be applied in year 2000 and beyond.
3. The study also ignores the issue of "water in the tariff", i.e. where the domestic price is lower than the world price plus the tariff rate. This can occur both for countries that are self-sufficient in the commodity and those which export the commodity without export subsidies or with export subsidies well below the tariff level. The question of domestic taxes and subsidies are likewise excluded from the analysis.
4. FAOSTAT commodities at higher processing levels have often been too aggregated for the purpose of this study. Important information may therefore have got lost in the aggregation process.[45]
5. In several cases the study only covers the first part of the processing chain because the final product is classified as industrial (e.g. leather products like shoes) and hence not part of the agricultural FAOSTAT database. The Agreement on Agriculture required tariff reductions of all agricultural commodities covered by the Agreement, while industrial products processed from agricultural commodities did not face the same requirements.

Finally, although the results of this study indicate sectors and commodities where tariff escalation has changed, and remaining levels of tariff escalation and de-escalation are appraised, the findings are only indicative and may not be used directly as a basis for decision-making. Additional in-depth studies would need to be undertaken before a developing exporting country invests in value-added industries or costly export promotion along the results of this study. A number of factors that have been beyond the scope of this study should also be taken into account. These relate, *inter alia,* to the competitiveness of the export commodities or industries in question (considering costs of production, processing, marketing and distribution), availability of appropriate technologies and infrastructure, product standards and technical regulations, and a host of consumer preference issues having to do with brand recognition as well as product characteristics.

[45] Relatively important processed commodities like for instance Orange marmalade is covered by the FAOSTAT commodities Prepared fruit, not elsewhere specified, 0623, or Fruit, nuts, Peel, sugar preserved, 0625, while Frozen pizza is covered by the FAOSTAT commodity Pastry, 0022.

ANNEXES

Annex 1. Tariff Wedges for all Commodities Covered

In Table A.1. the complete findings are presented, containing base and bound tariffs and the resulting tariff wedges covering the EU, Japan and the US and all the agricultural commodities examined by the study. The column headings of the Table have the following meanings:

Code	=	The FAOSTAT commodity code;
Description	=	The FAOSTAT description of the commodity;
L	=	The processing stage of the processed output commodity when it is made of the input commodity in question;
Base tariff	=	Tariff (in ad valorem equivalent) of the base years 1986-88;
Bound tariff	=	Bound tariff (in ad valorem equivalent) of year 2000, the final year of the implementation period;
Base CV	=	The coefficient of variation of the base tariff of the HS tariff lines making up the FAOSTAT commodity in question;
Bound CV	=	The coefficient of variation of the bound tariff of the HS tariff lines making up the FAOSTAT commodity in question;
H	=	Number of HS tariff lines making up the FAOSTAT commodity in question;
Tariff wedge, base	=	Tariff wedge (output tariff minus input tariff) based on base tariffs;
Tariff wedge, bound	=	Tariff wedge (output tariff minus input tariff) based on bound tariffs;
ΔTW	=	The change in the tariff wedge due to the UR (TW_{bound} minus TW_{base}).

The processed output commodities are grouped in 17 different commodity groups and sorted on commodity codes. Indented under each output commodity is located its input commodity (i.e. the previous stage of the processing chain). The findings only cover single commodity pairs. Several input commodities following one output commodity means that the output commodity can alternatively be made of all the input commodities in question. On the input commodity line is presented the tariff wedges between the input commodity and its corresponding output commodity. On the output commodity line is presented the tariff wedge between the output commodity and a simple average of following input commodities.

Although Table A.1 covers all the commodities examined by the study, there are some country-specific exceptions:

The FAOSTAT commodities 0020 (Bread), 0022 (Pastry), 0109 (Infant Food), 0118 (Frozen Potatoes), 0168 (Sugar Confectionery) and 0666 (Chocolate Preparations, Nes[46]) were not covered for the EU because of their complex tariffs (annex 1 of the EU tariff schedule).

The tariff lines 2005.20.10, 2101.10.98 and 2101.20.98 have been excluded from their respective commodities 0472 (Vegetables Preserved, Nes), 0659 (Coffee Extracts) and 0672 (Extracts Tea, Mate, Prep.) because of their complex tariffs (annex 1 of the EU tariff schedule).

The rice commodities 0027, Rice Paddy, 0028, Rice Husked, 0029, Milled/Husked Rice, 0031, Rice Milled, 0032, Rice Broken and 0038, Rice Flour are not covered for Japan because they are still subject to NTBs since the Japanese Government made recourse to the Special Treatment, allowed for in Annex 5 of the Agreement on Agriculture.

The FAOSTAT commodity 0873, Meat Extracts, has not been covered for US because no tariffs were listed in the schedule.

[46] Not Elsewhere Specified

Table A.1: Tariff wedges of EU, Japan and US for all covered commodities

Annex 2. Methodological Notes

In several of the following paragraphs reference is made to additional databases and spreadsheet. These can be made available upon request:

A.2.1. Methodological Notes on Tariffs (T and t)

A.2.1.1. The European Union

a) For cereals (head notes 6 and 7 of the tariff schedule), the following effective intervention prices have been used:

barley, maize, rye, sorghum and wheat:

119.19 ECU/MT

rice (HS 1006.10.60, 1006.20.55):

298.70 ECU/MT (the current intervention price of 373.84 reduced by 15 %, due to CAP reform, and reduced by 6 %, to get the buying-in price of Indica).

b) For some tariff lines, there have been made several additional assumptions, see A-TAR-EU.XLS.

c) Some tariff lines had in the conversion table provided by the ESSB (HI8EU.XLS) no link to the FAOSTAT commodity codes. In those cases such links have, when possible, been established. These additional links are marked by "HS-TAR" in the note column of HI8EU.XLS.

d) Tariff lines of livestock supposed to be imported for breeding, dairy or fattening purposes (the HS codes 0101.11.00, 0102.10.00, 0103.10.00, 0103.91.10, 0103.91.90, 0104.10.10, 0104.20.10, 0105.11.00, 0105.19.10 and 0105.19.90) and eggs for hatching (0407.00.19) have not been included in their respective aggregated FAOSTAT commodities.

e) The tariff lines of cereals supposed to be imported for sawing purposes (1001.90.10, 1005.10.14, 1005.10.90, 1006.10.10 and 1007.00.10) have not been included in their respective aggregated FAOSTAT commodities.

f) In order to convert specific tariffs into ad valorem tariffs, import unit values at 8 digits HS have been used. These unit values have been derived from HS import statistics (EU imports from outside the Union, excluding intra-trade) of the years 1992-94, c.i.f., obtained from the ESSB. The unit values are weighted averages of the years 92-94. These HS unit values have only been used when the total import value of 92-94 of the commodity in question was minimum 100 000 $.

When the import value was under 100 000$, we have used weighted average world import unit values (c.i.f.) of the years 92-94, adjusted by the country-specific factor of 1.1, of the corresponding FAOSTAT commodities (if the total world import value of 92-94 of the FAOSTAT commodity in question was minimum 100 000 $). The world import data has been converted from US dollars to ECU by the following exchange rates (averages of daily rates):

1990:	1 $	=	0.785281 ECU
1991:	1 $	=	0.806998 ECU
1992:	1 $	=	0.770363 ECU
1993:	1 $	=	0.853971 ECU
1994:	1 $	=	0.840675 ECU

(See Monthly Bulletin of External Trade published by the Statistical Office of the European Communities, EUROSTAT).

g) For fruits and vegetables subject to minimum entry prices, MEP, (comments 14-37 of the Schedule, see sheet Fruit-vegetables-notes of A-TAR-EU.XLS), the protection level has been assumed to equal the MEP minus the world price as described in f). When different time-specific MEP apply to one tariff line,

we have chosen the lowest MEP, assuming that imports of input commodities would take place when the protection level is lowest. In calculating bound MEP, head note 3 a) of the Schedule has been applied (see sheet Fruit-vegetables of A-TAR-EU.XLS).[47]

A.2.1.2. Japan

a) Japanese UR tariff schedules have been submitted at 6 digit HS level. A 9 digit HS code has been accorded to every tariff line. The notes in the column 9HSnote of TAR-JN.XLS explain the procedure according to which the 9 digit codes have been assigned:

Q1 = The 9 digit HS code has been derived through a query (query 1 of FIND9HS) linking the 6 digit tariff schedule to TRAINS (UNCTAD database) 9 digit HS commodities (linking simultaneously 6 HS codes and ad valorem tariffs and specific tariffs of the first implementation year)

Q2 = The 9 digit HS code has been derived through a query (query 2 of FIND9HS) linking the 6 digit tariff schedule to TRAINS (UNCTAD database) 9 digit HS commodities (linking the 6 HS code of the schedule with unique 9 HS codes of the TRAINS data)

A = A 9 digit HS code (with 7th-9th digit as 000) has been assumed (in those cases where the 6 digit HS code corresponded to one single FAOSTAT commodity)

M = The 9 digit HS code has been derived by linking manually the 6 digit HS code of the tariff schedule to 9 digit HS commodities of TRAINS or hard print tables (obtained from Yamazaki, ESCP)

I = Where the 6 digit HS code of the tariff schedule corresponded to more than one single FAOSTAT commodity (see note A), and no corresponding 9 digit HS was found manually or through the queries, a 9 HS code has been invented with a corresponding FAOSTAT code established in the HI9JP.XLS

b) In order to convert specific tariffs into ad valorem tariffs, we have used weighted average world import unit values (c.i.f.) of the years 92-94, adjusted by the country-specific factor of 1.44, of the corresponding FAOSTAT commodities. The world import data has been converted from US dollars to YEN by the following exchange rates (averages of daily rates):

1992: 1 $ = 126.53 YEN
1993: 1 $ = 110.85 YEN
1994: 1 $ = 102.05 YEN

(Source IMF, RH series).

c) The rice commodities 0027, RICE PADDY, 0028, RICE HUSKED, 0029, MILLED/HUSKED RICE, 0031, RICE MILLED, 0032, RICE BROKEN, 0038, RICE FLOUR are not covered by the study because they are still protected by NTB since the Japanese Government made recourse to the Special Treatment, allowed for in Annex 5 of the Agreement on Agriculture.

d) Tariff lines of livestock supposed to be imported for breeding, dairy or fattening purposes (the HS codes 0101.11, 0102.10, 0103.10, 0103.91, 0105.11 and 0105.19), for horse race (third line of 0101.19) and eggs for hatching (first line of 0407.00) have not been included in their respective aggregated FAOSTAT commodities.

e) The tariff lines of commodities supposed to be imported for sawing or feeding purposes (0701.10, first line of 0712.90, first and second line of 0713.10, first line of 0713.20, first and second line of 0713.33, first and second line of 0713.39, first line of 0713.40, first and second line of 0713.50, first and second line of 0713.90, first line of 0714.10, first line of 1002.00, first line of 1004.00, first line of 1005.10, first line of 1005.90, first and second line of 1007.00, first line of 1008.10 and first line of 1008.90) have not been included in their respective aggregated FAOSTAT commodities.

[47] However, it has been noted (Stefan Tangemann, personal communication) that the difference between MEP and world market prices cannot easily be interpreted as a rate of protection as many exporting countries restrict their exports to the EU such that they do not undercut the MEP. As a result they are secondary beneficiaries of the protection granted to EU producers (rather than suffering from EU protection).

f) The tariff quotas of HS headings 4104 (leather), have not been included in the respective commodities 2001, 2002, 2004 and 2005.

g) Meat of wild boar of HS headings 0203, 0206 has not been included in the commodities 1035 (PIG MEAT), 1038 (PORK), 1036 (OFFAL OF PIGS, EDIBLE), see A-TAR-JP.XLS.

h) According to note 6 of the "Notes to Section I-A of Part I, Japan" of the Japanese UR tariff schedule, bound gate prices have been calculated (see GATEPRICE of A-TAR-JP.XLS). However, all FAOSTAT unit values are lower than both base and bound gate prices. Hence the specific tariffs, not the ad valorem, apply for all concerned commodities. The ad valorem tariff lines of the concerned commodities have therefore not been included in its respective aggregated FAOSTAT commodities.

i) Bound tariffs have been changed according to note 11 of the "Notes to Section I-A of Part I, Japan" of the Japanese UR tariff schedule.

j) All tariff lines with the condition "whichever is the greater" of the specific tariff and the ad valorem tariff have been treated in sheet WHICHEVER IS THE GREATER of A-TAR-JP.XLS, using FAOSTAT world import unit values (see b)) to determine the tariff to be used.

k) The assumptions of the remaining tariffs to be "cleaned" are listed in ASSUMPTIONS CLEANED TARIFFS of A-TAR-JP.XLS.

A.2.1.3. The United States

a) Although the schedule indicates that for some commodities the base rate is not bound (=U), the submitted base rates have been used, assuming that they do not differ from real tariffs.

b) When the notes say that "the base rate to be used for the staging of this good to the full concession rate is .....", this rate has been used instead of the one in the schedule itself.

c) For some tariff lines, there have been made several additional assumptions, see A-TAR-US.XLS.

d) Tariff lines with tariff quotas considered as small and/or irrelevant for developing countries, have been removed, see the list A-TARUS.XLS

e) Links have been established between 8 digits of HS trade data that did not initially match 8 digits of HS import data. For those tariffs lines where it has not been possible to find a corresponding 8 digit HS import commodity, links have been established directly to the FAOSTAT codes. All those links that I had to establish myself, from 8 digits HS tariffs lines to 8 digits HS import data and to FAOSTAT data, are contained in the file HTAHIM8U.XLS. The HS unit values have only been used when the total import value of 92-94 of the commodity in question was minimum 100 000 $. When the import value was under 100 000$, we have used weighted average world import unit values (c.i.f.) of the years 92-94, adjusted by the country-specific factor of 1.08, of the corresponding FAOSTAT commodities (if the total world import value of 92-94 of the FAOSTAT commodity in question was minimum 100 000 $).

f) Tariff lines of livestock supposed to be imported for breeding, dairy or fattening purposes (the HS codes 0101.11.00, 0101.20.10, 0101.20.40, 0102.10.00, 0102.90.20, 0103.10.00, 0103.91.00, 0105.11.00 and 0105.19.00) have not been included in their respective aggregated FAOSTAT commodities.

g) The tariff lines of cereals supposed to be imported for sawing purposes (1001.90.10, 1005.10.00) have not been included in their respective aggregated FAOSTAT commodities.

For the purpose of converting specific tariffs into ad valorem tariffs:

h) Horses, bovine animals, swine, chickens, turkeys and ducks supposed to be imported for breeding, dairy or fattening purposes (the HS codes 0101110010, 0101110020, 0101190090, 0101201000, 0101204000, 0102100010, 0102100020, 0102100030, 0102100050, 0102902011, 0102902012, 0102904020, 0102904024, 0102904028, 0102904066, 0102904068, 0102904072, 0102904074,

0103100000, 0103910000, 0105110010, 0105110020, 0105190040, 0105190020 and 0105190040) have not been included in the import unit values of the aggregated 8 digit HS commodities.

i) USDA import statistics for US are at a f.o.b. basis and have been converted into c.i.f. by a standard conversion factor of 112 percent.

A.2.2. Methodological Notes on Extraction Rates (Q and q)

Annual, country-specific extraction rates have been extracted from FAOSTAT. In the study, the average of the years 1992-94 have been used. If extraction rates are not available for a specific country and commodity, data from the average of the two other countries studied have been used, or world extraction rates if none of the countries studied has extraction data for the commodity in question. For some very few commodities extraction rates have been estimated because no extraction data where available at all (the commodities 0773, 0828, 0829, 0831, 0988, 1008, 1009, 1010 and 1186). For the commodities 2001, 2002, 2003, 2004 and 2005 USA extraction rates selected from the "Global Compendium on Conversion Factors for Raw Hides and Skins and Leather" (1992, ESCR, FAO, p. 49) have been used.

The extraction rate of commodity SUGAR, RAW CENTRIFUGAL (FAOSTAT code 162) has been derived from BEET SUGAR (159) and CANE SUGAR (158), weighting on the country's production (as percentage of total beet and cane sugar production on the average 1992-94, the EU produces 99.9 % beet sugar, Japan 76.8 % and the US 55.6 %).

Since fresh hides, considered by FAOSTAT as intermediate commodities between livestock and wet-salted hides, have been excluded from the study (see above), we have combined the FAOSTAT extraction rates for fresh hides (from livestock) and wet-salted hides (from fresh hides) to get the extraction rate for wet-salted hides from livestock.

All output commodities are noted in metric tons, while input commodities are referred to in number or metric tons. Units of unit values and extraction rates must be identical for the same commodity.

A.2.3. Dispersion among Countries of Import Unit Values of FAOSTAT Commodities

Table A.2 presents the import unit values (weighed averages of 1992-94) of the world, the European Union, Japan and the United states for all commodities that have been imported by all these countries during that period. The Table is sorted according to the coefficients of variation (CV) defined as the standard deviation (Stdevp) divided by the average (Avrg) of the EU, Japan and US unit values, multiplied by 100.

A.2.4. Methodological Notes on Unit Values (P and r)

As *P* and *r* world import unit values have been used, multiplied by a country-specific factor, in order to calculate *ERP*s. These unit values have been derived from the FAOSTAT import statistics (on a c.i.f. base) of the years 1992-94. Annual values and quantities were added up and then the total value was divided by the total quantity. The 1992-94 unit value is therefore a weighed average (for some commodities, trade data may be available for only one or two of the years concerned).

The world import unit value have been multiplied with a country-specific factor of 1.10 (EU), 1.44 (Japan) and 1.08 (US). The country-specific factors are derived as follows: for all the commodities that are

imported by the US, EU and Japan during the years 1992-94, we have calculated country specific unit values (weighted average of the years 92-94) and then calculated, for every country, how much these unit values differ in percent from the world unit value of the same commodity. The *so-called country specific factor*, referred to above, is an average (weighted on import value) of these percentages.

Unit values of finished leather have been derived from EU import statistics of 1993 (see QVIMPICS.XLS) and multiplied by a country specific factor of 0.98 (US) and 1.31 (Japan).

Table A.2: The dispersion among countries of FAOSTAT import unit values for EU, Japan and US

Code	Description	Unit	World	EU	Japan	US	Avrg	Stdevp	CV
0256	Palm Kernels	MT	290	193	230	11086	3836	5126	134
1034	Pigs	HEAD	110	113	3133	92	1113	1429	128
0976	Sheep	HEAD	57	61	1690	86	612	762	124
0536	Plums	MT	951	1023	12750	948	4907	5546	113
1168	Animal Oils And Fats Nes	MT	376	343	4118	328	1597	1783	112
1096	Horses	HEAD	2404	2136	34480	3984	13534	14830	110
0878	Liver Preparations	MT	4408	4192	52420	6674	21096	22173	105
1107	Asses	HEAD	185	133	7000	1662	2932	2944	100
0558	Berries Nes	MT	1400	1140	12161	1813	5038	5044	100
0274	Oil Of Olive Residues	MT	1225	1246	10778	1491	4505	4437	98
1016	Goats	HEAD	53	51	1293	355	566	529	93
1057	Chickens	1000	1292	1136	7832	1301	3423	3118	91
1277	Residues of Fatty Substances	MT	257	205	1065	141	470	421	90
0156	Sugar Cane	MT	115	1443	510	22	658	590	90
0562	Grape Juice	MT	618	541	2752	398	1230	1078	88
0512	Citrus Fruit Nes	MT	791	1003	4222	464	1896	1659	88
1062	Hen Eggs	MT	1227	1143	2969	11249	5120	4397	86
0108	Cereals Nes	MT	220	556	3043	539	1379	1177	85
1074	Offal Liver Geese	MT	25116	24427	56398	2091	27639	22287	81
1217	Leather Used And Waste	MT	784	339	190	1273	601	479	80
1164	Meat Dried Nes	MT	2146	2368	12875	3345	6196	4740	76
0329	Cottonseed	MT	193	194	216	917	442	336	76
0521	Pears	MT	772	815	3200	732	1582	1144	72
0414	Beans Green	MT	1308	1429	5297	1145	2624	1894	72
1039	Bacon-Ham Of Pigs	MT	3722	3913	13164	2556	6544	4713	72
0531	Cherries	MT	2228	1482	6920	1927	3443	2465	72
0401	Chillies + Peppers Green	MT	1382	1463	5797	1388	2883	2061	71
0515	Apples	MT	637	664	2931	781	1459	1042	71
0388	Tomatoes	MT	867	1015	3831	909	1919	1353	71
0449	Mushrooms	MT	4125	2982	12095	3147	6075	4258	70
0245	Cake Of Groundnuts	MT	188	185	1000	333	506	354	70
0393	Cauliflower	MT	777	758	2046	341	1048	726	69
0653	Food Wastes	MT	609	607	2320	598	1175	810	69
0079	Millet	MT	219	285	244	1015	515	354	69
0402	Onions + Shallots Green	MT	348	819	2750	637	1402	956	68
1059	Offal Liver Of Chickens	MT	1275	1359	1371	5111	2614	1766	68
0999	Skin With Wool Sheep	MT	1531	1751	2316	7476	3848	2576	67
0631	Waters Ice Etc.	MT	64	30	361	474	288	188	65
0366	Artichokes	MT	1025	1006	4400	1486	2297	1500	65
0167	Sugar And Syrups Nes	MT	634	1000	254	316	524	338	65
0358	Cabbages	MT	587	649	1682	340	890	574	64
0544	Strawberries	MT	2164	2276	6918	1718	3637	2331	64
1030	Fine Goat Hair	MT	18986	16678	55025	15021	28908	18480	64
0777	Hemp Fibre And Tow	MT	795	793	6917	4200	3970	2505	63
1146	Rabbit Skins	MT	2281	1805	8485	3473	4588	2839	62
0466	Juice Of Vegetables Nes	MT	1550	1665	4237	956	2286	1409	62
0397	Cucumbers And Gherkins	MT	706	846	2110	470	1142	701	61
0507	Grapefruit And Pomelo	MT	671	618	954	115	563	345	61

Code	Description	Unit	World	EU	Japan	US	Avrg	Stdevp	CV
0127	Cassava Tapioca	MT	362	379	1379	497	752	446	59
0916	Egg Albumin	MT	2373	1726	3654	8087	4489	2663	59
0619	Fruit Fresh Nes	MT	1046	1568	3850	1009	2142	1229	57
1017	Goat Meat	MT	2512	6447	2131	2190	3589	2021	56
0600	Papayas	MT	1093	1963	3562	711	2079	1166	56
0509	Grapefruit Juice	MT	1283	1160	2333	524	1339	750	56
0663	Cocoa Husks + Shell	MT	137	126	193	462	260	145	56
0497	Lemons And Limes	MT	599	655	1333	308	765	426	56
1294	Seeds Fruits Spores Pl	MT	2002	1697	820	3475	1997	1104	55
0672	Extract Tea Mate Prep.	MT	1890	5429	4951	836	3739	2061	55
0622	Fruit Juice Nes	MT	1113	1608	2926	624	1719	943	55
0083	Sorghum	MT	125	180	128	439	249	136	55
0295	Flour Of Mustard	MT	1504	1449	3879	1251	2193	1195	54
0332	Cake Of Cotton Seed	MT	144	155	531	229	305	163	53
0491	Orange Juice Single-Strength	MT	1110	1099	1703	352	1051	553	53
0604	Fruit Tropical Dried Nes	MT	794	814	2691	1158	1554	816	53
0126	Flour Of Cassava	MT	182	986	223	1186	798	415	52
1064	Eggs Dry Whole Yolks Hen	MT	3771	4360	3702	10857	6306	3229	51
0518	Apple Juice	MT	1058	888	2068	670	1208	614	51
0446	Green Corn (Maize)	MT	696	1931	2434	495	1620	822	51
0846	Gluten Feed And Meal	MT	153	139	365	134	213	108	51
0877	Homogenised Meat Prep.	MT	1278	3120	9412	4000	5511	2782	50
0892	Yoghurt Concentrated or Not	MT	1267	1259	3515	1390	2055	1034	50
0635	Straw Husks	MT	149	69	248	128	148	75	50
0399	Eggplants	MT	1033	1368	2864	861	1698	850	50
0839	Natural Gums	MT	2408	2367	4681	1396	2815	1378	49
1043	Lard	MT	486	458	1098	396	651	317	49
0407	Leeks/Other Alliaceous Veg.	MT	750	806	1630	525	987	469	48
0461	Carobs	MT	503	449	1223	545	739	345	47
0035	Bran Of Rice	MT	89	145	476	261	294	137	47
1035	Pig Meat	MT	2839	2402	5526	2091	3340	1551	46
1221	Lard And Stearin Oil	MT	510	590	1009	299	633	292	46
0702	Nutmeg Mace Cardamom	MT	3071	2080	4986	1996	3021	1390	46
1274	Oils Boiled Etc.	MT	487	413	1471	970	951	432	45
0768	Cotton Carded Combed	MT	2084	3855	2200	1194	2416	1097	45
0997	Skin Dry-Salted Sheep	MT	5373	5841	13837	5607	8428	3826	45
1036	Offal Of Pigs Edible	MT	819	887	1809	640	1112	503	45
0569	Figs	MT	1415	1788	3444	1169	2134	961	45
0994	Grease Incl. Lanolin Wool	MT	1598	1505	765	2494	1588	708	45
0076	Oats Rolled	MT	452	623	917	264	601	267	44
0560	Grapes	MT	1099	1105	2614	1105	1608	711	44
0576	Pineapple Juice	MT	911	1029	1515	450	998	436	44
0116	Potatoes	MT	231	212	484	208	302	129	43
0577	Dates	MT	979	2169	754	1248	1390	586	42
0565	Vermouths And Similar	MT	1105	970	3180	2581	2244	934	42
1166	Meat Nes	MT	4976	4273	12027	6951	7750	3216	41
0222	Walnuts	MT	1970	1972	2362	726	1687	698	41
0476	Homogenised Veg. Prep.	MT	1119	1278	3419	1859	2186	904	41
0909	Products of Nat. Milk Constit	MT	1321	792	2422	2477	1897	781	41
0426	Carrots	MT	328	300	653	288	414	169	41

Code	Description	Unit	World	EU	Japan	US	Avrg	Stdevp	CV
0634	Beverages Dist Alcoholic	MT	4474	4373	10213	4905	6497	2637	41
0071	Rye	MT	119	240	114	105	153	62	40
0213	Bran Of Pulses	MT	160	290	222	94	202	81	40
0571	Mangoes	MT	1139	1653	2602	918	1724	689	40
0149	Roots And Tubers Nes	MT	510	384	783	1134	767	306	40
0829	Cigars Cheroots	MT	24758	24899	64592	36170	41887	16701	40
0770	Cotton Linters	MT	517	605	332	938	625	248	40
0367	Asparagus	MT	3347	3724	4988	1664	3459	1370	40
0064	Starch Of Maize	MT	418	546	224	292	354	139	39
0769	Cotton Waste	MT	717	828	799	1720	1116	427	38
0373	Spinach	MT	638	548	976	400	641	244	38
0128	Cassava Dried	MT	137	148	85	226	153	58	38
1292	Other Resins	MT	1327	2379	3461	1273	2371	893	38
0866	Cattle	HEAD	572	671	1263	554	829	311	37
0201	Lentils	MT	458	443	1055	599	699	260	37
1176	Snails Not Sea Snails	MT	3220	3541	2179	5541	3754	1381	37
1080	Turkey Meat	MT	2258	2769	2496	1021	2095	768	37
0667	Tea	MT	2208	2398	3909	1600	2636	958	36
0235	Prep. Nuts (Excl. Groundnuts)	MT	3396	3709	4737	1788	3411	1222	36
0109	Infant Food	MT	3734	4673	4000	1759	3477	1245	36
0873	Meat Extracts	MT	7773	12936	5954	15790	11560	4132	36
0564	Wine	MT	1913	1734	4327	4393	3485	1238	36
0212	Flour Of Pulses	MT	457	439	1144	933	839	295	35
1008	Hair Carded Or Combed	MT	6723	6800	13595	7133	9176	3128	34
0868	Offal Of Cattle Edible	MT	2352	2604	4599	2170	3124	1058	34
0173	Lactose	MT	881	836	894	1679	1136	384	34
0265	Castor Beans	MT	299	333	261	136	243	81	33
0112	Bran Of Cereals	MT	124	171	85	93	116	39	33
0259	Cake Of Palm Kernels	MT	119	119	258	155	177	59	33
0417	Peas Green	MT	957	940	1927	1095	1321	434	33
0474	Veg. In Temp Preservative	MT	1015	1533	812	797	1048	343	33
0568	Cantaloupes + Other Melons	MT	666	883	1061	443	796	260	33
0020	Bread	MT	1715	1638	1585	3059	2094	683	33
0624	Flour Of Fruit	MT	2409	3309	1798	1698	2269	737	32
0028	Rice Husked	MT	460	545	572	1057	725	235	32
1242	Margarine + Shortening	MT	960	979	2209	1511	1566	504	32
0267	Sunflower Seed	MT	355	360	588	279	409	131	32
0044	Barley	MT	143	218	139	101	153	49	32
0172	Glucose And Dextrose	MT	493	535	663	286	494	157	32
0339	Oilseeds Nes	MT	678	996	1546	732	1091	339	31
0089	Buckwheat	MT	293	312	296	141	250	77	31
0527	Dry Apricots	MT	2511	2497	4360	2264	3040	938	31
0885	Cream Fresh	MT	1788	1884	2690	1235	1936	595	31
0075	Oats	MT	132	228	166	103	166	51	31
0162	Sugar (Centrifugal Raw)	MT	368	576	265	403	415	127	31
0181	Broad Beans Dry	MT	259	237	522	489	416	127	31
0831	Tobacco Products Nes	MT	6718	6943	15474	13633	12017	3665	31
0111	Flour Of Cereals	MT	333	526	589	266	460	140	30
0372	Lettuce	MT	918	1124	2176	1280	1527	464	30
0910	Ice Cream And Edible Ice	MT	2825	2941	2902	5315	3719	1129	30

Code	Description	Unit	World	EU	Japan	US	Avrg	Stdevp	CV
0632	Alcohol Non Food Purpose	MT	422	589	395	281	422	127	30
0659	Coffee Extracts	MT	6225	7556	3904	4511	5324	1598	30
0753	Essential Oils Nes	MT	9482	10651	5155	7067	7624	2278	30
0889	Whole Milk Condensed	MT	1496	1874	1100	991	1322	393	30
0592	Kiwi Fruit	MT	1165	1111	1899	1019	1343	395	29
0897	Dry Whole Cow Milk	MT	2395	2965	1867	1516	2116	617	29
0211	Pulses Nes	MT	384	513	881	479	624	182	29
0220	Chestnuts	MT	1958	1444	2568	3067	2359	679	29
0406	Garlic	MT	856	1517	764	1000	1094	314	29
0244	Oil Of Groundnuts	MT	872	845	1484	843	1057	302	29
0867	Beef And Veal	MT	2876	3937	4758	2281	3659	1030	28
0115	Food Prep. of Flour/Malt Extr.	MT	1501	1751	854	1304	1303	366	28
0242	Groundnuts In Shell	MT	906	925	1073	516	838	235	28
0870	Beef And Veal Boneless	MT	3553	4927	4905	2494	4108	1142	28
0900	Dry Whey	MT	709	681	890	1322	964	267	28
0341	Cakes Of Oilseeds Nes	MT	126	119	162	233	171	47	27
0114	Mixes And Dough	MT	1351	1641	837	1143	1207	331	27
0828	Cigarettes	MT	16813	16120	32550	26806	25158	6808	27
0570	Figs Dried	MT	1991	1969	3123	1735	2276	607	27
0671	Mate	MT	1299	2317	3750	2123	2730	726	27
0498	Lemon Juice	MT	1531	1460	2000	1033	1497	396	26
0626	Homog. Cooked Fruit Prep.	MT	1659	1789	3358	2285	2477	655	26
0473	Vegetables Frozen	MT	975	936	1453	801	1063	281	26
0246	Prepared Groundnuts	MT	1841	2336	1366	1406	1703	448	26
0572	Avocados	MT	1382	1497	2090	1096	1561	408	26
0050	Malt Extracts	MT	1030	968	797	1456	1074	279	26
0016	Flour Of Wheat	MT	253	371	552	301	408	106	26
0113	Cereal Prep Nes	MT	214	398	383	210	331	86	26
0666	Chocolate Products Nes	MT	3306	3627	2078	2281	2662	687	26
0390	Tomato Juice	MT	614	522	944	624	697	180	26
0469	Vegetables Dehydrated	MT	2027	2593	4652	3043	3429	884	26
0490	Oranges	MT	490	488	943	849	760	196	26
0665	Cocoa Powder And Cake	MT	1102	1179	1778	984	1314	338	26
0517	Fermented Beverages, Nes	MT	1489	1354	2463	1682	1833	465	25
0122	Sweet Potatoes	MT	171	159	201	290	217	54	25
0574	Pineapples	MT	571	706	446	416	523	130	25
0392	Peeled Tomatoes	MT	581	571	818	453	614	152	25
0160	Maple Sugar And Syrups	MT	2558	4039	4473	2389	3634	898	25
0340	Oil Of Veg. Origin Nes	MT	1309	1923	2181	3330	2478	612	25
0620	Fruit Dried Nes	MT	1885	2947	1581	2654	2394	587	25
0118	Frozen Potatoes	MT	750	715	1032	579	775	190	24
0767	Cotton Lint	MT	1467	1449	1529	2415	1798	438	24
0343	Flour/Meal Of Oilseeds	MT	283	369	205	360	311	75	24
0403	Onions Dry	MT	324	318	458	586	454	109	24
0513	Citrus Juice	MT	1093	1276	2186	1450	1637	394	24
0234	Nuts Nes	MT	3177	3272	5650	3792	4238	1020	24
0677	Hops	MT	6564	5178	8876	5914	6656	1599	24
0886	Butter Of Cow Milk	MT	2617	3384	2078	2118	2527	606	24
0657	Coffee Roasted	MT	3752	4108	6820	4407	5112	1214	24
0187	Peas Dry	MT	273	252	424	449	375	87	23

Code	Description	Unit	World	EU	Japan	US	Avrg	Stdevp	CV
0928	Skins Wet-Salt Calves	MT	2321	2716	4682	3293	3564	825	23
0475	Veg., Prep. Or Pres. Frozen	MT	1228	1104	1961	1486	1517	351	23
0268	Oil Of Sunflower Seed	MT	613	627	910	538	692	159	23
0015	Wheat	MT	162	223	203	125	184	42	23
0056	Maize	MT	152	243	135	212	197	45	23
0826	Tobacco Leaves	MT	3788	4253	5180	2891	4108	940	23
0463	Vegetables Fresh Nes	MT	686	866	1011	568	815	184	23
0486	Bananas	MT	483	621	547	352	507	113	22
0262	Olives Preserved	MT	1574	1634	2865	2333	2277	504	22
0032	Rice Broken	MT	282	315	240	412	322	70	22
0901	Cheese (Whole Cow Milk)	MT	3984	4454	2651	3353	3486	742	21
0129	Cassava Starch	MT	235	416	249	309	325	69	21
0289	Sesame Seed	MT	746	1056	685	1161	967	204	21
0290	Oil Of Sesame Seed	MT	2174	2555	1756	2982	2431	508	21
0225	Hazelnuts (Filberts)	MT	1533	1667	2789	2471	2309	472	20
0169	Beet Pulp Dry	MT	141	133	165	100	133	27	20
0460	Veg Prod Fresh Or Dried	MT	1607	1741	2061	1248	1684	334	20
1103	Hides Wet-Salted Horses	MT	1468	1283	1688	2102	1691	334	20
0335	Cake Of Linseed	MT	203	206	147	132	162	32	20
0789	Sisal	MT	507	514	565	797	625	123	20
0261	Olive Oil	MT	2449	2575	3464	2182	2740	536	20
0872	Beef Dried Salt Smoked	MT	4978	8831	8765	5600	7732	1508	19
0652	Veg Products For Feed	MT	136	118	191	160	156	30	19
1007	Wool Shoddy	MT	2053	2088	3167	2238	2497	477	19
0292	Mustard Seed	MT	320	344	433	270	349	67	19
1291	Arabic Gum	MT	3277	3307	4984	3530	3940	743	19
1219	Hair Coarse Nes	MT	2157	1990	1966	1283	1746	328	19
1276	Fatty Acids Oils 431.31	MT	573	564	853	874	764	142	19
0058	Flour Of Maize	MT	268	318	406	501	408	75	18
0447	Sweet Corn Frozen	MT	1022	1029	1184	750	988	180	18
1037	Fat Of Pigs	MT	698	712	826	524	687	125	18
0495	Tang.Mand.Clemen.Satsuma	MT	754	801	1252	1052	1035	184	18
0623	Fruit Prepared Nes	MT	1255	1213	1723	1201	1379	243	18
0537	Plums Dried (Prunes)	MT	2101	2240	2244	1503	1996	348	17
0813	Coir	MT	374	396	419	275	363	63	17
0723	Spices Nes	MT	2207	3503	4118	2664	3428	596	17
0651	Forage Products Nes	MT	212	152	234	191	192	33	17
0774	Flax Tow Waste	MT	579	536	499	353	463	79	17
1167	Offal Nes	MT	1050	1270	1405	921	1199	204	17
0898	Dry Skim Cow Milk	MT	2026	2256	1675	1549	1827	308	17
1141	Rabbit Meat	MT	2969	2914	1959	2289	2387	396	17
0561	Raisins	MT	1308	1389	1554	1029	1324	219	17
0168	Sugar Confectionery	MT	2663	3218	2886	2147	2750	448	16
0977	Mutton And Lamb	MT	2540	3264	2185	2832	2760	443	16
0237	Oil Of Soya Beans	MT	564	541	751	799	697	112	16
0022	Pastry	MT	2726	2999	3608	2428	3012	482	16
0059	Bran Of Maize	MT	189	127	182	139	149	24	16
0692	Vanilla	MT	49860	53212	71648	50889	58583	9287	16
0450	Dried Mushrooms	MT	10547	14594	9892	12593	12360	1927	16
0017	Bran Of Wheat	MT	126	148	114	104	122	19	16

Code	Description	Unit	World	EU	Japan	US	Avrg	Stdevp	CV
0334	Oil Of Linseed	MT	510	518	689	492	567	88	15
0239	Soya Sauce	MT	1204	1425	1521	1050	1332	203	15
0024	Wheat Gluten	MT	1218	1206	1656	1244	1369	204	15
0394	Pumpkins Squash Gourds	MT	792	979	746	706	810	120	15
0472	Vegetables Prepared Nes	MT	1131	1122	1554	1194	1290	189	15
0836	Natural Rubber	MT	1228	1549	1412	1087	1349	193	14
0191	Chick-Peas	MT	430	653	917	736	769	110	14
0451	Canned Mushrooms	MT	1683	1675	2065	2385	2041	291	14
0247	Peanut Butter	MT	1608	1907	1546	1358	1604	228	14
0253	Cake Of Coconuts	MT	139	139	189	145	158	22	14
0271	Oil Of Rape Seed	MT	563	536	721	545	601	85	14
0154	Fructose Chemically Pure	MT	1177	1330	961	1315	1202	170	14
0821	Fibre Crops Nes	MT	831	1864	1904	1372	1713	242	14
0038	Rice Flour	MT	488	672	534	755	654	91	14
0221	Almonds	MT	2617	2899	3920	4000	3606	501	14
0843	Pet Food	MT	1070	1033	1368	1033	1145	158	14
0987	Wool Greasy	MT	2835	2803	3523	3933	3420	467	14
0773	Flax Fibre And Tow	MT	2016	2195	2370	2995	2520	344	14
0988	Wool Scoured	MT	3384	2981	4173	3625	3593	487	14
0281	Oil Of Safflower	MT	1000	971	1155	829	985	133	14
1069	Duck Meat	MT	3034	3476	4548	3443	3822	513	13
0448	Sweet Corn Prep. Or Pres.	MT	1150	1246	1149	906	1100	143	13
0051	Beer Of Barley	MT	797	735	1001	951	895	115	13
1173	Meat Meal	MT	329	302	374	278	318	41	13
1042	Meat Preparations Pigs	MT	3285	3936	2890	3387	3404	427	13
0920	Hides Wet-Salted Cattle	MT	1727	1765	2195	1652	1871	234	13
0809	Abaca (Manila Hemp)	MT	1242	1357	1003	1250	1203	148	12
1058	Chicken Meat	MT	1524	2336	1989	1732	2019	248	12
0391	Tomato Paste	MT	894	907	999	739	882	108	12
0231	Almonds Shelled	MT	4129	4195	4490	3348	4011	484	12
0862	Alfalfa Meal And Pellets	MT	138	111	147	121	127	15	12
0720	Ginger	MT	928	1328	995	1207	1177	138	12
1187	Cocoons Unreelable	MT	6378	7037	6606	5301	6315	738	12
0232	Walnuts Shelled	MT	3921	4171	4718	3536	4142	483	12
1182	Honey	MT	1182	1197	923	969	1029	120	12
1061	Meat Canned Chicken	MT	3876	4070	4103	5162	4445	507	11
0049	Malt Of Barley	MT	358	416	396	319	377	42	11
0278	Jojoba Oil	MT	7011	6773	8546	6841	7387	820	11
0755	Pyrethrum Extract	MT	63655	59665	56727	72803	63065	6989	11
1225	Tallow	MT	400	392	391	306	363	40	11
1218	Hair Fine Animal	MT	12707	11453	14494	11668	12538	1386	11
0625	Fruit Nut Peel Sugar Pres.	MT	2099	2859	2637	2197	2564	275	11
1009	Wool And Hair Waste	MT	2022	2237	1729	2087	2018	213	11
0687	Pepper White/Long/Black	MT	1657	1869	1997	1546	1804	190	11
0223	Pistachios	MT	3380	3539	4463	3671	3891	408	10
0894	Whole Milk Evaporated	MT	1248	1334	1102	1063	1166	119	10
0296	Poppy Seed	MT	1155	1284	1023	1276	1194	121	10
0661	Cocoa Beans	MT	1244	1285	1463	1148	1298	129	10
1186	Silk Raw And Waste	MT	27329	32291	37766	29977	33345	3266	10
0698	Cloves Whole + Stems	MT	995	1195	1508	1298	1334	130	10

Code	Description	Unit	World	EU	Japan	US	Avrg	Stdevp	CV
0654	Dregs From Brewing + Dist.	MT	124	123	122	99	115	11	10
0471	Vegetables Pr By Vinegar	MT	1072	1090	880	1083	1018	98	10
0689	Pimento Allspice	MT	1560	2128	2344	1860	2111	198	9
0633	Beverages Non-Alcoholic	MT	697	716	672	834	741	69	9
0575	Pineapples Canned	MT	751	751	888	723	787	72	9
0164	Sugar Refined	MT	409	774	633	652	686	62	9
1172	Meat Prepared Nes	MT	2908	3600	4477	3972	4016	359	9
0917	Casein	MT	3751	3496	4354	4020	3957	353	9
0664	Cocoa Butter	MT	3160	3283	3484	2814	3194	281	9
0331	Oil Of Cotton Seed	MT	588	642	678	552	624	53	8
0041	Breakfast Cereals	MT	2020	2287	2405	1961	2218	188	8
0280	Safflower Seed	MT	409	350	423	415	396	33	8
0101	Canary Seed	MT	322	319	337	276	311	25	8
1100	Hair Of Horses	MT	5235	5186	5342	6225	5584	458	8
0266	Oil Of Castor Beans	MT	762	774	804	662	747	61	8
0656	Coffee Green	MT	1755	1757	2027	1688	1824	146	8
0252	Oil Of Coconuts	MT	559	573	640	528	580	46	8
0243	Groundnuts Shelled	MT	776	851	1015	1012	959	76	8
1183	Beeswax	MT	3229	2981	3569	3176	3242	244	8
1063	Eggs Liquid Hen	MT	1619	1655	1777	1477	1636	123	8
1002	Karakul Skins	MT	31167	43414	43705	37000	41373	3094	7
0658	Coffee Substitutes	MT	3544	5269	4500	5324	5031	376	7
1275	Oils Hydrogenated	MT	847	760	892	771	808	60	7
0333	Linseed	MT	233	239	222	200	220	16	7
0662	Cocoa Paste	MT	1914	2049	1925	1736	1904	129	7
0251	Copra	MT	365	348	362	311	340	21	6
0230	Cashew Nuts Shelled	MT	4579	4802	5113	4414	4776	286	6
0236	Soybeans	MT	256	249	278	244	257	15	6
0238	Cake Of Soya Beans	MT	229	221	246	218	228	13	6
0165	Molasses	MT	88	88	97	100	95	5	5
0117	Flour Of Potatoes	MT	1050	1142	1038	1010	1063	57	5
0257	Palm Oil	MT	457	445	482	425	451	24	5
0780	Jute	MT	360	507	448	489	481	25	5
0711	Anise Badian Fennel	MT	1105	1284	1394	1451	1376	69	5
0176	Beans Dry	MT	548	710	739	658	702	34	5
0875	Beef Preparations	MT	2740	2900	3179	3204	3094	138	4
0276	Tung Oil	MT	1584	1773	1640	1619	1677	68	4
0272	Cake Of Rape Seed	MT	140	146	155	140	147	6	4
1041	Sausages Pig Meat	MT	3413	4196	4582	4250	4343	171	4
0270	Rape Seed	MT	289	292	295	271	286	11	4
0119	Potato Starch	MT	407	452	418	418	429	16	4
1296	Waxes Veg 431.43	MT	2570	2688	2863	2913	2821	96	3
0233	Hazelnuts Shelled	MT	3155	3204	3434	3220	3286	105	3
0837	Rubber Natural Dry	MT	951	985	915	970	956	30	3
0034	Rice Starch	MT	895	1274	1261	1186	1241	39	3
1010	Wool Tops	MT	5522	5739	6105	5905	5916	150	3
0060	Oil Of Maize	MT	837	739	733	774	748	18	2
0693	Cinnamon (Canella)	MT	1999	2175	2150	2065	2130	47	2
0250	Coconuts Desiccated	MT	966	1006	1030	994	1010	15	1
0258	Oil Of Palm Kernels	MT	589	586	605	603	598	9	1
0018	Macaroni	MT	938	1041	1056	1066	1054	10	1
0269	Cake Of Sunflower Seed	MT	133	132	134	133	133	1	1

Annex 3. Complete List of FAOSTAT Agricultural Commodities

Table A.3 presents a complete list of FAOSTAT commodities. The processing level indicates whether if we have considered the commodity as a primary commodity (L=0), a processed commodity that has been processed directly from a primary commodity (L=1) or a processed commodity resulting from two or more processing operations (L>1). The FAOSTAT definitions[48] have basically been followed. But, contrary to the FAOSTAT definitions, livestock products like meat (boneless and bone-in), fat and offal have been considered as processed products (L=1) instead of primary commodities.
The codes of commodity groups have the following descriptions:

AF = Animal feeds
BE = Beverages
CE = Cereal products
FI = Fibres of vegetal and animal origin
HS = Hides and skins
NU = Nut products
PU = Pulse products
SS = Sugar products and sweeteners
VE = Vegetable products
NO = Non-oil products of oil-bearing crops
CC = Cocoa and coffee products
DE = Dairy and egg products
FR = Fruit products
MO = Meat products and edible offal
OF = Oils and fats of vegetable and animal origin
RT = Root and tuber products
TP = Tobacco and pyrethrum

Table A.3: Complete list of FAOSTAT commodities

Code	Description	Processing level	Covered by the study	Commodity group
0015	Wheat	L=0	x	CE
0016	Flour Of Wheat	L=1	x	CE
0017	Bran Of Wheat	L=1	x	AF
0018	Macaroni	L>1	x	CE
0019	Germ Of Wheat	L=1	x	CE
0020	Bread	L>1	x	CE
0021	Bulgur Wholemeal	L=1		CE
0022	Pastry	L>1	x	CE
0023	Wheat Starch	L>1	x	CE
0024	Wheat Gluten	L>1	x	CE
0026	Wheat Fermented Beverage	L>1		BE
0027	Rice Paddy	L=0	x	CE
0028	Rice Husked	L=1	x	CE
0029	Milled/Husked Rice	L>1	x	CE
0031	Milled Paddy Rice	L=1	x	CE
0032	Rice Broken	L>1	x	CE
0033	Rice Gluten	L>1		CE
0034	Rice Starch	L>1	x	CE
0035	Bran Of Rice	L>1	x	AF
0036	Oil Of Rice Bran	L>1	x	OF
0037	Cake Of Rice Bran	L>1	x	AF
0038	Rice Flour	L>1	x	CE
0039	Rice Fermented Beverages	L>1	x	BE
0041	Breakfast Cereals	L>1	x	CE

[48] See *Definition and Classification of Commodities (Draft).* FAO, Rome, 1994, 115 pp.

Code	Description	Processing level	Covered by the study	Commodity group
0044	Barley	L=0	x	CE
0045	Pot Barley	L=1	x	CE
0046	Barley Pearled	L>1	x	CE
0047	Bran Of Barley	L=1		AF
0048	Barley Flour And Grits	L>1	x	CE
0049	Malt Of Barley	L=1	x	CE
0050	Malt Extracts	L>1	x	CE
0051	Beer Of Barley	L>1	x	BE
0056	Maize	L=0	x	CE
0057	Germ Of Maize	L=1	x	CE
0058	Flour Of Maize	L=1	x	CE
0059	Bran Of Maize	L=1	x	AF
0060	Oil Of Maize	L>1	x	OF
0061	Cake Of Maize	L>1	x	AF
0063	Maize Gluten	L>1		CE
0064	Starch Of Maize	L>1	x	CE
0066	Beer Of Maize	L=1		BE
0067	White Maize	L=0		CE
0068	Pop Corn	L=0		CE
0071	Rye	L=0	x	CE
0072	Flour Of Rye	L=1	x	CE
0073	Bran Of Rye	L=1		AF
0075	Oats	L=0	x	CE
0076	Oats Rolled	L=1	x	CE
0077	Bran Of Oats	L=1	x	AF
0079	Millet	L=0	x	CE
0080	Flour Of Millet	L=1	x	CE
0081	Bran Of Millet	L=1		AF
0082	Beer Of Millet	L=1		BE
0083	Sorghum	L=0	x	CE
0084	Flour Of Sorghum	L=1	x	CE
0085	Bran Of Sorghum	L=1		AF
0086	Beer Of Sorghum	L=1		BE
0089	Buckwheat	L=0	x	CE
0090	Flour Of Buckwheat	L=1	x	CE
0091	Bran Of Buckwheat	L=1		AF
0092	Quinoa	L=0		CE
0094	Fonio	L=0		CE
0095	Flour Of Fonio	L=1		CE
0096	Bran Of Fonio	L=1		AF
0097	Triticale	L=0		CE
0098	Flour Of Triticale	L=1		CE
0099	Bran Of Triticale	L=1		AF
0101	Canary Seed	L=0		CE
0103	Mixed Grain	L=0		CE
0104	Flour Of Mixed Grain	L=1		CE
0108	Cereals Nes	L=0		CE
0109	Infant Food	L>1		CE
0110	Wafers	L>1	x	CE

Code	Description	Processing level	Covered by the study	Commodity group
0105	Bran Of Mixed Grain	L=1		AF
0111	Flour Of Cereals	L=1		CE
0112	Bran Of Cereals	L=1		AF
0113	Cereal Prep Nes	L>1		CE
0114	Mixes And Dough	L>1		CE
0115	Food Prep. of Flour, Meal or Malt Extract	L>1		CE
0116	Potatoes	L=0	x	RT
0117	Flour Of Potatoes	L=1	x	RT
0118	Frozen Potatoes	L=1	x	RT
0119	Potato Starch	L=1	x	RT
0120	Potato Offal	L=1		AF
0121	Potato Tapioca	L=1	x	RT
0122	Sweet Potatoes	L=0		RT
0125	Cassava	L=0		RT
0126	Flour Of Cassava	L=1		RT
0127	Cassava Tapioca	L=1		RT
0128	Cassava Dried	L=1		RT
0129	Cassava Starch	L=1	x	RT
0135	Yautia (Coco Yam)	L=0		RT
0136	Taro (Coco Yam)	L=0		RT
0137	Yams	L=0		RT
0149	Roots And Tubers Nes	L=0		RT
0150	Flour Of Roots And Tuber	L=1		RT
0151	Roots And Tubers Dried	L=1		RT
0154	Fructose Chemically Pure	L>1		SS
0155	Maltose Chemically Pure	L>1		SS
0156	Sugar Cane	L=0		SS
0157	Sugar Beets	L=0	x	SS
0158	Cane Sugar	L=1		SS
0159	Beet Sugar	L=1		SS
0160	Maple Sugar And Syrups	L=1		SS
0161	Sugar Crops Nes	L=0		SS
0162	Sugar (Centrifugal Raw)	L=1	x	SS
0163	Sugar (Non-centrifugal)	L=1		SS
0164	Sugar Refined	L>1	x	SS
0165	Molasses	L=1	x	SS
0166	Other Fructose And Syrup	L>1		SS
0167	Sugar And Syrups Nes	L=1		SS
0168	Sugar Confectionery	L>1	x	SS
0169	Beet Pulp Dry	L=1	x	AF
0170	Bagasse	L=1		AF
0171	Sugars Flavoured	L>1	x	SS
0172	Glucose And Dextrose	L>1	x	SS
0173	Lactose	L>1	x	SS
0174	Artificial Sweeteners	L>1		SS
0175	Isoglucose	L>1	x	SS
0176	Beans Dry	L=0	x	PU
0181	Broad Beans Dry	L=0	x	PU
0187	Peas Dry	L=0	x	PU

Code	Description	Processing level	Covered by the study	Commodity group
0191	Chick-Peas	L=0	x	PU
0195	Cow Peas Dry	L=0	x	PU
0197	Pigeon Peas	L=0	x	PU
0201	Lentils	L=0	x	PU
0203	Bambara Beans	L=0	x	PU
0205	Vetches	L=0		PU
0210	Lupines	L=0		PU
0211	Pulses Nes	L=0		PU
0212	Flour Of Pulses	L=1	x	PU
0213	Bran Of Pulses	L=1	x	AF
0216	Brazil Nuts	L=0		NU
0217	Cashew Nuts	L=0		NU
0220	Chestnuts	L=0		NU
0221	Almonds	L=0	x	NU
0222	Walnuts	L=0	x	NU
0223	Pistachios	L=0	x	NU
0224	Kola Nuts	L=0		NU
0225	Hazelnuts (Filberts)	L=0	x	NU
0226	Areca Nuts (Betel)	L=0		NU
0229	Brazil Nuts Shelled	L=1	x	NU
0230	Cashew Nuts Shelled	L=1	x	NU
0231	Almonds Shelled	L=1	x	NU
0232	Walnuts Shelled	L=1	x	NU
0233	Hazelnuts Shelled	L=1	x	NU
0234	Nuts Nes	L=0		NU
0235	Prep. Nuts (Excl. Groundnuts)	L>1	x	NU
0236	Soybeans	L=0	x	NO
0237	Oil Of Soya Beans	L=1	x	OF
0238	Cake Of Soya Beans	L=1	x	AF
0239	Soya Sauce	L=1	x	NO
0240	Soya Paste	L=1		NO
0241	Soya Curd	L=1		NO
0242	Groundnuts In Shell	L=0	x	NO
0243	Groundnuts Shelled	L=1	x	NO
0244	Oil Of Groundnuts	L>1	x	OF
0245	Cake Of Groundnuts	L>1	x	AF
0246	Prepared Groundnuts	L>1	x	NO
0247	Peanut Butter	L>1	x	NO
0249	Coconuts	L=0	x	NO
0250	Coconuts Desiccated	L=1		NO
0251	Copra	L=1	x	NO
0252	Oil Of Coconuts	L>1	x	OF
0253	Cake Of Coconuts	L>1	x	AF
0254	Oil Palm Fruit	L=0		NO
0256	Palm Kernels	L=1	x	NO
0257	Palm Oil	L=1	x	OF
0258	Oil Of Palm Kernels	L>1	x	OF
0259	Cake Of Palm Kernels	L>1	x	AF
0260	Olives	L=0	x	NO

Code	Description	Processing level	Covered by the study	Commodity group
0261	Olive Oil	L=1	x	OF
0262	Olives Preserved	L=1	x	NO
0263	Karite Nuts (Sheanuts)	L=0		NO
0264	Butter Of Karite Nuts	L=1		OF
0265	Castor Beans	L=0	x	NO
0266	Oil Of Castor Beans	L=1	x	OF
0267	Sunflower Seed	L=0	x	NO
0268	Oil Of Sunflower Seed	L=1	x	OF
0269	Cake Of Sunflower Seed	L=1	x	AF
0270	Rape Seed	L=0	x	NO
0271	Oil Of Rape Seed	L=1	x	OF
0272	Cake Of Rape Seed	L=1	x	AF
0273	Olive Residues	L=1	x	AF
0274	Oil Of Olive Residues	L>1	x	OF
0275	Tung Nuts	L=0		NO
0276	Tung Oil	L=1		OF
0277	Jojoba Seeds	L=0		NO
0278	Jojoba Oil	L=1		OF
0280	Safflower Seed	L=0	x	NO
0281	Oil Of Safflower	L=1	x	OF
0282	Cake Of Safflower	L=1		AF
0289	Sesame Seed	L=0	x	NO
0290	Oil Of Sesame Seed	L=1	x	OF
0291	Cake Of Sesame Seed	L=1	x	AF
0292	Mustard Seed	L=0	x	NO
0293	Oil Of Mustard Seed	L=1	x	OF
0294	Cake Of Mustard	L=1	x	AF
0295	Flour Of Mustard	L=1	x	NO
0296	Poppy Seed	L=0		NO
0297	Oil Of Poppy Seed	L=1		OF
0298	Cake Of Poppy Seed	L=1		AF
0299	Melonseed	L=0		NO
0305	Tallowtree Seeds	L=0		NO
0306	Vegetable Tallow	L=1		OF
0307	Stillingia Oil	L=1		OF
0310	Kapok Fruit	L=0		NO
0311	Kapokseed In Shell	L=0		NO
0312	Kapokseed Shelled	L=1		NO
0313	Oil Of Kapok	L=1		OF
0314	Cake Of Kapok	L=1		AF
0328	Seed Cotton	L=0		NO
0329	Cottonseed	L=0	x	NO
0331	Oil Of Cotton Seed	L>1	x	OF
0332	Cake Of Cotton Seed	L>1	x	AF
0333	Linseed	L=0	x	NO
0334	Oil Of Linseed	L=1	x	OF
0335	Cake Of Linseed	L=1	x	AF
0336	Hempseed	L=0		NO
0337	Oil Of Hempseed	L=1		OF

Code	Description	Processing level	Covered by the study	Commodity group
0338	Cake Of Hempseed	L=1		AF
0339	Oilseeds Nes	L=0		NO
0340	Oil Of Veg. Origin Nes	L=1		OF
0341	Cakes Of Oilseeds Nes	L=1		AF
0343	Flour/Meal Of Oilseeds	L=1	x	NO
0358	Cabbages	L=0	x	VE
0366	Artichokes	L=0	x	VE
0367	Asparagus	L=0	x	VE
0372	Lettuce	L=0		VE
0373	Spinach	L=0	x	VE
0378	Cassava Leaves	L=0		VE
0388	Tomatoes	L=0	x	VE
0389	Tomato Juice Concentrated	L=1	x	VE
0390	Tomato Juice	L=1	x	VE
0391	Tomato Paste	L=1	x	VE
0392	Peeled Tomatoes	L=1	x	VE
0393	Cauliflower	L=0	x	VE
0394	Pumpkins Squash Gourds	L=0	x	VE
0397	Cucumbers And Gherkins	L=0	x	VE
0399	Eggplants	L=0	x	VE
0401	Chillies + Peppers Green	L=0	x	VE
0402	Onions + Shallots Green	L=0	x	VE
0403	Onions Dry	L=0	x	VE
0406	Garlic	L=0	x	VE
0407	Leeks And Other Alliaceous Vegetables	L=0		VE
0414	Beans Green	L=0	x	VE
0417	Peas Green	L=0	x	VE
0420	Broad Beans Green	L=0	x	VE
0423	String Beans	L=0	x	VE
0426	Carrots	L=0	x	VE
0430	Okra	L=0		VE
0446	Green Corn (Maize)	L=0	x	VE
0447	Sweet Corn Frozen	L=1		VE
0448	Sweet Corn Prep. Or Pres.	L=1		VE
0449	Mushrooms	L=0	x	VE
0450	Dried Mushrooms	L=1	x	VE
0451	Canned Mushrooms	L=1	x	VE
0459	Chicory Roots	L=0	x	VE
0460	Veg Prod Fresh Or Dried	L=0		VE
0461	Carobs	L=0		VE
0463	Vegetables Fresh Nes	L=0		VE
0464	Vegetables Dried Nes	L=1		VE
0465	Vegetables Canned Nes	L=1		VE
0466	Juice Of Vegetables Nes	L=1		VE
0469	Vegetables Dehydrated	L=1	x	VE
0471	Vegetables Pr By Vinegar	L=1	x	VE
0472	Vegetables Prepared Nes	L=1		VE
0473	Vegetables Frozen	L=1	x	VE
0474	Veg. In Temp Preservative	L=1	x	VE

Code	Description	Processing level	Covered by the study	Commodity group
0475	Vegetables, Prepared Or Preserved, Frozen	L>1		VE
0476	Homogenised Vegetable Preparations	L>1		VE
0486	Bananas	L=0	x	FR
0489	Plantains	L=0		FR
0490	Oranges	L=0	x	FR
0491	Orange Juice	L=1	x	FR
0492	Orange Juice, Concentrated	L=1	x	FR
0495	Tangerines, Mandarins, Clementines, Satsumas	L=0		FR
0496	Tangerine Juice	L=1		FR
0497	Lemons And Limes	L=0	x	FR
0498	Lemon Juice	L=1	x	FR
0499	Lemon Juice, Concentrated	L=1	x	FR
0507	Grapefruit And Pomelo	L=0	x	FR
0509	Grapefruit Juice	L=1	x	FR
0510	Grapefruit Juice, Concentrated	L=1	x	FR
0512	Citrus Fruit Nes	L=0		FR
0513	Citrus Juice	L=1		FR
0514	Citrus Juice Concentrated	L=1		FR
0515	Apples	L=0	x	FR
0517	Fermented Beverages, Nes	L=1		BE
0518	Apple Juice	L=1	x	FR
0519	Apple Juice, Concentrated	L=1	x	FR
0521	Pears	L=0	x	FR
0523	Quinces	L=0		FR
0526	Apricots	L=0	x	FR
0527	Dry Apricots	L=1	x	FR
0530	Sour Cherries	L=0		FR
0531	Cherries	L=0	x	FR
0534	Peaches And Nectarines	L=0		FR
0536	Plums	L=0	x	FR
0537	Plums Dried (Prunes)	L=1		FR
0538	Plum Juice	L=1		FR
0539	Plum Juice Concentrated	L=1		FR
0541	Stone Fruit Nes Fresh	L=0		FR
0542	Pome Fruit Nes, Fresh	L=0		FR
0544	Strawberries	L=0		FR
0547	Raspberries	L=0		FR
0549	Gooseberries	L=0		FR
0550	Currants	L=0		FR
0552	Blueberries	L=0		FR
0554	Cranberries	L=0		FR
0558	Berries Nes	L=0		FR
0560	Grapes	L=0	x	FR
0561	Raisins	L=1	x	FR
0562	Grape Juice	L=1	x	FR
0563	Must Of Grapes	L=1	x	BE
0564	Wine	L=1	x	BE
0565	Vermouths And Similar	L>1	x	BE
0566	Marc Of Grapes	L=1	x	AF

Code	Description	Processing level	Covered by the study	Commodity group
0567	Watermelons	L=0		FR
0568	Cantaloupes + Other Melons	L=0		FR
0569	Figs	L=0	x	FR
0570	Figs Dried	L=1	x	FR
0571	Mangoes	L=0		FR
0572	Avocados	L=0		FR
0574	Pineapples	L=0	x	FR
0575	Pineapples Canned	L=1	x	FR
0576	Pineapple Juice	L=1	x	FR
0577	Dates	L=0		FR
0580	Pineapple Juice Concentrated.	L=1	x	FR
0583	Mango Juice	L=1		FR
0584	Mango Pulp	L=1		FR
0587	Persimmons	L=0		FR
0591	Cashew Apple	L=0		FR
0592	Kiwi Fruit	L=0		FR
0600	Papayas	L=0		FR
0603	Fruit Tropical Fresh Nes	L=0		FR
0604	Fruit Tropical Dried Nes	L=1		FR
0619	Fruit Fresh Nes	L=0		FR
0620	Fruit Dried Nes	L=1		FR
0622	Fruit Juice Nes	L=1		FR
0623	Fruit Prepared Nes	L=1		FR
0624	Flour Of Fruit	L=1	x	FR
0625	Fruit Nut Peel Sugar Pres.	L=1	x	FR
0626	Homogenised, Cooked Fruit, Prepared	L=1	x	FR
0628	Fruit Pulp For Feed	L=1	x	AF
0629	Beet Tops	L=1		AF
0630	Cane Tops	L=1		AF
0631	Waters, Ice, Etc.	L=1		BE
0632	Alcohol Non Food Purpose	L>1		BE
0633	Beverages Non-Alcoholic	L>1	x	BE
0634	Beverages Dist Alcoholic	L>1		BE
0635	Straw Husks	L=1		AF
0636	Maize For Forage + Silage	L=0		AF
0637	Sorghum For Forage + Silage	L=0		AF
0638	Rye Grass Forage + Silage	L=0		AF
0639	Grasses Nes Forage + Silage	L=0		AF
0640	Clover For Forage + Silage	L=0		AF
0641	Alfalfa For Forage + Silage	L=0		AF
0642	Green Oilseeds For Silage	L=0		AF
0643	Legumes For Silage	L=0		AF
0644	Cabbage For Fodder	L=0		AF
0645	Pumpkins For Fodder	L=0		AF
0646	Turnips For Fodder	L=0		AF
0647	Beets For Fodder	L=0		AF
0648	Carrots For Fodder	L=0		AF
0649	Swedes For Fodder	L=0		AF
0650	Leaves And Tops Vines	L=0		AF

Code	Description	Processing level	Covered by the study	Commodity group
0651	Forage Products Nes	L=1		AF
0652	Veg Products For Feed	L=1		AF
0653	Food Wastes	L=1		AF
0654	Dregs From Brewing/Dist.	L>1	x	AF
0655	Vegetables/Roots Fodder	L=0		AF
0656	Coffee Green	L=0	x	CC
0657	Coffee Roasted	L=1	x	CC
0658	Coffee Substitutes	L=1	x	CC
0659	Coffee Extracts	L=1	x	CC
0660	Coffee Husks And Skins	L=0		CC
0661	Cocoa Beans	L=0	x	CC
0662	Cocoa Paste	L=1	x	CC
0663	Cocoa Husks + Shell	L=1	x	CC
0664	Cocoa Butter	L>1	x	CC
0665	Cocoa Powder And Cake	L>1	x	CC
0666	Chocolate Products Nes	L>1		CC
0667	Tea	L=0		CC
0671	Mate	L=0		CC
0672	Extract Tea Mate Prep.	L=1		CC
0674	Tea Nes	L=0		CC
0677	Hops	L=0		TP
0687	Pepper White/Long/Black	L=0		SP
0689	Pimento Allspice	L=0		SP
0692	Vanilla	L=0		SP
0693	Cinnamon (Canella)	L=0		SP
0698	Cloves Whole + Stems	L=0		SP
0702	Nutmeg Mace Cardamom	L=0		SP
0711	Anise Badian Fennel	L=0		SP
0720	Ginger	L=0		SP
0723	Spices Nes	L=0		SP
0737	Oil Of Citronella	L=0		TP
0748	Peppermint	L=0		TP
0753	Essential Oils Nes	L=1		TP
0754	Pyrethrum Dried Flowers	L=0	x	TP
0755	Pyrethrum Extract	L=1	x	TP
0756	Pyrethrum Marc	L=1		TP
0767	Cotton Lint	L=0	x	FI
0768	Cotton Carded Combed	L>1	x	FI
0769	Cotton Waste	L=0		FI
0770	Cotton Linters	L>1	x	FI
0771	Flax Fibre Raw	L=0		FI
0773	Flax Fibre And Tow	L=1		FI
0774	Flax Tow Waste	L=1		FI
0777	Hemp Fibre And Tow	L=0		FI
0778	Kapok Fibre	L=0		FI
0780	Jute	L=0		FI
0782	Jute-Like Fibres	L=0		FI
0788	Ramie	L=0		FI
0789	Sisal	L=0		FI

Code	Description	Processing level	Covered by the study	Commodity group
0800	Agave Fibres Nes	L=0		FI
0809	Abaca (Manila Hemp)	L=0		FI
0813	Coir	L=0		FI
0821	Fibre Crops Nes	L=0		FI
0826	Tobacco Leaves	L=0	x	TP
0828	Cigarettes	L=1	x	TP
0829	Cigars Cheroots	L=1	x	TP
0831	Tobacco Products Nes	L=1		TP
0836	Natural Rubber	L=0		TP
0837	Rubber Natural Dry	L=1		TP
0839	Natural Gums	L=0		TP
0840	Compound Feed Cattle	L>1		AF
0841	Compound Feed Poultry	L>1		AF
0842	Compound Feed Pigs	L>1		AF
0843	Pet Food	L>1		AF
0845	Compound Feed, Nes	L>1		AF
0846	Gluten Feed And Meal	L>1	x	AF
0849	Feed Yeast	L>1		AF
0850	Feed Supplements	L>1		AF
0851	Non Protein Nitrogens	L>1		AF
0852	Other Concentrates, Nes	L>1		AF
0853	Vitamins	L>1		AF
0854	Feed Additives	L>1		AF
0855	Feed Minerals	L>1		AF
0857	Hay Non-Leguminous	L=1		AF
0858	Hay (Clover Lucerne Etc.)	L=1		AF
0859	Hay (Unspecified)	L=0		AF
0862	Alfalfa Meal And Pellets	L=1		AF
0866	Cattle	L=0	x	LI
0867	Beef And Veal	L=1	x	MO
0868	Offal Of Cattle Edible	L=1	x	MO
0869	Fat Of Cattle	L=1	x	OF
0870	Beef And Veal Boneless	L>1	x	MO
0871	Cattle Butcher Fat	L>1		OF
0872	Beef Dried Salt Smoked	L>1	x	MO
0873	Meat Extracts	L>1	x	MO
0874	Sausages Beef And Veal	L>1	x	MO
0875	Beef Preparations	L>1	x	MO
0876	Beef Canned	L>1		MO
0877	Homogenised Meat Prep.	L>1	x	MO
0878	Liver Preparations	L>1	x	MO
0882	Cow Milk Whole Fresh	L=0	x	DE
0883	Standardised Milk	L=1		DE
0885	Cream Fresh	L=1	x	DE
0886	Butter Of Cow Milk	L=1	x	DE
0887	Ghee (From Cow Milk)	L=1		DE
0888	Skim Milk Of Cows	L=1	x	DE
0889	Whole Milk Condensed	L=1	x	DE
0890	Whey Condensed	L>1	x	DE

Code	Description	Processing level	Covered by the study	Commodity group
0891	Yoghurt	L=1	x	DE
0892	Yoghurt Concentrated or Not	L>1	x	DE
0893	Buttermilk, Curdled/Acid Milk	L=1	x	DE
0894	Whole Milk Evaporated	L=1	x	DE
0895	Skim Milk Evaporated	L>1	x	DE
0896	Skim Milk Condensed	L>1	x	DE
0897	Dry Whole Cow Milk	L=1	x	DE
0898	Dry Skim Cow Milk	L>1	x	DE
0899	Dry Buttermilk	L>1	x	DE
0900	Dry Whey	L>1	x	DE
0901	Cheese (Whole Cow Milk)	L>1	x	DE
0903	Whey Fresh	L=1	x	DE
0904	Cheese (Skim Cow Milk)	L>1		DE
0905	Whey Cheese	L>1		DE
0907	Processed Cheese	L>1	x	DE
0908	Reconstituted Milk	L>1		DE
0909	Products of Natural Milk Constituents, Nes	L>1		DE
0910	Ice Cream And Edible Ice	L=1	x	DE
0916	Egg Albumin	L>1		DE
0917	Casein	L>1	x	DE
0919	Cattle Hides Fresh	L=1		HS
0920	Hides Wet-Salted Cattle	L=1	x	HS
0921	Hides Dry-Salted Cattle	L>1	x	HS
0922	Hides Nes Cattle	L=1		HS
0927	Calf Skins, Fresh	L=1		HS
0928	Skins Wet-Salt Calves	L=1	x	HS
0929	Skins Dry-Salt Calves	L>1	x	HS
0930	Skins Nes Calves	L=1		HS
0946	Buffaloes	L=0	x	LI
0947	Buffalo Meat	L=1		MO
0948	Offal Of Buffalo Edible	L=1		MO
0949	Fat Of Buffalo	L=1		OF
0951	Buffalo Milk	L=0		DE
0952	Butter Of Buffalo Milk	L>1		DE
0953	Ghee (From Buffalo Milk)	L>1		DE
0954	Skim Milk Of Buffalo	L>1		DE
0955	Cheese Of Buffalo Milk	L>1		DE
0957	Buffalo Hides Fresh	L=1		HS
0958	Hides Wet-Salted Buffalo	L=1	x	HS
0959	Hides Dry-Salted Buffalo	L>1	x	HS
0976	Sheep	L=0	x	LI
0977	Mutton And Lamb	L=1	x	MO
0978	Offal Of Sheep Edible	L=1	x	MO
0979	Fat Of Sheep	L=1	x	OF
0982	Sheep Milk	L=0		DE
0983	Butter + Ghee (Sheep Milk)	L>1		DE
0984	Cheese Of Sheep Milk	L>1		DE
0985	Skim Sheep Milk	L>1		DE
0987	Wool Greasy	L=0	x	FI

Code	Description	Processing level	Covered by the study	Commodity group
0988	Wool Scoured	L=1	x	FI
0994	Grease Incl. Lanolin Wool	L>1		OF
0995	Sheepskins Fresh	L=1		HS
0996	Skin Wet-Salted Sheep	L=1	x	HS
0997	Skin Dry-Salted Sheep	L>1	x	HS
0998	Skin Nes Sheep	L=1		HS
0999	Skin With Wool Sheep	L=1	x	HS
1002	Karakul Skins	L=1		HS
1007	Wool Shoddy	L>1		FI
1008	Hair Carded Or Combed	L>1	x	FI
1009	Wool, Hair Waste	L>1	x	FI
1010	Wool Tops	L>1	x	FI
1016	Goats	L=0	x	LI
1017	Goat Meat	L=1	x	MO
1018	Offal Of Goats Edible	L=1		MO
1019	Fat Of Goats	L=1		OF
1020	Goat Milk	L=0		DE
1021	Cheese Of Goat Milk	L>1		DE
1022	Butter Of Goat Milk	L>1		DE
1023	Milk Skimmed Of Goats	L>1		DE
1025	Goatskins Fresh	L=1		HS
1026	Skins Wet-Salted Goats	L=1	x	HS
1027	Skins Dry-Salted Goats	L>1	x	HS
1028	Skins Nes Goats	L=1		HS
1030	Fine Goat Hair	L=0		FI
1031	Coarse Goat Hair	L=0		FI
1034	Pigs	L=0	x	LI
1035	Pig Meat	L=1	x	MO
1036	Offal Of Pigs Edible	L=1	x	MO
1037	Fat Of Pigs	L=1	x	OF
1038	Pork	L>1	x	MO
1039	Bacon-Ham Of Pigs	L>1	x	MO
1040	Pig Butcher Fat	L>1	x	OF
1041	Sausages Pig Meat	L>1	x	MO
1042	Meat Preparations Pigs	L>1	x	MO
1043	Lard	L>1	x	OF
1044	Pigskins Fresh	L=1		HS
1045	Skin Wet-Salted Pigs	L=1	x	HS
1046	Skin Dry-Salted Pigs	L>1	x	HS
1047	Skins Nes Pigs	L=1		HS
1057	Chickens	L=0	x	LI
1058	Chicken Meat	L=1	x	MO
1059	Offal Liver Of Chickens	L=1	x	MO
1060	Fat Liver Prep(Foie Gras)	L>1		MO
1061	Meat Canned Chicken	L>1	x	MO
1062	Hen Eggs	L=0	x	DE
1063	Eggs Liquid Hen	L=1	x	DE
1064	Eggs Dry Whole Yolks Hen	L=1	x	DE
1065	Fat Of Poultry	L>1	x	OF

Code	Description	Processing level	Covered by the study	Commodity group
1066	Fat Of Poultry Rendered	L>1	x	OF
1068	Ducks	L=0	x	LI
1069	Duck Meat	L=1	x	MO
1072	Geese	L=0	x	LI
1073	Goose Meat	L=1	x	MO
1074	Offal Liver Geese	L=1	x	MO
1075	Offal Liver Ducks	L=1		MO
1079	Turkeys	L=0	x	LI
1080	Turkey Meat	L=1	x	MO
1081	Offal Liver Turkeys	L=1		MO
1083	Pigeons Other Birds	L=0	x	LI
1089	Meat Of Pigeon Other Birds	L=1	x	MO
1091	Eggs Excl. Hen	L=0		DE
1096	Horses	L=0	x	LI
1097	Horse Meat	L=1	x	MO
1098	Offal Of Horse	L=1	x	MO
1100	Hair Of Horses	L=0		FI
1102	Horse Hides Fresh	L=1		HS
1103	Hides Wet-Salted Horses	L=1	x	HS
1104	Hides Dry-Salted Horses	L>1	x	HS
1105	Hides Unspecified Horses	L=1	x	HS
1107	Asses	L=0		LI
1108	Meat Of Asses	L=1		MO
1109	Hides Of Asses Fresh	L=1		HS
1110	Mules	L=0		LI
1111	Meat Of Mules	L=1		MO
1112	Hides Of Mules Fresh	L=1		HS
1126	Camels	L=0		LI
1127	Meat Of Camels	L=1		MO
1128	Offal Of Camel Edible	L=1		MO
1129	Fat Of Camels	L=1		OF
1130	Camel Milk	L=0		DE
1133	Camel Hides Fresh	L=1		HS
1134	Hides Wet Salted Camels	L=1		HS
1135	Hides Dry Salted Camels	L>1		HS
1136	Hides Unspecified Camels	L=1		HS
1140	Rabbits	L=0	x	LI
1141	Rabbit Meat	L=1	x	MO
1146	Rabbit Skins	L=1	x	HS
1150	Other Rodents	L=0		LI
1151	Meat Of Other Rodents	L=1		MO
1157	Other Camelids	L=0		LI
1158	Meat Of Other Camelids	L=1		MO
1159	Offal Of Other Camelids	L=1		MO
1160	Fat Of Other Camelids	L=1		OF
1163	Game Meat	L=1		MO
1164	Meat Dried Nes	L>1		MO
1166	Meat Nes	L=1		MO
1167	Offal Nes	L>1		MO

Code	Description	Processing level	Covered by the study	Commodity group
1168	Animal Oils And Fats Nes	L>1		OF
1169	Live Animals Non-Food	L=0		LI
1171	Live Animals Nes	L=0		LI
1172	Meat Prepared Nes	L>1		MO
1173	Meat Meal	L>1		AF
1176	Snails Not Sea Snails	L=0		MO
1181	Beehives	L=0		LI
1182	Honey	L=0		DE
1183	Beeswax	L=0		DE
1185	Cocoons Reelable	L=0	x	FI
1186	Silk Raw And Waste	L=1	x	FI
1187	Cocoons Unreelable	L=1		FI
1195	Fur Skins	L=1		HS
1213	Hides And Skins Nes, Fresh	L=1		HS
1214	Hide Wet-Salted	L=1		HS
1215	Hide Dry-Salted	L>1		HS
1216	Hide Nes	L=1		HS
1217	Leather Used And Waste	L>1		HS
1218	Hair Fine Animal	L=0		FI
1219	Hair Coarse Nes	L=0		FI
1221	Lard And Stearin Oil	L>1	x	OF
1222	Degras	L=1		OF
1225	Tallow	L>1	x	OF
1232	Food Prepared Nes	L>1		TP
1241	Liquid Margarine	L>1		OF
1242	Margarine + Shortening	L>1	x	OF
1243	Fat Preparations Nes	L>1		OF
1259	Food Waste, Prep. For Feed	L>1		AF
1273	Castor Oil Hydrogenated. (Opal Wax)	L>1		OF
1274	Oils Boiled Etc.	L>1	x	OF
1275	Oils Hydrogenated	L>1	x	OF
1276	Fatty Acids Oils 431.31	L>1	x	OF
1277	Residues of Fatty Substances	L>1		OF
1291	Arabic Gum	L=0		TP
1292	Other Resins	L=0		TP
1293	Crude Organic Materials 29	L=0		TP
1294	Seeds Fruits Spores Pl	L=0		TP
1296	Waxes Veg 431.43	L=0		TP
2001	Finished Heavy Leather From Bovine	L>1	x	HS
2002	Finished Light Leather From Bovine	L>1	x	HS
2004	Finished Light Leather From Sheep	L>1	x	HS
2005	Finished Light Leather From Goat	L>1	x	HS

The finished leather commodities (2001, 2002, 2004 and 2005) are not covered by FAOSTAT, but have been defined for the purpose of this study.

Annex 4. References

Balassa, Bela, 1965:
Tariff Protection in Industrial Countries: An Evaluation. Journal of Political Economy, Vol. 73, pp. 573-594.

Corden, W.M., 1966:
The Structure of a Tariff System and the Effective Protective Rate. Journal of Political Economy, Vol 74, pp. 221-237.

Corden, W.M., 1971:
The Theory of Protection, London, 1971.

FAO, 1994:
Definition and Classification of Commodities (Draft). Rome, 115 pp.

GATT, 1980:
Tariff Escalation, Note by the Secretariat. Committee on Trade and Development, Forty-First Session, COM.TD/W/315, Geneva, 105 pp.

GATT, 1981a:
Tariff Escalation, Note by the Secretariat. Committee on Trade and Development, Forty-Fifth Session, COM.TD/W/354, Geneva, 2 pp.

GATT, 1981b:
Measurement of Tariff Escalation. Note by the Secretariat, TAR/W/18, Geneva, 13 pp.

GATT, 1982:
Tariff Escalation, Note by the Secretariat. Committee on Tariff Concessions, Committee on Trade and Development, TAR/W/29, COM.TD/W/354, Geneva, 3 pp.

GATT, 1994:
The Results of the Uruguay Round of Multilateral Trade Negotiations. Market Access for Goods and Services: Overview of the Results. Geneva, 88 pp.

Golub, Stephen S. and Finger, J.M., 1979:
The Processing of Primary Commodities: Effects of Developed-Country Tariff Escalation and Developing-Country Export Taxes, Journal of Political Economy, Vol. 87, No 31, pp. 559-574.

Johnson, Harry, 1965:
The Theory of Tariff Structure with Special Reference to World Trade and Development. Trade and Development, Institut Universitaire des Hautes Etudes Internationales, Geneva.

Tangermann, Stefan, 1987:
Escalation of Barriers to International Trade of Agricultural Products - A Research Survey and Illustrative Case Studies for Cocoa and Soya. Paper prepared for Commodities and Trade Division, FAO. Institute of Agricultural Economics, University of Göttingen, Germany, 157 pp.

Tangermann, Stefan, 1995:
Implementation of the UR Agreement onAgriculture by Major Developed Countries. UNCTAD/ITD/16, 1995.

WTO, 1995:
The Results of the Uruguay Round of Multilateral Trade Negotiations. The Legal Texts. Geneva, 558 pp.

WTO, 1996:
Tariff Escalation. Note by the Secretariat to the Committee on Trade and Environment, WT/CTE/W/25, 22 March 1996, Geneva, 49 pp.

Yeats, Alexander J., 1984:
On the Analysis of Tariff Escalation. Is there a Methodological Bias Against the Interest of Developing Countries? Journal of Development Economics, Vol. 15, pp. 77-88.

Yeats, Alexander J., no year:
A Note on the Treatment of Tariff Issues Within the GATT: A Bias Against the Interests of the Developing Countries. Draft, 8 pp.

Annex 5. List of Abbreviations

ERP = Effective Rate of Protection
ESSB = Basic Data Unit of FAO's Statistics Division
HS = Harmonised Commodity Description and Coding System
LDC = Least Developed Country
MEP = Minimum Entry Price
NES = Not Elsewhere Specified
NTB = Non Tariff Trade Barrier
TW = Tariff Wedge
UR = Uruguay Round
USDA = United States Department of Agriculture
WTO = World Trade Organization