

Impacts of liberalising
WORLD TRADE in

DAIRY PRODUCTS



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Foreword

The current World Trade Organisation negotiations on agriculture offer an opportunity to significantly reform world dairy market trade. The likely benefits from trade liberalisation in world dairy markets can be largely deduced from the current structure of the market itself. World trade in dairy products has the potential to increase, but remains restricted to below its full potential by the distorting effects of strong protectionist policies and export subsidies.

In this study, the economic effects of two types of reform are examined in detail — increasing market access, and reducing export subsidies. It is demonstrated that either of these reforms would lead to substantial increases in the value of world dairy trade. The two types of reform are seen to be complementary, however, in that the increases in world demand that would result from improved market access may absorb some of the dairy exports that were previously subsidised.

The empirical analysis uses an enhanced version of the OECD's AGLINK model of world dairy markets. The model is used to quantify the potential benefits of reform that theory suggests should be available. The major players such as the European Union, the United States, Japan, Canada and the southern hemisphere exporters are modeled in detail. Additionally, many smaller markets are individually modeled, resulting in a level of detail on the market not available in previous studies.



BRIAN S. FISHER
Executive Director

May 2001

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Summary

World imports of dairy products — cheese, butter, milk powders and other products — were valued by the FAO at US\$12 billion in 1998. This trade has the potential to increase, but remains restricted to below its full potential by the distorting effects of strong protectionist policies and export subsidies.

The Uruguay Round achieved only limited success in increasing market access and reducing export subsidies for most dairy products. However, the new World Trade Organisation negotiations on agriculture offer an opportunity to liberalise world dairy market trade through increasing market access and reducing export subsidies.

The research reported here analyses the effect of achieving real and meaningful progress in reducing barriers to trade and export subsidies in the current WTO negotiations. The analyses were conducted using an enhanced version of the OECD's AGLINK dairy model.

ABARE estimates that if world dairy product quotas were doubled and effective tariff rates halved, the value of world dairy trade would initially rise by around US\$1.8 billion. If the volume of subsidised dairy exports by the European Union and the United States were halved, the value of trade would initially rise by around US\$0.7 billion.

The combined effects of both types of reform are still being analysed. However, ABARE's research to date, set out in detail in this report, indicates that the potential for trade liberalisation to increase the value of world dairy trade is large. Moreover, increasing market access and reducing export subsidies are seen as complementary, in that the increase in world demand that would result from improved market access may absorb some of the dairy exports that were previously subsidised.

World dairy market

Dairy industries in developed countries such as the European Union, the United States, Japan and Canada are highly supported. However, these countries are also relatively large importers of cheese and butter. Even so, EU and US cheese and butter imports account for only a relatively small percent-

age of their cheese and butter consumption. In 1999, the European Union consumed 6.4 million tonnes of cheese and 1.75 million tonnes of butter, but imported only 145 000 tonnes of cheese (2 per cent of consumption) and only 105 000 tonnes of butter (6 per cent of consumption).

The largest dairy exporters are the European Union, Australia, New Zealand, Argentina and the United States. Australia and New Zealand export a relatively large proportion of their dairy production. EU and US exports, however, represent only a relatively small proportion of their total production. Nonetheless, because EU and the US exports form a relatively large proportion of world exports, any reduction in the volume of subsidised exports by the European Union and the United States may have a significant effect on world dairy trade.

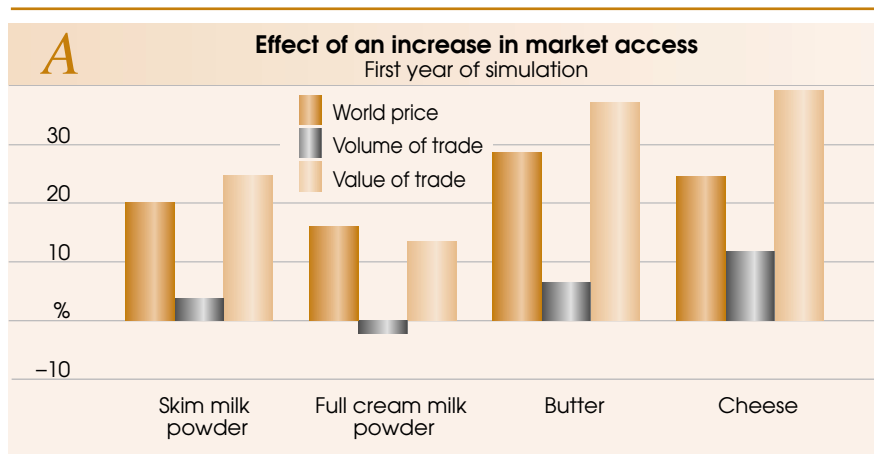
Impact of liberalising trade in dairy products

To estimate the impact of reforming policies affecting international trade in dairy products, ABARE conducted two quantitative experiments — increasing market access for dairy products, and reducing the volume of subsidised exports from the United States and the European Union.

The experiments estimated what would happen in one year to world dairy markets as a result of changing trade policy. At the time the analysis was undertaken, 1999 was the most recent year for which actual data was available and consequently provided the baseline against which trade liberalising scenarios were compared.

Increased market access

The first experiment simulates the effects of significantly increasing world market access for dairy products by doubling dairy product quotas and halving tariff rates. With these reforms, world import demand for dairy products rises significantly (figure A). World prices change to reallocate current year milk supplies to their new most profitable uses and dairy products to their new most profitable markets. Relative to the 1999 baseline, the value of world dairy trade rises by US\$1.8 billion — the value of cheese trade by 39 per cent, butter trade by 37 per cent and milk powder trade by 14–25 per cent. World imports of cheese rise by 138 000 tonnes (12 per cent), world imports of butter by 40 000 tonnes (7 per cent) and world imports of skim milk powder by 45 000 tonnes (4 per cent).



In the simulation, the main markets to increase imports are the European Union, the United States and Japan. The European Union and the United States also increase their exports.

Dairy exports from Australia, New Zealand, Argentina and other countries rise. In Australia, New Zealand and Argentina, the gross value of production of milk rises by 7–9 per cent and the gross value of dairy products by 9–11 per cent. The gross value of production of milk and dairy products in the European Union and the United States falls marginally, by 1–2 per cent (table 1).

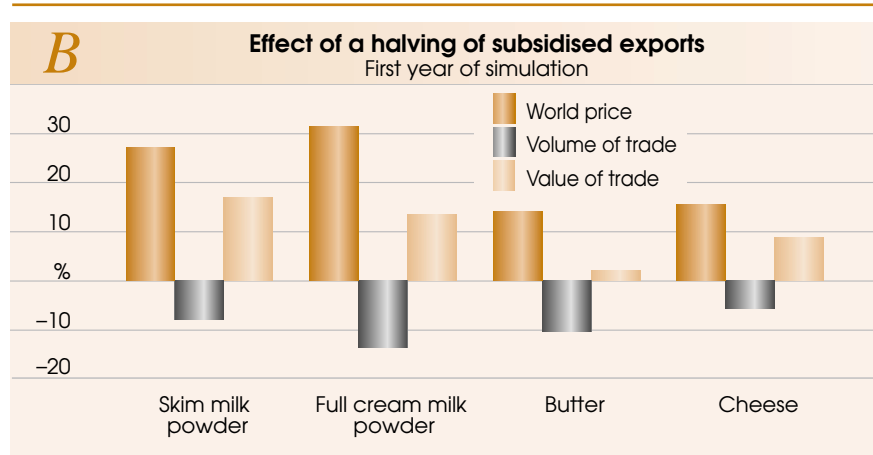
1 Increasing market access: effect on gross value of production
Change from baseline, first year of simulation

	Milk	Dairy products
	%	%
Australia	7.3	9.3
New Zealand	9.0	10.6
Argentina	6.9	9.4
European Union	-1.4	-1.6
United States	-1.2	-1.4

Reduced subsidised exports

In the second experiment, the effects of halving the volume of subsidised exports by the European Union and the United States are simulated. Halving EU and US subsidised exports reduces world availability of dairy products for export and increases world dairy product prices. Prices rise to more than offset the reduction in the volume of trade (figure B). Relative to the 1999 baseline, the value of world dairy trade increases by US\$0.7 billion.

As the main subsidising exporter, the European Union experiences the largest reduction in exports overall. However, the volume of EU unsubsidised



exports, particularly those of cheese, rise, offsetting to some extent the fall in the volume of EU subsidised exports. EU expenditure on subsidised exports also falls, by just over 80 million ECU overall.

In Australia, New Zealand and Argentina, the gross value of production of milk rises by 7–15 per cent and the gross value of dairy products by 8–18 per cent (table 2). In Argentina, the highest price rise is for full cream milk powder. As this product accounts for a relatively high proportion of the country’s processed dairy production, Argentina benefits relatively more in this simulation in terms of its percentage increase in gross value of production than does Australia and New Zealand. The gross value of production of milk and dairy products in the European Union falls by 5–6 per cent, while that in the United States remains virtually unchanged.

2 Halving subsidised exports: effect on gross value of production
Change from baseline, first year of simulation

	Milk	Dairy products
	%	%
Australia	6.7	8.3
New Zealand	9.4	10.6
Argentina	14.6	17.5
European Union	-4.9	-5.5
United States	0.0	-0.1

Conclusions

The current WTO agricultural negotiations offer an opportunity to make real and meaningful reductions in barriers to trade and export subsidies in the world dairy market.

The results of ABARE's analysis of trade liberalisation in world dairy markets suggest that reforms aimed at increasing market access would complement those aimed at reducing the subsidised volume of exports. Increases in world demand that would result from improved market access may absorb some of the dairy exports that were previously subsidised. Furthermore, the results suggest that the impact on farm gate milk prices of both a substantial improvement in increased market access and reduced volumes of subsidised exports on the highly protected EU and US markets would be relatively small, and manageable.

The results show the initial impact of trade policy reforms. The impact is primarily evident in higher world market prices and corresponding changes in consumption levels and trade flows. Over time markets would respond to the change in world prices. Production would increase, trade would grow and global consumption of dairy products would expand. As the additional product moves onto the global market the extent of the ongoing price rise generated by the reforms would be reduced.

With a permanent and multilateral expansion in dairy market access, the rise in the value of world trade would be substantial. Although it is unclear who would gain most from the reforms — the traditional dairy exporters, including the European Union and the United States, or new and emerging dairy producers and exporters — what is clear is that reforms would generate substantial gains in total.

1

Introduction

Globally, dairy remains one of the most highly supported of all agricultural industries. As a result, world trade in dairy products continues to be distorted by the use of strong protectionist policies and export subsidies.

Policy makers and trade negotiators are considering the effect of further trade liberalisation in world dairy markets (see box 1 for a brief description of the WTO Agreement on Agriculture). Some analysts have suggested that the gains from further liberalisation would be small. In this study, however, it is demonstrated that the gains would be large. From the analysis, it is estimated that:

- world dairy prices and the value of dairy trade would both increase significantly after reform; and
- the effects on internal EU and US dairy markets would be small.

These findings are not surprising, given the current structure of the market. Since barriers to trade remain high, any effective relaxation of these barriers should expand the size of the market significantly. At the same time, since the volume of dairy products produced and consumed in the major developed country markets is large relative to the volume traded worldwide, any change in the volume of world trade should have only a marginal effect on supply and demand (and hence prices) in these major markets.

Two specific reforms are examined in this study: an increase in dairy market access, and a reduction in the volume of subsidised exports. Both types of reform will be pursued in the current round of multilateral trade negotiations.

From the information provided in the following chapter it is clear that in many of the larger developed country markets, the bulk of domestic consumption is satisfied from domestic production. Relatively little dairy product is imported. It is also clear that a large proportion of EU and US dairy exports are subsidised. The structure of the market itself suggests there would be substantial gains from further liberalisation in world dairy trade.

In chapter three, the main policy instruments that governments use to restrict and/or influence dairy trade — tariffs, tariff-quotas and export subsidies —

are examined. The chapter includes information on quota limits, in-quota and out-of-quota tariffs, tariff rates (where only tariffs rather than tariff-quotas apply) and the volume and value of export subsidies, and discussion of quota underfill.

1

WTO Agreement on Agriculture

The World Trade Organisation's Agreement on Agriculture, which took effect in 1995, was one of the outcomes of the Uruguay Round conducted from 1986 to 1994. Under the agreement, quotas and other nontariff measures on most agricultural imports were replaced by tariffs that were supposed to provide more or less equivalent levels of protection. To maintain access levels and, in cases where access was small, to increase access opportunities, tariff-quotas were introduced for some products and countries. Under tariff-quotas, lower tariff rates are applied for specified quantities, with the higher general rates for quantities that exceed the quota. Uruguay Round participants agreed that developed countries would cut their tariffs (or the out-of-quota rates in the case of tariff-quotas) by an average of 36 per cent in equal steps over six years. Developing countries would make 24 per cent cuts over ten years. Least developed countries were not required to cut their tariffs (World Trade Organisation 2001).

The Agreement on Agriculture also prohibited export subsidies on agricultural products unless the subsidies were specified in a member's lists of commitments. Where they were listed, the agreement requires WTO members to cut both the amount of money they spend on export subsidies and the quantities of exports that receive subsidies. Taking averages for 1986 to 1990 as the base level, developed countries agreed to cut the value of export subsidies by 36 per cent over the six years starting in 1995. Developed countries also agreed to reduce the quantities of subsidised exports by 21 per cent over the six years. Developing countries agreed to cut the value of export subsidies by 24 per cent over ten years, and the quantities of subsidised exports by 14 per cent over the same period (World Trade Organisation 2001).

Despite some progress, world dairy trade has yet to see substantial benefit from the Uruguay Round. Market access for dairy products is still highly restricted. Current minimum access quantities are small, and above-quota tariffs are high. The European Union and the United States continue to subsidise dairy exports. EU and US subsidies were high in the 1986–90 base period, so despite some reductions, the European Union and United States have been able to maintain subsidised exports at relatively high levels (Andrews 2001).

Much remains to be done to further liberalise world trade in dairy products. Thus, the current WTO negotiations offer an opportunity to further progress efforts to reduce both trade barriers and the use of export subsidies.

The impacts of two specific dairy trade reforms are estimated in chapter four. The estimates are made using a world dairy model, based on the OECD's AGLINK model, which replicates the main features of world dairy industries and trade, including individual countries' trade and domestic support policies. The results of two experiments, which simulate the effects of increasing access to dairy markets and of reducing the volume of subsidised exports, are set out in detail. Both initial and medium term impacts are given. The latter show how the initial impacts may be affected by supply response.

Recent studies

Zhu, Cox and Chavas (1999) used the UW–Madison world dairy model to simulate the market equilibrium impacts of full WTO Agreement on Agriculture implementation in 2000. The UW–Madison model is an equilibrium model with 21 regions including the United States, Canada, Mexico, China, India, Japan, Australia, New Zealand, western Europe, eastern Europe and the former Soviet Union. The authors concluded that implementation of the Uruguay Round Agreement on Agriculture to 2000 would provide only a small step toward free trade in dairy markets.

Cox, Coleman, Chavas and Zhu (1999) suggested the next round of negotiations (to 2005) will likely involve intermediate liberalisation scenarios for dairy that lie somewhere between full Agreement on Agriculture implementation and complete trade liberalisation. Using the UW–Madison model, the authors examined the separate impacts of policy instruments such as tariff reductions, tariff rate quota volume increases, and export subsidy reductions.

One unifying theme across the results was the differences in the impacts of dairy trade liberalisation on the 'more protected' dairy regions (western Europe, Japan, Canada, the United States and northern South America) compared with the impacts on the 'low cost exporting regions' (New Zealand, Australia and southern South America). In broad terms, further liberalisation led to losses in producer welfare and gains in consumer welfare in the more protected dairy regions, while, in contrast, gains in producer welfare and losses in consumer welfare occurred in the low cost exporting regions. Western Europe experienced a relatively large increase in the value of dairy net imports (gross imports less gross exports). The more protected countries in the Americas experienced relatively small increases in the value of dairy net imports, while eastern Europe, Oceania and southern South America experienced moderate increases in the value of dairy net exports.

Global dairy market

Supply and demand

The world's largest consumers of dairy products include the European Union, the United States, China, Japan, India, Brazil, the Russian Federation, Canada, Mexico and Argentina (table 3).

Global dairy market trade has many distinctive features. However, one of particular relevance for analysing the effects of trade liberalisation is the small volume of product entering international trade relative to the size of the main markets. To take the European Union as an example, consumption

3 Consumption of dairy products in major markets, 1999^a

	Skim milk powder	Full cream milk powder	Butter	Cheese
	kt	kt	kt	kt
European Union	982	507	1 755	6 417
Russian Federation	220	87	307	222
North America				
United States	369	53	538	3 762
Canada	39	..	81	331
Mexico	130	138	39	165
North Asia				
Japan	264	53	81	225
Korea, Rep. of	27	4	4	25
China	92	453	95	177
Other Asia				
India	155	111	1 758	234
South America				
Argentina	14	70	47	418
Brazil	113	365	84	453
Venezuela	8	104	2	107
Australia	36	32	67	205

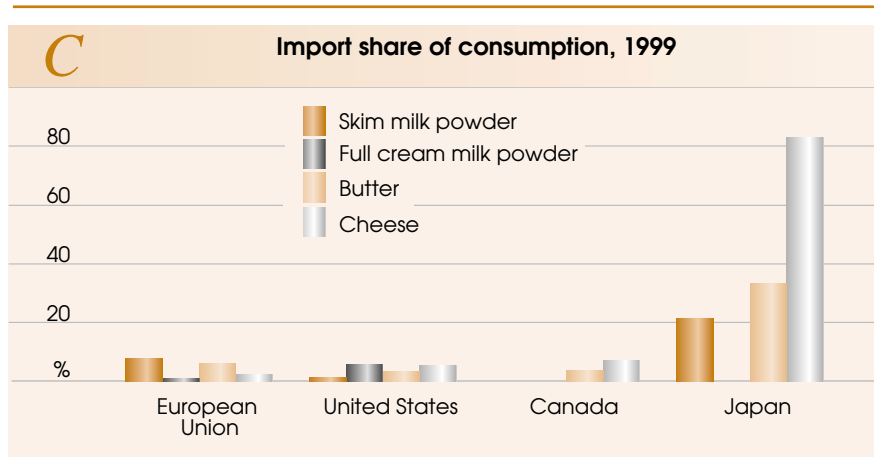
^a Includes imports.

Sources: Aglink database; FAO agricultural database; Australian Dairy Corporation (1999).

4 World imports of dairy products, 1999

	Skim milk powder	Full cream milk powder	Butter	Cheese
	kt	kt	kt	kt
European Union	75	0	105	145
North America	109	48	49	245
United States	5	3	18	195
Canada	0	0	3	23
Mexico	104	45	28	27
North Asia	153	150	71	226
Japan	56	0	27	187
Korea, Rep. of	3	0	0	14
China	45	60	15	9
Hong Kong	14	47	13	8
Chinese Taipei	35	43	15	8
South east Asia	314	164	54	30
Philippines	87	37	10	15
Malaysia	72	54	10	4
Singapore	40	20	17	6
Thailand	56	50	11	1
Indonesia	51	3	7	4
Central Asia	38	81	12	1
South America	89	252	21	42
Brazil	53	121	14	20
Venezuela	5	60	1	7
Central America	46	20	6	7
Former Soviet Union and eastern Europe	99	37	64	51
Russian Federation	90	35	55	40
Africa	157	150	59	42
Egypt	25	15	30	15
Algeria	97	117	9	18
Middle East	44	94	60	87
Saudi Arabia	26	68	28	55
World	1 193	1 157	615	1 169

Sources: Aglink database; FAO trade database; Australian Dairy Corporation (1999).

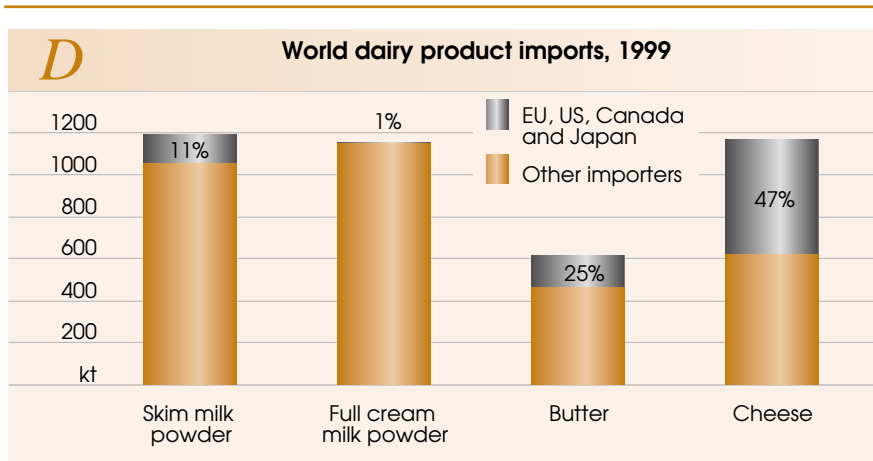


of cheese in that region was 6.4 million tonnes in 1999. Consumption of butter was 1.75 million tonnes. EU cheese imports, however, were only 145 000 tonnes, 2 per cent of consumption, while butter imports were only 105 000 tonnes, 6 per cent of consumption (table 4). The situation in the United States is similar. Only 5 per cent of the cheese and 3 per cent of the butter consumed in the United States was imported in 1999.

In contrast, Japan, with a small domestic dairy industry and a lower per person consumption of dairy products, imported 83 per cent of the cheese it consumed and 34 per cent of the butter it consumed in 1999 (figure C). Except for Japan, however, the large developed country markets tend to import only a small proportion of the dairy products they consume.

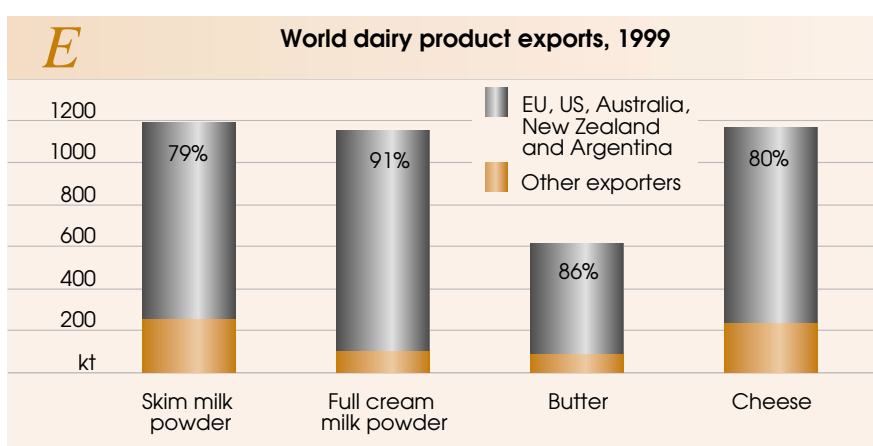
At the same time, the volume of dairy products imported by the major markets is large relative to world trade. The European Union, the United States, Japan and Canada accounted for 47 per cent of world cheese imports and 25 per cent of world butter imports in 1999 (figure D). Relatively little milk powder was imported by these four markets (Asia and Latin America are the main importers of powders). There are other large importers of cheese and butter including the Russian Federation, Egypt, Saudi Arabia, Mexico and Brazil. Nonetheless, in total value, the main developed country markets account for a significant proportion of world dairy product imports. It follows that any change in market access, particularly to developed country markets, will have a significant effect on the volume of product entering trade.

For exports, as for imports, the quantities entering trade are small relative to the quantities produced in the major markets. The five largest dairy



exporters are the European Union, the United States, Australia, New Zealand and Argentina (table 5). Together, these five exporters supplied around 80–90 per cent of the butter, cheese and milk powders entering world markets in 1999 (figure E).

Both Australia and New Zealand export a relatively large proportion of their production. Exports from the European Union and the United States, however, represent only a relatively small proportion of producers' total output. Nonetheless, because EU and the US exports, which in many cases are subsidised, form a relatively large proportion of world exports, any reduction in the volume of subsidised exports by the European Union and the United States is likely to have a significant effect on the market.



5 World exports of dairy products, 1999

	Skim milk powder	Full cream milk powder	Butter	Cheese
	kt	kt	kt	kt
Australia	220	126	104	175
New Zealand	219	335	254	256
European Union	253	441	160	447
North America a	256	11	6	66
United States	217	5	2	38
Canada	39	0	0	0
North Asia	8	29	6	2
China	3	10	0	1
Hong Kong	4	19	6	1
South east Asia	22	19	2	1
Singapore	10	5	1	1
Central Asia	2	0	1	0
South America	47	169	21	40
Argentina	29	149	9	20
Uruguay	18	16	13	18
Central America	0	1	0	3
Former Soviet Union and eastern Europe	116	18	14	48
Poland	115	5	5	30
Hungary	0	3	1	15
Africa	2	10	3	10
Middle East	1	1	8	7
World	1 193	1 157	615	1 169

a Includes Mexico.

Sources: Aglink database; FAO trade database; Australian Dairy Corporation (1999).

Domestic support policies

Dairy industries in the European Union, the United States, Canada and Japan are highly supported. That is, domestic prices are maintained well above world prices through a set of administrative arrangements that include barriers to imports, intervention buying and, if production exceeds consumption at the administered price, the use of export subsidies to dispose of the 'surplus' on the world market.

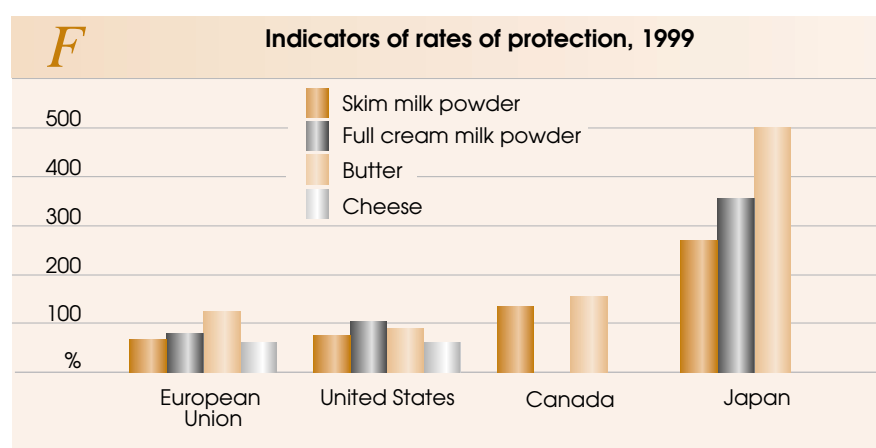
6 Indicators of rates of protection, 1999

		Skim milk powder	Full cream milk powder	Butter	Cheese
World price	US\$/t	1 301	1 508	1 435	1 915
European Union					
Wholesale price	US\$/t	2 184	2 720	3 232	3 108
Price differential ^a	%	68	80	125	62
United States					
Wholesale price	US\$/t	2 287	3 075	2 722	3 089
Price differential ^a	%	76	104	90	61
Canada					
Support price	C\$/t	4 525	na	5 467	na
Price differential ^a	%	134	..	156	..
Japan					
Wholesale price	¥/t	545 703	779 757	980 750	..
Price differential ^a	%	269	355	501	..

^a Defined as $100 \times [(\text{domestic wholesale price} \div \text{world price}) - 1]$. Average US\$ exchange rates for 1999 were C\$1.49 and ¥113.71.

Sources: Aglink database; FAO trade database; Australian Dairy Corporation (1999).

The difference between the domestic wholesale price for dairy products and the equivalent world price provides one indicator of the protection provided by these domestic marketing arrangements. As can be seen in table 6 and figure F, these differences are large. For example, in both the European Union and the United States, the domestic wholesale price of cheese was just over 60 per cent higher than the equivalent world price in 1999. Butter was also



highly protected both in the European Union (125 per cent) and the United States (90 per cent).

European Union

Internal prices for milk in the European Union are maintained at well above the milk price equivalent for internationally traded milk products by a combination of import restrictions, intervention buying and subsidised disposal of 'surplus' product. Quotas have been applied to milk production since 1984, in an attempt to control the surpluses of product generated by the high internal prices. UK and Danish studies indicate that internal support prices could be 20–30 per cent above those necessary to sustain production at the quota levels (Roberts et al. 1999).

Until 1994, restrictions on imports were primarily through variable levies that prevented entry of all but permitted quantities, predominantly a quota on New Zealand butter and quotas on specified cheeses from a number of countries. As a result of the WTO Agreement on Agriculture, the variable levies were converted to tariffs and imports of butter and cheese were made subject to tariff-quotas. The import tariff-quota for butter was set at 76 700 tonnes a year. For cheese, tariff-quotas were set at 15 300 tonnes in 1995 rising to 83 400 tonnes in 2000. Although this increase was large in percentage terms, overall access is still small relative to EU consumption of some 5.2 million tonnes a year and world trade (excluding intra-EU trade) of around 1 million tonnes a year (Roberts et al. 1999).

United States

As in the European Union, the US dairy industry is highly protected, with minimum support prices for milk being maintained at or above their administratively set levels through import restrictions, stock control and subsidised disposal of surplus product. As in the European Union, tariff-quotas on imports replaced import quotas at the conclusion of the Uruguay Round. In addition, regional 'marketing orders', that involve regional pricing and allocation of supplies, provide premiums for milk sales in specific domestic markets (Roberts et al. 1999).

Under the WTO Agreement on Agriculture, minimum access quotas on cheese imports were increased from 111 000 tonnes in 1995 to 140 000 tonnes in 2000. Again, this is small relative to US cheese consumption of around 3.7 million tonnes. Tariff-quotas on butter were set at 4000 tonnes in 1995

rising to 7000 tonnes in 2000, and tariff-quotas on butter oil at 3500 tonnes in 1995 rising to 6100 tonnes in 2000 (Roberts et al. 1999).

Assessment of the market situation

Two things are evident from this brief survey of the world dairy market and the dairy support arrangements in the major European Union and United States markets.

First, changes in the volume of imports or the volume of subsidised exports by the major dairy markets would have a significant impact on the world market. However, as these markets are so large, such changes would not necessarily greatly affect the quantities produced or consumed, or internal market prices for dairy products.

Second, the trade and support policies of the major players (as well as those of the minor players) distort world dairy trade. If not for these policies, the observed pattern of trade would be different. It could be argued that if support in the European Union and the United States were reduced, they would import more dairy products and export less. The flow-on effects to other producers could be significant. In some cases, countries that are presently small net importers (at lower prices) could, at higher prices, become small net exporters. Therefore, the current pattern of dairy trade should not be taken as 'fixed'. A somewhat different pattern of trade may evolve if world dairy markets were further liberalised.

Dairy trade policies

Policies influencing imports

In countries where domestic prices for dairy products are supported well above world prices, there is an obvious incentive on the part of wholesalers to import cheaper product from the world market. To prevent this happening, governments limit import market access. As discussed in the introductory chapter, under the WTO Agreement on Agriculture, quotas and other nontariff barriers in the major markets have been replaced by tariff-quotas (also known as tariff rate quotas, or TRQs). In some other markets, only tariffs apply. Some issues in the administration of tariff rate quotas are discussed in de Gorter and Sheldon (2000). The operation of tariff rate quotas in specific countries and country groups is discussed in Bureau and Tangermann (2000) (European Union), Skully (2000) (United States), Choi and Sumner (2000) (Japan and Korea), Barichello (2000) (Canada), Abbott and Paarlberg (1998) and Abbott and Morse (1999, 2000) (developing countries).

Three issues that will need to be addressed as part of efforts to further liberalise world dairy market trade are: how much tariffs and above-quota tariff rates can be further cut; how much tariff-quota access can be increased; and what observed quota underfill may indicate about underlying demand.

Tariffs and tariff rate quotas

Even after the WTO Agreement on Agriculture reductions, tariffs and above-quota tariff rates for dairy products remain extremely high. Above-quota rates in the European Union exceed 100 per cent (table 7). Those for the United States are in the 60–70 per cent range, while those set by Canada exceed 200 per cent. Rates set by Japan on butter and milk powders are also very high (80–140 per cent). The Republic of Korea has above-quota rates approaching 200 per cent for milk powders and nearly 75 per cent for butter, while Mexico has rates of over 130 per cent for milk powders and nearly as high for cheese.

Not only the developed countries but many developing or newly industrialised countries use tariff rate quotas for dairy products and impose high above-quota rates — for example, Venezuela, India and South Africa.

7 Dairy product import tariffs, 1999

	Skim milk powder	Full cream milk powder	Butter	Cheese
	%	%	%	%
European Union a	101.5	100.9	154.1	101.8
United States a	68.4	59.0	68.4	66.0
Canada	207.5	250.6	307.5	252.8
Mexico	132.1	132.1	20.0	125.0
North Asia				
Japan b	84.1	98.0	140.3	30.7
Korea, Rep. of	198.0	198.0	74.3	38.0
China	25.0	25.0	50.0	50.0
Hong Kong	0.0	0.0	0.0	0.0
Chinese Taipei	15.0	15.0	10.0	11.0
South east Asia				
Philippines	3.0	3.0	15.0	10.0
Malaysia	0.0	0.0	2.0	5.0
Singapore	0.0	0.0	0.0	0.0
Thailand	228.0	19.0	45.0	45.0
Indonesia	0.0	0.0	5.0	5.0
Central Asia				
India	60.0	60.0	45.6	45.6
Sri Lanka	20.0	20.0	30.0	30.0
Bangladesh	37.5	37.5	37.5	37.5
South America				
Argentina	27.0	27.0	19.0	19.0
Brazil	30.0	19.0	19.0	30.0
Uruguay	21.7	21.7	19.0	19.0
Venezuela	104.0	104.0	73.0	73.0
Peru b	55.0	55.0	25.0	25.0
Other countries				
Russian Federation	5.0	5.0	15.0	15.0
South Africa a	56.5	48.8	56.9	42.7
Egypt	5.0	25.0	7.5	10.0
Algeria	5.0	5.0	25.0	45.0
Saudi Arabia	12.0	12.0	12.0	12.0
Rest of world c	21.0	11.9	12.9	13.4

a *Ad valorem* equivalent of specific tariff rates — based on world prices (cif Rotterdam). b Sum of *ad valorem* and specific tariff rates. c Weighted average *ad valorem* rate for Morocco, Kuwait, United Arab Emirates, Viet Nam, Papua New Guinea, Mauritius, Pakistan, Senegal, Chile, Colombia, Guatemala, Jordan and the Dominican Republic.

Other countries use tariffs only rather than tariff rate quotas. Typically, however, tariff rates are still high, commonly in the 15–60 per cent range. Only a few south east Asian countries set tariff rates of less than 10 per cent.

Given that most countries currently restrict market access, if market access were increased, consumers in the highly protected countries would be able to buy cheaper imported product. Consumption would increase, import demand would rise, and the size of the market would expand significantly. In the first experiment described in chapter four (a simulated increase in market access), all applied tariff rates (both in-quota and above-quota) were cut by half across the board.

Tariff-quota access

Currently, tariff-quota access to the major markets is very small. Tariff-quota access to the European Union market for cheese and butter, for example,

8 Tariff-quota access for dairy products, 1999

	Skim milk powder	Full cream milk powder	Butter	Cheese
	kt	kt	kt	kt
European Union	63.4	..	84.7	102.1
North America				
United States	4.9	2.8	6.4	138.0
Canada	..	..	3.0	20.4
Mexico	120.0	a	..	9.4
North and central Asia				
Japan b	110.1	..	20.9	..
Korea, Rep. of	0.8	0.4	0.3	..
Thailand	49.4	..	..	..
India	10.0	a	..	..
Other countries				
Venezuela	0.1	75.4	2.0	3.2
South Africa	4.5	a	1.2	1.9
Australia	..	..	..	11.5
Total	363.2	78.7	118.5	286.5

a Skim milk powder tariff-quota includes access for full cream milk powder. **b** Tariff-quota for skim milk powder includes food (24 200 tonnes) and feed (85 900 tonnes) use. The skim milk powder food use access includes 80 per cent of ALIC (Agriculture and Livestock Industries Corporation) designated import tariff rate quota (80 per cent of 137 200 tonnes converted to skim milk powder tonnes — 16 900 tonnes). The remaining 20 per cent is typically used for whey (20 per cent of 137 200 tonnes converted to whey tonnes — 4000 tonnes). Japan's butter tariff rate quota includes access for edible fats.

was limited to 102 100 tonnes and 84 700 tonnes respectively in 1999 (table 8). This represented only a fraction of European Union cheese and butter consumption in 1999 (table 9).

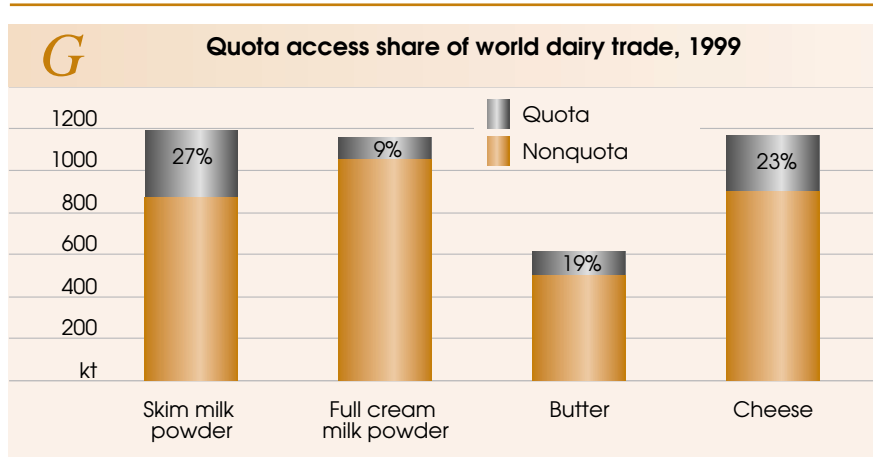
In percentage terms, however, tariff-quota access represents more than a small share of world trade in dairy products: 27 per cent of world trade in skim milk powder, 23 per cent of world trade in cheese, 19 per cent of world trade in butter, and 9 per cent of world trade in full cream milk powder in 1999 (figure G).

9 Market access for dairy products, 1999

		Skim milk powder	Full cream milk powder	Butter	Cheese
European Union					
Tariff-quota access	kt	63	..	85	102
Imports	kt	75	0	105	145
Domestic disappearance	kt	982	507	1 755	6 417
<i>Import market share</i>	%	8	0	6	2
United States					
Tariff-quota access	kt	5	3	6	138
Imports	kt	5	3	18	195
Domestic disappearance	kt	369	53	538	3 762
<i>Import market share</i>	%	1	5	3	5
Canada					
Tariff-quota access	kt	..	..	3	20
Imports	kt	0	0	3	23
Domestic disappearance	kt	39	..	81	331
<i>Import market share</i>	%	0	..	4	7
Japan					
Tariff-quota access	kt	110	..	21	..
Imports	kt	56	0	27	187
Domestic disappearance	kt	264	53	81	225
<i>Import market share</i>	%	21	0	34	83
World total					
Tariff-quota access ^a	kt	322	104	114	266
Total world imports	kt	1 193	1 157	615	1 169
<i>Proportion subject to quota</i>	%	27	9	19	23

^a Sum of European Union, United States, Canada, Japan, Korea, Mexico, India, Australia, South Africa, Thailand and Venezuela.

Sources: Aglink database; FAO agricultural database; Australian Dairy Corporation (1999).



Quota underfill

It is well recognised that the expanded quota access for agricultural products agreed to in the Uruguay Round for many agricultural commodities has been underfilled, often substantially (Thompson, Liapis and Sckokai 1999; Roberts et al. 1999). While countries were obliged to provide a minimum level of access by establishing tariff rate quotas for products that were previously protected by nontariff barriers, there was no requirement that the quotas be completely filled. Thompson et al. (1999) suggest that while the fill rate may be a reasonable indicator of market access, it has its limitations. However, the economic incentive for importers to fill the quotas is large. In 1999, for example, the wholesale price of cheese in the United States was higher than the indicative price of cheese imported within quota by US\$983 a tonne. The price for full cream powdered milk was nearly US\$1500 a tonne higher (table 10).

With a large economic incentive to import until quota is filled, it is more likely that underfill reflects other nontariff barriers such as quota administration, the method of allocating quota, the presence of state trading enterprises or other factors, rather than weak demand for imports. The issues in quota underfill are discussed more fully in appendix B. The examination presented there on fill rates for dairy products indicates that with few exceptions fill rates have been close to 100 per cent recently.

The implication is that any expansion of quota access arising from the next WTO round by itself will not be sufficient to ensure a real increase in market access. Other factors impeding access, such as tariff administration, will also need to be addressed effectively.

10 Indicators of quota profits, 1999

		Skim milk powder	Full cream milk powder	Butter	Cheese
World price	US\$/t	1 301	1 508	1 435	1 915
European Union					
Wholesale price	US\$/t	2 184	2 720	3 232	3 108
In quota import price	US\$/t	1 861	3 188	2 459	2 618
<i>Price difference a</i>	<i>US\$/t</i>	<i>324</i>	<i>-468</i>	<i>773</i>	<i>490</i>
United States					
Wholesale price	US\$/t	2 287	3 075	2 722	3 089
In quota import price	US\$/t	1 334	1 578	1 558	2 106
<i>Price difference a</i>	<i>US\$/t</i>	<i>953</i>	<i>1 497</i>	<i>1 163</i>	<i>983</i>
Canada					
Support price	C\$/t	4 525	na	5 467	7 264
In quota import price	C\$/t	5 918	7 822	2 267	2 874
<i>Price difference a</i>	<i>C\$/t</i>	<i>-1 394</i>	<i>..</i>	<i>3 199</i>	<i>4 390</i>
Japan					
Wholesale price	¥/t	545 703	779 757	980 750	..
<i>Price difference a</i>	<i>%</i>	<i>269</i>	<i>355</i>	<i>501</i>	<i>..</i>

a Derived as domestic wholesale price *less* world price *plus* in-quota tariff. Average US\$ exchange rates for 1999 were C\$1.49 and ¥113.71. **na** Not applicable.

Sources: Aglink database; FAO agricultural database; Australian Dairy Corporation (1999).

Policies influencing exports

Export subsidies

The use of export subsidies by the European Union, the world's largest exporter of dairy products, significantly depresses world market prices. The European Union subsidises practically all its milk powder and butter exports, as well as a substantial proportion of its cheese exports. The United States also subsidises dairy product exports, though not to the same extent as the European Union. While nearly all US skim milk powder exports are subsidised, only small volumes of other US dairy products are exported with subsidy.

Subsidised exports by the European Union and United States represent a significant proportion of total trade (figure H). In 1998-99, as much as 35 per cent of full cream milk powder, 30 per cent of skim milk powder, 27 per cent of butter and 20 per cent of cheese entering world trade was subsidised (table 11).

The size of the export subsidies are also substantial. According to notifications to the WTO, the average export subsidy applied to skim milk powder exports in 1998-99 was the equivalent of 42 per cent and 44 per cent respectively of the average wholesale domestic price of the product. For EU butter, the differential amounted to 53 per cent (table 12).

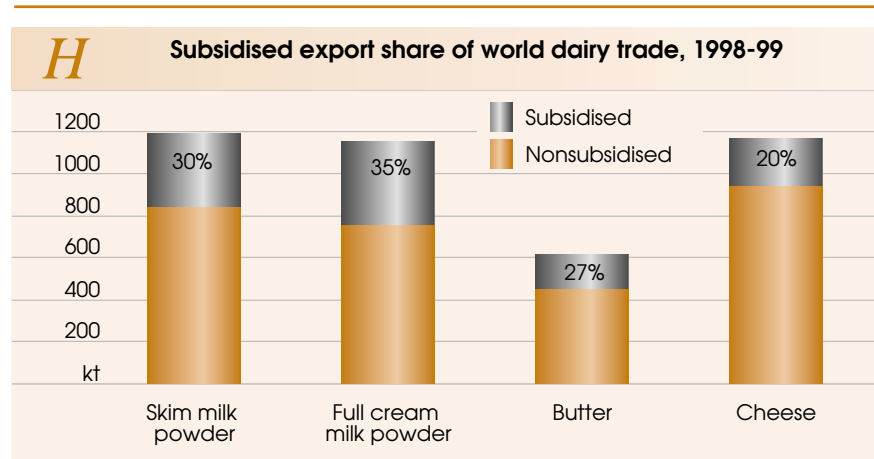
In total, the volume of dairy products exported by the European Union and the United States using export subsidies represents a relatively small proportion of total dairy product output (10 per cent in the European Union and 2

11 EU and US notifications on subsidised exports, 1998-99 ^a

	Skim milk powder	Other milk products ^b	Butter	Cheese
	kt	kt	kt	kt
European Union ^c				
Total exports	200	1 153	151	321
Food aid	3	1	0	0
Subsidised export limit	298	1 049	435	363
Subsidised exports	222	951	165	226
Total production	1 161	944	1 856	6 699
<i>Share of production exported with subsidy (%)</i>	19	..	9	3
United States				
Total exports	79	6	3	22
Food aid	0	0	0	0
Subsidised export limit	84	5	30	3
Subsidised exports	130	5	0	3
Total production	625	534	530	3 595
<i>Share of production exported with subsidy (%)</i>	21	..	0.1	0.1
Total ^d				
Total world exports	1 193	1 157	615	1 169
Subsidised exports	351	956 ^e	166	229
<i>Share of exports subsidised (%)</i>	30	35 ^f	27	20

^a Notification year is 1 July to 30 June. Exports in this table are 1999 calendar year exports. ^b 'Other milk products' include full cream milk powder, whey, butter milk powder, etc. Total production and world trade volumes are for full cream milk powder only. ^c Total butter exports in product weight; subsidised exports of butter include oil expressed in butter equivalents. ^d Other countries also use export subsidies. ^e Sum of EU and US subsidised export notifications only. ^f Subsidised exports of full cream milk powder only from European Union as a proportion of world full cream milk powder exports.

Sources: EU and US notifications to the WTO; Aglink database.



per cent in the United States). However, relative to total world dairy exports, this volume of subsidised product is large — 28 per cent of world dairy exports in 1999.

The size of the export subsidies and the high proportion of world dairy trade to which subsidies are applied both suggest that world prices could increase substantially if significant reductions in the use of export subsidies can be negotiated in the current WTO agricultural negotiations.

12 EU and US notifications on export subsidy rates for 1998-99 ^a

	Skim milk powder	Other milk products ^b	Butter	Cheese
	US\$/t	US\$/t	US\$/t	US\$/t
European Union ^b				
Wholesale price	2 228	2 834	3 577	3 296
Subsidy notification	947	873	1 891	721
Subsidised export price	1 281	1 961	1 686	2 575
<i>Subsidy rate (%) ^c</i>	<i>42</i>	<i>31</i>	<i>53</i>	<i>22</i>
United States				
Wholesale price	2 333	3 301	3 723	3 347
Subsidy notification	1 027	1 386	1 144	1 334
Subsidised export price	1 307	1 915	2 578	2 014
<i>Subsidy rate (%) ^c</i>	<i>44</i>	<i>42</i>	<i>31</i>	<i>40</i>

^a Notification year is 1 July to 30 June. ^b 'Other milk products' include full cream milk powder, whey, butter milk powder, etc. Wholesale price and subsidised export price are for full cream milk powder. ^c Derived as subsidy notification ÷ domestic wholesale price.

Sources: EU and US Notifications to the WTO, Aglink database.

Implications of world dairy market reform

Dairy model

The impact of changes in international trade policy were estimated by means of a structural model of the world dairy industry based on the OECD's AGLINK model (OECD 1999). The original model was enhanced by, among other things, a more extensive country coverage and representation of world dairy policy. The structure of the model reflects the features of dairy industries and international trade outlined earlier. The enhanced model replicates the trade and domestic support policies that have an impact on world dairy markets. More detail of the model of world dairy markets used in this analysis is presented in appendix A.

Two policy experiments were carried out using the model to estimate the effects of liberalising world dairy trade. The first experiment simulated the impact of an effective multilateral increase in access to the world's dairy markets. The second simulated the impacts of reducing the volume of subsidised exports from the European Union and the United States.

The experiments were designed to simply isolate the effects on world dairy markets of each trade policy reform. At the time, 1999 was the most recent year of historical data and consequently provided the baseline against which the trade liberalising scenarios were compared. Consequently, the simulation results reflect market conditions and settings in that year and should be interpreted as how dairy markets would have looked in 1999 if the trade policy environment had been more liberal. A prospective baseline was not considered in this analysis. Having a base of actual data avoids disagreements over the setting of future dairy policy, such as Agenda 2000, and their impact on world dairy markets.

The model includes a representation of both EU intervention stock holding for butter and skim milk powder as well as the US price support system for cheese, butter and skim milk powder. In the simulation experiments, the model simultaneously determines imports under tariff or tariff rate quota regimes, the volume of subsidised exports and both government and private stock holding. For all experiments it was assumed that domestic support policies remained fixed at their level in 1999.

In the tables of results that follow the immediate impact of the policy change is reported. Within one year, milk and dairy product supply changes are small because expansion of dairy milking herds is limited by biological constraints. Clearly, in subsequent years producers will respond to higher returns by increasing milk production. This will temper any initial price rise and lead to increased consumption and growth in trade. An indication of the effect on world dairy markets of allowing for some production response (estimated at approximately three years) is also presented in the simulation results. More detailed simulation results for each country and region in the model are presented in appendix C.

It is important to note that even though the expansion of milk production and subsequent rise in the output of dairy products will temper the initial increase in world dairy product and milk prices, more liberal trade policies by themselves lead to permanently higher world dairy prices. Also, it should be noted that the estimated impacts depend on the supply responsiveness used in the AGLINK model as well as those used in the new specifications of supply in Australia, New Zealand and the ‘rest of world’.

A permanent move to more liberal trade policies may alter producers’ expectations around the world, to such an extent that there is a larger structural change in dairy product supply in traditional as well as small exporting countries than estimated in this analysis. Once again, this would only serve to temper the estimated longer run increase in world prices and alter the distribution of the gains from trade reform, among exporting countries.

Analysis and results – increased market access

The increase in market access is simulated by multilaterally doubling all tariff rate quotas and halving applied tariff rates (both in-quota and above-quota) from their level in 1999, for cheese, butter and the milk powders.

Since the objective of the experiment is to estimate the impact of an effective increase in market access, it was assumed that new tariff rate quotas were established that applied to the broad product categories. For instance, a new tariff rate quota for cheese could be used for any type of cheese product. It was also assumed that no conditions would be imposed on access, with the tariff rate quotas open to all potential suppliers on a first-come, first-serve basis. During the Uruguay Round negotiations a similar approach was taken to establish several new unconditional tariff rate quotas.

Even though the quotas double in the experiment, imports under the tariff rate quota do not necessarily double. Rather, the extent to which the new tariff rate quotas are fully utilised is determined within the model by relative changes in the price of the domestic product and the landed price of the substitute imported product (see appendix A).

For the increased market access experiment, the volume of subsidised exports, also determined simultaneously in the model, is subject to the WTO value and volume constraints that applied in 1998-99. The volume constraint for the United States and the European Union also included the rollover credits that were available in that year on the volume that could be subsidised. The European Union, in particular, had substantial rollover credits for dairy products that were not used in that year.

Expected effects of increasing market access

The immediate impact of a multilateral increase in market access is to increase the demand for manufactured dairy product and, consequently, world prices for all dairy products will rise. For the experiment considered (a doubling of all tariff rate quotas and a halving of all tariffs), world prices are expected to rise significantly because the simulated increase in demand is large compared with the volume of product that is traded and because milk production is unresponsive in the very short term. The value of trade should also increase.

In markets that currently are highly protected either by tariffs or tariff rate quotas, consumers would be able to buy more and cheaper priced imports. The average price of dairy products should fall, and total consumption of dairy products in these countries should increase, in the absence of any change in income, tastes or the prices of nondairy substitutes. The increase in imports in the highly protected markets will be small relative to the total size of these markets and, consequently, the fall in domestic market prices for dairy products should be small compared with the corresponding rise in world prices.

In countries where tariffs on imports are lower, such as in some Asian countries, the increase in world prices could be relatively larger than the concurrent fall in tariff rates, and the landed price of imports that consumers will face will be higher and imports will fall.

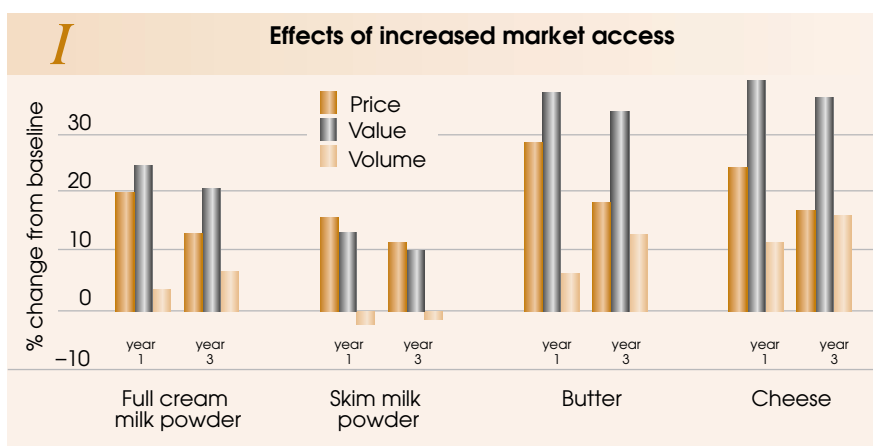
All exporters of dairy products will face increased export demand, including the highly protected markets and nontraditional exporting countries. In

exporting countries that have little or no protection, like New Zealand, Australia and Argentina, higher domestic prices reduce consumption and that product is diverted to export markets. If higher world prices are passed on to domestic prices in countries that are traditionally small exporters of dairy products, some domestically produced product also will be diverted from consumption to export markets.

Estimated impacts of increasing market access

Initially, when market access is increased, the world prices of cheese, butter and milk powders increase by 16–29 per cent above the baseline (tables 13–16). Even with some response in milk production, prices are still 12–19 per cent higher. These estimated changes are well within the bounds of price movements recorded during the 1990s and most recently.

The increase in market access results in a 39 per cent increase in the value of world cheese trade, with both prices and export volumes higher. The value of butter trade increases by 37 per cent and the value of skim milk powder by 25 per cent, mainly in response to the higher prices. For full cream milk powder, the increase in price more than offsets a slight fall in volume, so the value of trade rises by nearly 14 per cent. Over time, supply response tempers the initial price rise, which encourages further expansion of trade. For example, after the supply response the value of world cheese trade is still 36 per cent higher than in the baseline, and the value of world butter trade still 34 per cent higher (figure I).



13 Impact of increased market access for skim milk powder

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	132	27	20.2	17	13.2
	ECU/100 kg	124	25	20.2	16	13.2
Imports	kt	1 193	45	3.7	81	6.8
Value of trade	US\$m	1 572	388	24.7	327	20.8
European Union (15)						
Production sold domestically	kt	907	-25	-2.7	-25	-2.7
Imports	kt	75	59	79.3	63	83.4
Total consumption	kt	982	35	3.5	38	3.8
Exports	kt	254	21	8.2	32	12.7
Stocks	kt	195	17	-	10 a	-
Import price	ECU/100 kg	210	-52	-24.6	-54	-25.8
Producer price	ECU/100 kg	211	-2	-0.9	-3	-1.2
United States						
Production sold domestically	kt	364	-3	-0.9	-4	-1.0
Imports	kt	5	5	94.3	5	96.3
Total consumption	kt	369	1	0.4	1	0.3
Exports	kt	217	6	2.6	3	1.6
Stocks	kt	113	-3	-	-1 a	-
Import price	US\$/100 kg	199	-28	-14.1	-28	-14.0
Wholesale price	US\$/100 kg	228	1	0.2	1	0.4
Japan						
Imports	kt	56	20	36.0	22	38.4
Australia						
Production sold domestically	kt	36	0	-1.3	-1	-1.8
Imports	kt	3	0	0.0	0	0.0
Total consumption	kt	40	0	-1.2	0	-1.6
Exports	kt	220	1	0.6	12	5.6
Gross value of production	A\$m	575	55	9.6	103	18.0
New Zealand						
Total consumption	kt	8	0	-2.3	0	-3.1
Exports	kt	219	0	0.2	10	4.6
Gross value of production	NZ\$m	600	59	9.8	111	18.5
Argentina						
Total consumption	kt	14	-1	-4.3	0	-0.7
Exports	kt	29	-1	-2.8	-5	-16.2
Gross value of production	m pesos	106	2	1.8	-11	-10.3
China						
Imports	kt	45	-4	-9.3	-1	-1.9
Rest of Asia b						
Imports	kt	387	-14	-3.6	-2	-0.6

a Change in stocks from year 2. b Asia excluding Japan, Korea and China. All volumes in this table are rounded to the nearest 1000 tonnes.

14 Impact of increased market access for full cream milk powder

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	152	24	16.0	18	11.8
	ECU/100 kg	143	23	16.0	17	11.8
Imports	kt	1 157	-25	-2.2	-16	-1.3
Value of trade	US\$m	1 756	238	13.5	181	10.3
European Union (15)						
Production sold domestically	kt	502	-4	-0.8	-5	-1.0
Imports	kt	5	3	51.1	3	57.8
Total consumption	kt	507	-1	-0.3	-2	-0.5
Exports	kt	441	-24	-5.3	-15	-3.4
Stocks	kt	-	-	-	-	-
Import price	ECU/100 kg	271	-51	-18.7	-56	-20.7
Producer price	ECU/100 kg	257	-8	-3.2	-7	-2.8
United States						
Production sold domestically	kt	55	0	0.0	0	0.0
Imports	kt	3	2	71.4	2	83.4
Total consumption	kt	53	2	3.8	2	4.5
Exports	kt	5	0	0.0	0	0.0
Stocks	kt	-	-	-	-	-
Import price	US\$/100 kg	218	-39	-17.8	-45	-20.8
Wholesale price	US\$/100 kg	-	-	-	-	-
Japan						
Imports	kt	-	-	-	-	-
Australia						
Production sold domestically	kt	32	0	-0.7	0	-1.1
Imports	kt	6	0	0.0	0	0.0
Total consumption	kt	38	0	-0.6	0	-0.9
Exports	kt	126	-1	-0.7	0	-0.3
Gross value of production	A\$m	418	24	5.8	41	9.8
New Zealand						
Total consumption	kt	1	0	0.0	0	0.0
Exports	kt	335	-2	-0.6	2	0.6
Gross value of production	NZ\$m	1 067	77	7.2	139	13.1
Argentina						
Total consumption	kt	70	-1	-2.1	0	0.1
Exports	kt	149	0	0.0	-3	-1.9
Gross value of production	m pesos	649	11	1.7	-9	-1.3
China						
Imports	kt	60	-3	-4.4	0	-0.6
Rest of Asia a						
Imports	kt	323	-6	-1.7	-4	-1.3

a Asia excluding Japan, Korea and China. All volumes in this table are rounded to the nearest 1000 tonnes.

15 Impact of increased market access for butter

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	148	42	28.7	27	18.5
	ECU/100 kg	139	40	28.7	26	18.5
Imports	kt	615	40	6.5	81	13.1
Value of trade	US\$m	908	337	37.1	309	34.0
European Union (15)						
Production sold domestically	kt	1 650	-9	-0.6	-9	-0.5
Imports	kt	105	83	79.1	81	76.8
Total consumption	kt	1 755	74	4.2	72	4.2
Exports	kt	160	8	5.2	14	9.0
Stocks	kt	129	4	-	0 ^a	-
Import price	ECU/100 kg	306	-74	-24.0	-71	-23.2
Producer price	ECU/100 kg	369	-10	-2.6	-10	-2.7
United States						
Production sold domestically	kt	520	0	0.0	-1	-0.1
Imports	kt	18	4	22.9	5	27.3
Total consumption	kt	538	4	0.8	4	0.8
Exports	kt	2	-1	-56.6	-1	-31.2
Stocks	kt	20	1	-	0 ^a	-
Import price	US\$/100 kg	276	-64	-23.1	-63	-22.9
Wholesale price	US\$/100 kg	276	-6	-2.0	-5	-1.7
Japan						
Imports	kt	27	27	100.0	28	103.9
Australia						
Production sold domestically	kt	67	-1	-2.0	-2	-2.5
Imports	kt	6	0	0.0	0	0.0
Total consumption	kt	73	-1	-1.4	-2	-2.7
Exports	kt	104	2	1.7	8	7.7
Gross value of production	A\$m	495	53	10.7	88	17.7
New Zealand						
Total consumption	kt	31	-1	-3.0	-1	-3.9
Exports	kt	254	3	1.0	11	4.4
Gross value of production	NZ\$m	1 174	160	13.7	244	20.8
Argentina						
Total consumption	kt	47	-4	-8.3	-2	-4.2
Exports	kt	9	3	37.2	0	-0.5
Gross value of production	m pesos	155	15	10.0	3	1.6
China						
Imports	kt	15	2	-13.8	0	2.3
Rest of Asia ^b						
Imports	kt	94	-22	-23.5	-11	-12.2

^a Change in stocks from year 2. ^b Asia excluding Japan, Korea and China. All volumes in this table are rounded to the nearest 1000 tonnes.

16 Impact of increased market access for cheese

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	175	43	24.5	30	17.1
	ECU/100 kg	165	40	24.5	28	17.1
Imports	kt	1 169	138	11.8	191	16.3
Value of trade	US\$m	2 052	805	39.2	744	36.3
European Union (15)						
Production sold domestically	kt	6 272	-65	-1.0	-48	-0.8
Imports	kt	145	97	66.6	98	67.6
Total consumption	kt	6 417	31	0.5	50	0.8
Exports	kt	447	79	17.7	58	13.1
Stocks	kt	126	11	-	-2 a	-
Import price	ECU/100 kg	311	-71	-22.9	-72	-23.0
Producer price	ECU/100 kg	452	-7	-1.6	-9	-2.0
United States						
Production sold domestically	kt	3 510	-13	-0.4	-24	-0.7
Imports	kt	195	70	35.9	95	48.6
Total consumption	kt	3 705	57	1.5	71	1.9
Exports	kt	38	6	14.6	4	10.9
Stocks	kt	282	2	-	0 a	-
Import price	US\$/100 kg	272	-43	-15.7	-56	-20.7
Wholesale price	US\$/100 kg	314	-4	-1.3	-4	-1.3
Japan						
Imports	kt	187	-1	-0.3	2	1.3
Australia						
Production sold domestically	kt	175	-8	-4.3	-11	-6.3
Imports	kt	31	-2	-6.1	-1	-2.2
Total consumption	kt	205	-9	-4.6	-12	-5.7
Exports	kt	175	8	4.8	27	15.6
Gross value of production	A\$m	1 304	127	9.7	258	19.8
New Zealand						
Total consumption	kt	38	-1	-2.5	-1	-3.7
Exports	kt	256	2	0.8	19	7.4
Gross value of production	NZ\$m	873	98	11.2	218	25.0
Argentina						
Total consumption	kt	418	-16	-3.9	-9	-2.2
Exports	kt	20	21	106.6	31	155.7
Gross value of production	m pesos	944	146	15.4	123	13.0
China						
Imports	kt	9	0	0.0	0	0.0
Rest of Asia b						
Imports	kt	47	-5	-10.3	-3	-6.6

a Change in stocks from year 2. b Asia excluding Japan, Korea and China. All volumes in this table are rounded to the nearest 1000 tonnes.

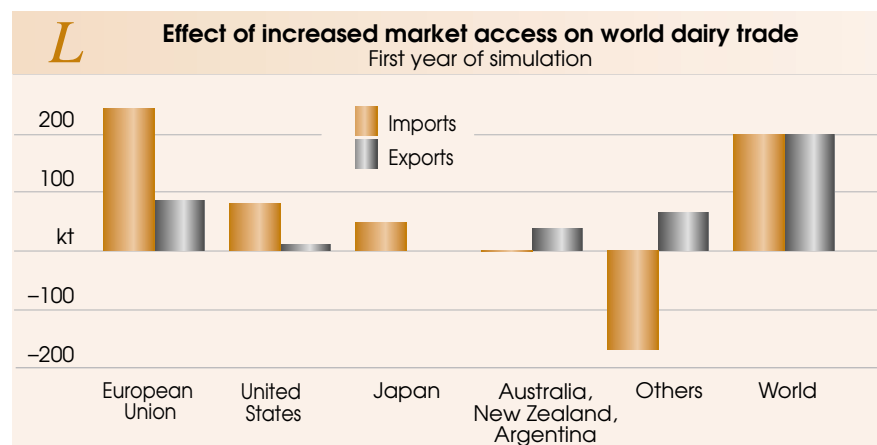
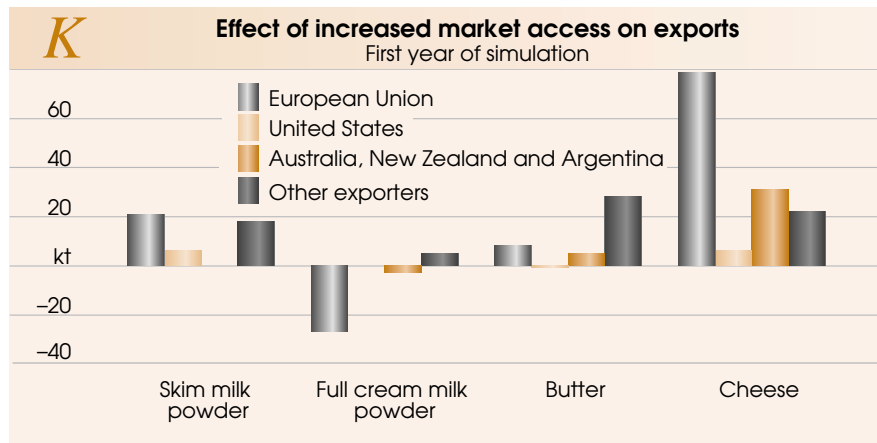
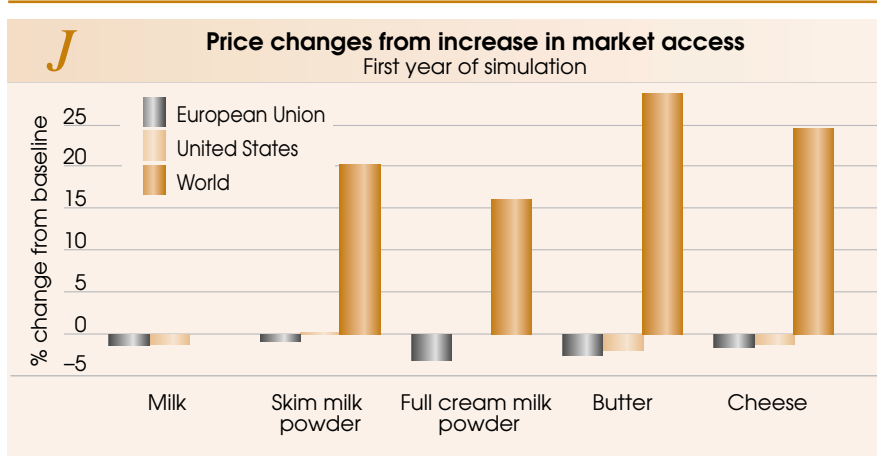
The key to understanding these results lies in a detailed examination of results for the European Union and the United States. In these markets, the increase in quota access means that consumers are able to access greater quantities of imports than before. Also, the reductions in tariffs mean that these imports are more cheaply priced than before. EU imports of cheese rise by 97 000 tonnes (67 per cent), consumption of domestically produced product falls by 65 000 tonnes (1 per cent) and EU consumption of cheese overall rises by 32 000 tonnes (0.5 per cent). In the United States, imports of cheese rise by 70 000 tonnes (36 per cent), consumption of domestically produced product falls by 13 000 tonnes (0.4 per cent) and consumption of cheese overall rises by 57 000 tonnes (1.5 per cent).

Once world producers have responded to these higher prices and cheese supplies worldwide have increased, the world cheese price remains higher than in the base although lower than in the first year of the simulation, and EU and US cheese imports, principally US imports, continue to rise.

The large increase in import demand for cheese by the European Union and the United States is the principal driver of the initial US\$430 a tonne increase in world cheese prices. The increase in world prices in turn reduces consumption in other markets. Some importing countries reduce cheese imports — for example, ‘Rest of Asia’ (Asia *less* Japan, China and Korea) reduces cheese imports by 5000 tonnes (10 per cent) — while some exporting countries such as Australia, New Zealand and Argentina increase exports.

For cheese in particular, responding to relative movements in world dairy product prices, these exporting countries are also able to increase cheese exports by reallocating existing milk supplies from the production of milk powder and butter to production of cheese. In Japan, cheese consumers could stand to benefit from the cut in cheese tariffs. In this simulation, initially the price reducing effect of cutting the tariff is offset by the rise in cheese prices worldwide, and Japanese cheese imports fall by 0.3 per cent. However, when there is a supply response, Japanese cheese imports are 1.3 per cent higher than in the baseline. Consumers in Japan also gain from lower prices for other products, particularly butter.

The effects of increasing market access on milk producers in the European Union and the United States appear manageable. In the first year of the simulation, the average farm gate milk prices in the European Union and United States are estimated to fall by less than 1.5 per cent in the first year after the reforms (figure J). The largest fall in manufactured dairy product prices



observed is around 3 per cent, for full cream milk powder in the European Union.

EU and US cheese exporters are also able to benefit from the increase in the volume and value of dairy product trade. For example, EU cheese exports rise by 79 000 tonnes (18 per cent) and US cheese exports by 6000 tonnes (15 per cent) — figure K. Overall, world trade in dairy products rose by nearly 200 000 tonnes (5 per cent), with the European Union and the United States supplying around half of these exports (figure L).

Analysis and results – reduction in subsidised exports

The reduction in the volume of subsidised exports from the European Union and the United States is simulated as a halving of the maximum volume of dairy products permitted to be exported with subsidy. This constraint was imposed in the experiment by halving the volume of exports notified to the WTO that were actually subsidised in the 1998-99 marketing year. This means the maximum volumes that could be exported with subsidy by the European Union were constrained to 88 000 tonnes of cheese, 138 000 tonnes of butter, 101 000 tonnes of skim milk powder and an estimated 201 000 tonnes of full cream milk powder.

In the United States, skim milk powder exports are effected the most, with a limit of 51 000 tonnes available for export with subsidy. Only minimal reduction in the constraint on the volume of subsidised exports of butter and cheese are simulated because actual subsidised exports of both were small in 1998-99.

Even though the maximum volume of exports with subsidy is halved in the experiment, the simulated volume of subsidised exports is determined within the world dairy model by relative changes in the subsidised price of the domestic product and the world price of the competing internationally traded product.

For the export subsidy experiment, the tariff rate quota arrangements and tariff rates were left unchanged from their setting in 1999 and imports were determined simultaneously in the model.

Expected effects of reducing the volume of subsidised exports

Given the structure of the world dairy market, if export subsidies by the United States and the European Union were reduced, US and EU dairy exports would be expected to fall, reducing supplies on the world market in the short term. This would be expected to put upward pressure on world dairy product prices, reducing consumption of dairy products in most markets.

In the European Union and the United States, however, for dairy products where internal market prices currently exceed administered levels, the reduction in export demand would be expected to reduce internal market prices, some product would be diverted from exports to the domestic market and, consequently, consumption would be expected to increase. Where internal market prices become close to support levels, or reach support levels, stocks will rise in line with domestic support programs.

Estimated impacts of reducing the volume of subsidised exports

Halving the maximum volume of subsidised exports from the European Union and the United States reduces the volume of product entering world trade overall — cheese by 67 000 tonnes (6 per cent of world trade), butter by 65 000 tonnes (11 per cent), skim milk powder by 95 000 tonnes (8 per cent) and full cream milk powder by 159 000 tonnes (14 per cent) — as shown in tables 17–20. In contrast with the previous experiment (increased market access) when the key developed country markets of the European Union and the United States were the main price drivers through their increased import demand for cheese (and butter, to some extent), in this experiment (reducing the volume of subsidised exports), the main focus was on EU and US milk powder exports and the importers of those milk powders.

In the simulation, reducing the volume of subsidised EU and US dairy product exports meant reducing EU subsidised exports of cheese, butter and milk powder by 528 000 tonnes and US subsidised exports of dairy products (principally skim milk powder) by 54 000 tonnes. Accordingly, the largest relative impact on world prices as exportable supplies of subsidised dairy products are cut is on the world prices of milk powders. The price of skim milk powder rises by 27 per cent and the price of full cream milk powder rises by 32 per cent. World prices of cheese and butter rise by almost 16 per cent and 14 per cent respectively.

17 Impact of reduced subsidised exports of skim milk powder

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	132	36	27.2	22	16.5
	ECU/100 kg	124	34	27.2	20	16.5
Imports	kt	1 193	-95	-8.0	-69	-5.7
Value of trade	US\$m	1 572	268	17.0	154	9.8
European Union (15)						
Production sold domestically	kt	907	13	1.4	11	1.2
Imports	kt	75	-2	-2.4	-1	-1.5
Total consumption	kt	982	11	1.1	10	1.0
Exports	kt	254	-95	-37.5	-97	-38.3
Stocks	kt	195	141	-	118 ^a	-
Import price	ECU/100 kg	210	-2	-0.8	-2	-0.9
Producer price	ECU/100 kg	211	-5	-2.1	-5	-2.3
United States						
Production sold domestically	kt	364	2	0.5	2	0.5
Imports	kt	5	0	-7.8	0	-4.8
Total consumption	kt	369	1	0.3	1	0.4
Exports	kt	217	-43	-19.8	-46	-21.2
Stocks	kt	113	41	-	42 ^a	-
Import price	US\$/100 kg	199	0	-0.2	0	-0.2
Wholesale price	US\$/100 kg	228	-1	-0.6	-1	-0.6
Japan						
Imports	kt	56	-5	-9.3	-3	-5.7
Australia						
Production sold domestically	kt	36	-1	-1.7	-1	-2.2
Imports	kt	3	0	0.0	0	0.0
Total consumption	kt	40	-1	-1.6	-1	-2.0
Exports	kt	220	1	0.4	11	5.0
Gross value of production	A\$m	575	72	12.5	119	20.6
New Zealand						
Total consumption	kt	8	0	-3.0	0	-3.8
Exports	kt	219	-2	-0.8	-7	-3.2
Gross value of production	NZ\$m	600	73	12.1	79	13.2
Argentina						
Total consumption	kt	14	-2	-14.1	-1	-9.1
Exports	kt	29	2	8.3	9	31.3
Gross value of production	m pesos	106	21	20.2	33	31.5
China						
Imports	kt	45	-13	-28.5	-8	-17.5
Rest of Asia ^b						
Imports	kt	387	-30	-7.8	-23	-5.9

^a Change in stocks from year 2. ^b Asia excluding Japan, Korea and China. All volumes in this table are rounded to the nearest 1000 tonnes.

18 Impact of reduced subsidised exports of full cream milk powder

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	152	48	31.5	24	15.7
	ECU/100 kg	143	45	31.5	23	15.7
Imports	kt	1 157	-159	-13.8	-69	-6.0
Value of trade	US\$m	1 756	235	13.4	154	8.8
European Union (15)						
Production sold domestically	kt	502	23	4.5	19	3.8
Imports	kt	5	-3	-68.5	-2	-45.0
Total consumption	kt	507	19	3.8	17	3.4
Exports	kt	441	-190	-43.2	193	-43.7
Stocks	kt	-	-	-	-	-
Import price	ECU/100 kg	271	41	15.0	20	7.5
Producer price	ECU/100 kg	257	-41	-15.7	-39	-15.1
United States						
Production sold domestically	kt	50	3	5.0	3	5.0
Imports	kt	3	0	0.0	0	0.0
Total consumption	kt	53	-3	-4.7	-3	-4.7
Exports	kt	5	-3	-50.0	-3	-50.0
Stocks	kt	-	-	-	-	-
Import price	US\$/100 kg	218	0	-0.2	0	-0.2
Wholesale price	US\$/100 kg	-	-	-	-	-
Japan						
Imports	kt	-	-	-	-	-
Australia						
Production sold domestically	kt	32	0	-1.3	0	-1.5
Imports	kt	6	0	0.0	0	0.0
Total consumption	kt	38	0	-1.1	0	-1.3
Exports	kt	126	3	2.0	14	11.3
Gross value of production	A\$m	418	61	14.6	109	26.0
New Zealand						
Total consumption	kt	1	0	0.0	0	0.0
Exports	kt	335	7	2.2	60	17.8
Gross value of production	NZ\$m	1 067	192	18.0	416	39.0
Argentina						
Total consumption	kt	70	-11	-15.1	-6	-8.2
Exports	kt	149	14	9.1	21	13.8
Gross value of production	m pesos	649	143	22.0	115	17.7
China						
Imports	kt	60	-20	-33.1	-10	-16.4
Rest of Asia a						
Imports	kt	323	-33	-10.2	-14	-4.3

a Asia excluding Japan, Korea and China. All volumes in this table are rounded to the nearest 1000 tonnes.

19 Impact of reduced subsidised exports of butter

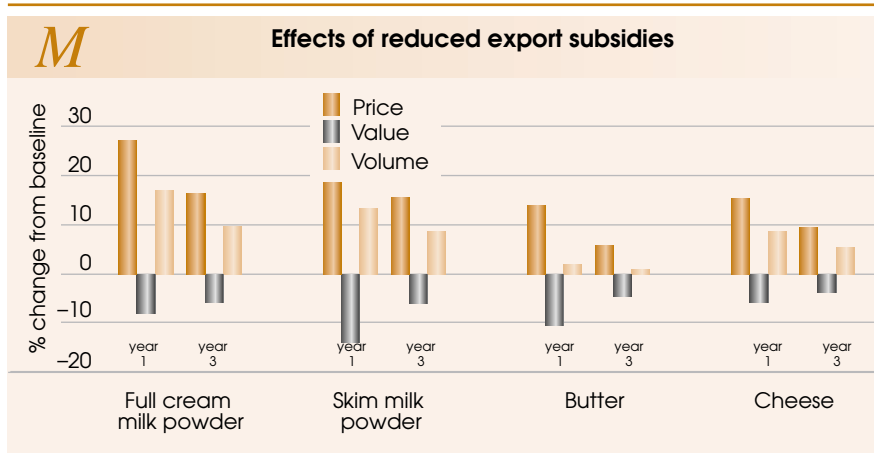
		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	148	21	14.0	8	5.8
	ECU/100 kg	139	19	14.0	8	5.8
Imports	kt	615	-65	-10.5	-27	-4.5
Value of trade	US\$m	908	18	2.0	9	1.0
European Union (15)						
Production sold domestically	kt	1 650	17	1.1	23	1.4
Imports	kt	105	-1	-1.2	-1	-1.0
Total consumption	kt	1 755	16	0.9	22	1.3
Exports	kt	160	-87	-54.1	-87	-54.1
Stocks	kt	129	85	-	63 ^a	-
Import price	ECU/100 kg	306	-12	-3.8	-15	-5.0
Producer price	ECU/100 kg	369	-41	-11.0	-54	-14.5
United States						
Production sold domestically	kt	520	0	0.0	-1	-0.2
Imports	kt	18	-1	-5.8	0	-2.2
Total consumption	kt	538	-1	-0.2	-2	-0.3
Exports	kt	2	-1	-42.1	-1	-46.9
Stocks	kt	20	0	-	0 ^a	-
Import price	US\$/100 kg	276	0	0.0	1	0.2
Wholesale price	US\$/100 kg	276	0	0.0	2	0.6
Japan						
Imports	kt	27	-2	-6.0	-1	-2.5
Australia						
Production sold domestically	kt	67	-1	-1.0	-1	-0.9
Imports	kt	6	0	0.0	0	0.0
Total consumption	kt	73	-1	-1.3	-1	-1.3
Exports	kt	104	1	0.8	7	6.6
Gross value of production	A\$m	495	25	5.1	40	8.2
New Zealand						
Total consumption	kt	31	0	-1.5	0	-1.4
Exports	kt	254	0	0.0	-1	-0.2
Gross value of production	NZ\$m	1 174	73	6.3	62	5.3
Argentina						
Total consumption	kt	47	-3	-6.4	-1	-2.8
Exports	kt	9	4	41.9	8	88.9
Gross value of production	m pesos	155	15	9.8	24	15.5
China						
Imports	kt	15	-4	-27.1	-2	-11.4
Rest of Asia ^b						
Imports	kt	94	-16	-16.6	-6	-6.8

^a Change in stocks from year 2. ^b Asia excluding Japan, Korea and China. All volumes in this table are rounded to the nearest 1000 tonnes.

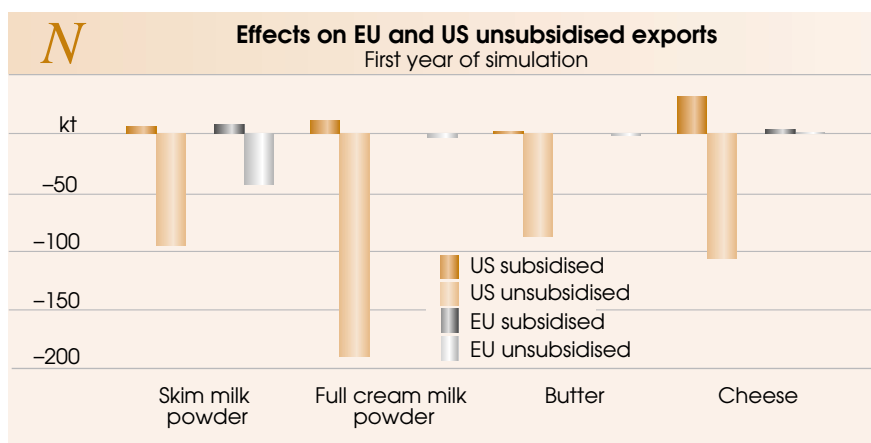
20 Impact of reduced subsidised exports of cheese

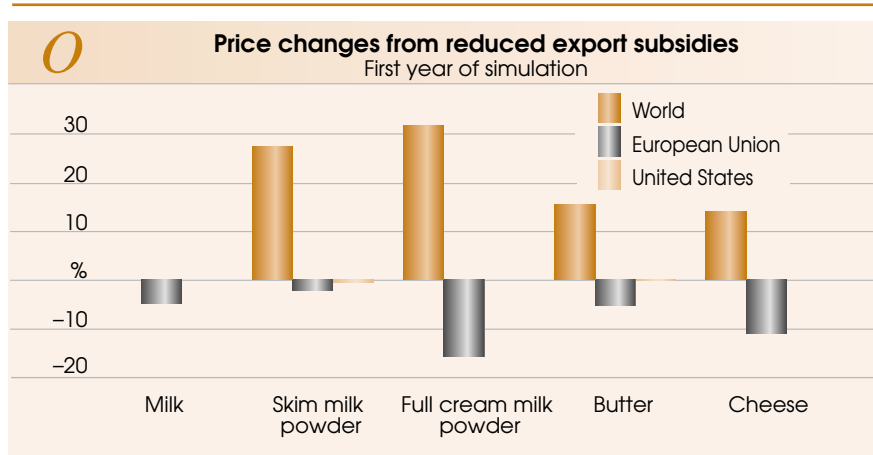
		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	175	27	15.5	17	9.5
	ECU/100 kg	165	26	15.5	16	9.5
Imports	kt	1 169	-67	-5.8	-43	-3.7
Value of trade	US\$m	2 052	181	8.8	113	5.5
European Union (15)						
Production sold domestically	kt	6 272	216	3.4	324	5.2
Imports	kt	145	-4	-2.9	-3	-2.4
Total consumption	kt	6 417	212	3.3	320	5.0
Exports	kt	447	-106	-23.8	-105	-23.6
Stocks	kt	126	50	-	1 a	55.7
Import price	ECU/100 kg	311	-6	-1.8	-8	-2.6
Producer price	ECU/100 kg	452	-24	-5.3	-35	-7.7
United States						
Production sold domestically	kt	3 510	1	0	4	0.1
Imports	kt	195	-2	-1	-1	-0.6
Total consumption	kt	3 705	-1	0	3	0.1
Exports	kt	38	1	3.5	0	0.1
Stocks	kt	282	0	-	0 a	-
Import price	US\$/100 kg	272	0	0	0	-0.1
Wholesale price	US\$/100 kg	314	0	-0.1	-1	-0.3
Japan						
Imports	kt	187	-7	-3.6	-4	-2.3
Australia						
Production sold domestically	kt	175	-5	-2.8	-6	-3.6
Imports	kt	31	-1	-4.2	0	-1.6
Total consumption	kt	205	-6	-3.0	-6	-3.3
Exports	kt	175	4	2.3	9	4.9
Gross value of production	A\$m	1 304	74	5.7	111	8.5
New Zealand						
Total consumption	kt	38	-1	-1.6	-1	-2.1
Exports	kt	256	-1	-0.2	0	-0.2
Gross value of production	NZ\$m	873	54	6.2	72	8.3
Argentina						
Total consumption	kt	418	-17	-4.1	-11	-2.6
Exports	kt	20	19	94.1	27	134.1
Gross value of production	m pesos	944	146	15.4	125	13.2
China						
Imports	kt	9	0	0.2	0	-0.1
Rest of Asia b						
Imports	kt	47	-4	-8.3	-2	-5.1

a Change in stocks from year 2. b Asia excluding Japan, Korea and China. All volumes in this table are rounded to the nearest 1000 tonnes.



As in the previous experiment, when producers increase production, the initial increase in world prices is tempered. However, even then dairy product prices are still 6–17 per cent higher than in the baseline. Also, as in the previous experiment, as world prices fall the volume of world dairy trade increases, tempering the initial decline in the volume of trade (figure M). Although their subsidised exports fall, both the European Union and United States gain from the higher world prices on their remaining unsubsidised exports (figure N). At the producer level, farm gate milk prices are estimated to fall by around 6 per cent in the European Union (figure O). In the United States, where subsidised exports constitute a relatively smaller share of total production than in the European Union, milk prices fall by only 0.2 per cent in the first year of the simulation.





As in the previous experiment, when world dairy product prices rise, consumption falls in most markets. With higher world prices, imports by most dairy importing countries fall, and exports by dairy exporting countries rise.



Appendix

World dairy model – enhancements to AGLINK

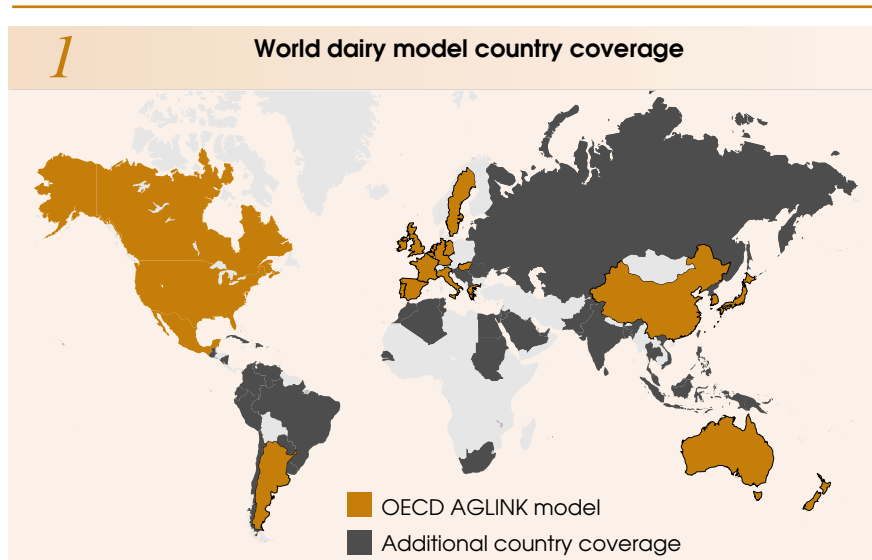
The analysis of changes in market access and export subsidies reported in this study was based on the dairy component of the OECD's AGLINK model. However, before conducting the experiments a number of enhancements were made to the original AGLINK model.

The AGLINK representation of world dairy markets was enhanced by:

- revising the dairy product specifications for the key price responsive exporting countries — Australia and New Zealand;
- adding specifications for manufactured dairy product and milk supply as well as the demand for domestically produced dairy products in Uruguay and 'rest of world';
- extending the coverage of dairy importing countries through the addition of import demand relationships;
- adding specifications of trade access arrangements (tariffs and tariff-quotas) in all importing countries for the key dairy products — skim milk powder, full cream milk powder, butter and cheese;
- adding representations for the export subsidy arrangements of the European Union and the United States; and
- incorporating specifications for 'rest of world' import demand for the key dairy products with an equivalent set of trade access representations.

The country coverage in the enhanced model is presented in map 1 while the products for each country that are represented in the dairy model are detailed in table 21.

For supply, new models were built to represent the production of skim milk powder, full cream milk powder, butter, cheese, casein and other fresh manufactured products in both Australia and New Zealand. Dairy product supply models were also developed for Uruguay and two 'rest of world' groups to represent the production of milk, skim milk powder, full cream milk powder, butter and cheese.



All the dairy product supply models incorporate changes in the transformation of milk into products in response to a change in any product price or the milk price. Each product's supply response includes an element of milk that is diverted from the production of other dairy products as well as a component of any expanded milk production as a consequence of the increase in the price of the dairy product. For the Australian and New Zealand components, the various supply responses were based on information provided by dairy product manufacturers operating in the Australian industry and, as is typical in AGLINK, are imposed on the model rather than estimated empirically. The Australian and New Zealand models also incorporate the dynamics of milk supply at the farm level, which reflects the biological herd constraints that effect the ability of producers to adjust milk production in response to a change in returns.

Supply responsiveness in Uruguay and the 'rest of world' was based on an examination of the production data and on the knowledge gained from building the New Zealand and Australian supply modules. In essence, the response in supply of each manufactured product to a change in the output price, is determined only after extensive testing to ensure consistency between the estimated reallocations of milk to and from the various products, and the physical and technical constraints of the manufacturing process.

For supply, the 'rest of world' was split into two groups. Countries included in these two groups were selected according to whether their share of exports

in production was large (10 per cent or more) or small (less than 10 per cent). Together, more than 50 countries are represented in both these groups. The supply elasticities for each product and milk are reported in table 22. Table 22 also contains estimates of the implied export supply elasticities that comprise both the diversion of product from domestic consumers and the increased product supply in response to a 1 per cent rise in output prices.

21 Commodity and policy coverage in the model of world dairy markets

	Milk	Skim milk powder	Full cream milk powder	Cheese	Butter	Casein
Argentina						
Production	✓		✓	✓	✓	
Consumption	✓		✓	✓	✓	
Exports			✓	✓	✓	
Australia						
Production	✓	✓	✓	✓	✓	✓
Consumption	✓	✓	✓	✓	✓	
Exports		✓	✓	✓	✓	✓
Imports				✓		
TRQ				✓		
Canada						
Production	✓	✓		✓	✓	
Consumption	✓	✓		✓	✓	
Exports		✓		✓		
Imports				✓	✓	
TRQ				✓	✓	
China						
Production	✓	✓	✓	✓	✓	
Consumption	✓	✓	✓	✓	✓	
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
European Union (15)						
Production	✓	✓	✓	✓	✓	✓
Consumption	✓	✓	✓	✓	✓	✓
Exports		✓	✓	✓	✓	
Subsidies		✓	✓	✓	✓	
Imports		✓	✓	✓	✓	✓
TRQ		✓	✓	✓	✓	
Stocks		✓		✓	✓	
Algeria						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	

Continued ⇨

21 Commodity and policy coverage in the model of world dairy markets

continued

	Milk	Skim milk powder	Full cream milk powder	Cheese	Butter	Casein
Bangladesh						
Imports		✓	✓		✓	
TRQ a		✓	✓		✓	
Brazil						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
Hungary						
Production	✓	✓	✓	✓	✓	
Consumption	✓	✓	✓	✓	✓	
Exports				✓		
Japan						
Production	✓	✓	✓	✓	✓	
Consumption	✓	✓		✓	✓	
Imports		✓ b		✓	✓ c	✓
TRQ		✓ b		✓ a	✓ c	
Stocks		✓			✓	
Korea, Rep. of						
Production	✓	✓	✓	✓	✓	
Consumption	✓	✓	✓	✓	✓	
Imports		✓	✓	✓	✓	
TRQ		✓	✓	✓ a	✓	
Mexico						
Production	✓		✓	✓		
Consumption	✓	✓	✓	✓	✓	
Imports		✓	✓		✓	
New Zealand						
Production	✓	✓	✓	✓	✓	✓
Consumption	✓	✓		✓	✓	
Exports		✓	✓	✓	✓	✓
Poland						
Production	✓	✓		✓	✓	
Consumption	✓	✓		✓	✓	
Exports		✓				
United States						
Production	✓	✓		✓	✓	
Consumption	✓	✓		✓	✓	
Exports		✓		✓	✓	
Subsidies		✓		✓	✓	
Imports		✓	✓	✓	✓	✓
TRQ		✓	✓	✓	✓	
Stocks		✓		✓	✓	

Continued ⇨

21 Commodity and policy coverage in the model of world dairy markets

continued

	Milk	Skim milk powder	Full cream milk powder	Cheese	Butter	Casein
Uruguay						
Production	✓	✓	✓	✓	✓	
Consumption		✓	✓	✓	✓	
Exports		✓	✓	✓	✓	
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
Chinese Taipei						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
Egypt						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
Hong Kong						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
India						
Imports		✓	✓		✓	
TRQ		✓ a	✓ a		✓	
Indonesia						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
Malaysia						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
Peru						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
Philippines						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
Russian Federation						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
Saudi Arabia						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	

Continued ⇨

21 Commodity and policy coverage in the model of world dairy markets

continued

	Milk	Skim milk powder	Full cream milk powder	Cheese	Butter	Casein
Singapore						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
South Africa						
Imports		✓	✓	✓	✓	
TRQ		✓	✓	✓	✓	
Sri Lanka						
Imports		✓	✓	✓	✓	
TRQ a		✓	✓	✓	✓	
Switzerland						
Imports				✓		
TRQ a				✓		
Thailand						
Imports		✓	✓	✓	✓	
TRQ		✓	✓ a	✓ a	✓ a	
Venezuela						
Imports		✓	✓	✓	✓	
TRQ		✓	✓	✓	✓	
Rest of world						
Production d	✓		✓	✓	✓	
Consumption d		✓	✓	✓	✓	
Exports d		✓	✓	✓	✓	
Imports e		✓	✓	✓	✓	
TRQ a e		✓	✓	✓	✓	

a Tariff only as there is no quota. b Separate representations for food and feed. c Includes separate representations for edible fats and butter. d Two groups of countries modeled separately are represented. The groups are selected according to whether the share of exports in total production is 'small' or 'large'. For each commodity the countries split into the two groups include: Algeria, Egypt, Bangladesh, India, Pakistan, Sri Lanka, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, Chinese Taipei, Thailand, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Brazil, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, Venezuela, Norway, Switzerland, Armenia, Georgia, Romania, the Russian Federation, Slovakia, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Czech Republic, Turkey, Israel, Jordan, Kuwait, Saudi Arabia, United Arab Emirates, Morocco, Rwanda, Senegal, Sudan, Tunisia, Mauritius and South Africa. e Includes Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Romania, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Pakistan, Mauritius, Morocco, Rwanda, Senegal, Sudan, Tunisia, Democratic Republic of Korea, Viet Nam and Papua New Guinea.

The output supply responses in the large ‘rest of world’ countries are similar to those in the big export oriented countries like New Zealand and Australia. In contrast, for the small ‘rest of world’ module the output response is very low in proportional terms compared with that for traditional export oriented countries. Typically in these small developing countries, dairy

22 Supply elasticities for new country models in the world dairy model

	Change in output for a 1 per cent change in the price of:								
	Milk			Skim milk powder			Whole milk powder		
	year 1	year 2	year 3	year 1	year 2	year 3	year 1	year 2	year 3
	%	%	%	%	%	%	%	%	%
Australia	0.0	0.09	0.17	0.1	0.3	0.4	0.2	0.6	0.9
New Zealand	0.0	0.12	0.23	0.2	0.4	0.7	0.3	0.6	1.4
Uruguay	0.0	0.06	0.09	0.2	0.5	0.7	0.1	0.4	0.6
– export supply	..	..	..	0.2	0.6	0.8	1.0	1.8	2.2
Rest of world (small) a	0.0	0.02	0.03	0.0	0.02	0.03	0.0	0.2	0.2
– export supply	..	..	..	3.4	4.1	4.4	2.4	6.5	8.6
Rest of World (large) a	0.02	0.17	0.25	0.1	0.4	0.5	0.2	0.8	1.1
– export supply	..	..	..	1.3	3.0	3.9	0.2	0.5	0.7

	Change in output for a 1 per cent change in the price of:						
	Butter			Cheese			
	year 1	year 2	year 3	year 1	year 2	year 3	year 3
	%	%	%	%	%	%	%
Australia	0.1	0.2	0.3	0.1	0.3	0.5	
New Zealand	0.1	0.1	0.3	0.2	0.7	1.3	
Uruguay	0.1	0.3	0.4	0.1	0.3	0.4	
– export supply	0.3	0.6	0.7	0.4	0.7	0.8	
Rest of world (small) a	0.0	0.1	0.1	0.0	0.1	0.1	
– export supply	4.3	11.8	15.6	2.7	7.9	10.9	
Rest of world (large) a	00.1	0.5	0.7	0.1	0.3	0.5	
– export supply	0.8	2.7	3.7	0.7	1.6	2.2	

a For each of the five commodities the countries included in the ‘small’ and ‘large’ Rest of world groups are selected according to whether the share of exports in total production is large or small. For each commodity the countries split into the two groups include: Algeria, Egypt, Bangladesh, India, Pakistan, Sri Lanka, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, Taiwan, Thailand, Democratic Republic of Korea, Viet Nam, Papua New Guinea; and Brazil, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, Venezuela, Norway, Switzerland, Armenia, Georgia, Romania, Russian Federation, Slovakia, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Czech Republic, Turkey, Israel, Jordan, Kuwait, Saudi Arabia, United Arab Emirates, Morocco, Rwanda, Senegal, Sudan, Tunisia, Mauritius and South Africa.

products are produced for domestic consumption and are typically made at home rather than in dairy manufacturing plants.

Demand for domestically produced dairy products in Uruguay and the ‘rest of world’ is also represented in the extended world dairy model. For Uruguay and the large ‘rest of world’ group of countries the demand responses are similar to those in other exporting countries (table 23).

The demand responses for the small ‘rest of world’ countries are low by comparison. In most of the countries represented by this group, it is reasonable to assume that dairy products are considered necessities by consumers. It should also be noted that while the demand responses are very small in a relative sense, total consumption of dairy products by the small ‘rest of world’ group is substantial, with over 2 million tonnes of cheese and 3 million tonnes of butter consumed in 1999.

23 Domestic product demand elasticities for new country models in the world dairy model

	Skim milk powder		Whole milk powder	
	Import price	Income	Import price	Income
Argentina				
Uruguay	-0.50	0.70	-0.70	0.40
Rest of world – small a	-0.10	0.70	-0.06	0.40
Rest of world – large a	-0.18	0.20	-0.20	0.40
	Butter		Cheese	
	Import price	Income	Domestic price	Import price
Argentina			-0.30	
Uruguay	-0.70	0.20		-0.50
Rest of world – small a	-0.03	0.20		-0.025
Rest of world – large a	-0.10	0.20		-0.15

a For each of the five commodities the countries included in the ‘small’ and ‘large’ rest of world groups are selected according to whether the share of exports in total production is large or small. For each commodity the countries split into the two groups includes Algeria, Egypt, Bangladesh, India, Pakistan, Sri Lanka, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, Chinese Taipei, Thailand, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Brazil, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, Venezuela, Norway, Switzerland, Armenia, Georgia, Romania, Russian Federation, Slovakia, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Czech Republic, Turkey, Israel, Jordan, Kuwait, Saudi Arabia, United Arab Emirates, Morocco, Rwanda, Senegal, Sudan, Tunisia, Mauritius and South Africa.

In Argentina the bulk of cheese production is consumed domestically and exports are small by comparison. In AGLINK, the domestic cheese demand elasticity is -0.65 . The implication of this demand elasticity is that a large volume of cheese would be diverted from domestic consumption to exports when the cheese price rises. The increase in exports is very large compared with that in other countries that similarly export cheese at world prices, such

24 Import demand elasticities for country models appended to the world dairy model

	Skim milk powder			Whole milk powder		
	Import price	Domestic price	Income	Import price	Domestic price	Income
Australia	..	..	..	..	..	..
Canada	..	..	..	..	..	..
China	-1.20	0.20	0.14	-1.10	0.10	0.37
European Union (15)	-3.00	1.50	0.05	-3.00	1.50	0.20
Japan	-3.00	1.50	0.25	..	..	..
	-0.60 ^a	0.50	..	..	..	..
Korea	-3.00	..	0.10	-3.00	..	0.10
United States	-4.80	1.90	0.20	-2.90	1.40	0.30
Algeria	-0.50	..	0.70	-0.50	..	0.70
Bangladesh	-1.50	..	0.70	-1.50	..	0.70
Brazil	-1.50	..	0.70	-0.50	..	0.70
Chinese Taipei	-0.50	..	0.70	-0.50	..	0.70
Egypt	-0.50	..	0.70	-0.50	..	0.70
Hong Kong	-0.50	..	0.70	-0.50	..	0.70
India	-3.00	..	0.70	-3.00	..	0.70
Indonesia	-0.50	..	0.70	-0.50	..	0.70
Malaysia	-0.50	..	0.70	-0.50	..	0.70
Philippines	-0.50	..	0.70	-0.50	..	0.70
Peru	-1.50	..	0.70	-1.50	..	0.70
Russia	-0.50	..	0.70	-0.50	..	0.70
Saudi Arabia	-0.50	..	0.70	-0.50	..	0.70
Singapore	-0.50	..	0.70	-0.50	..	0.70
South Africa	-3.00	..	0.70	-3.00	..	0.70
Sri Lanka	-0.50	..	0.70	-0.50	..	0.70
Switzerland	..	..	..	..	..	..
Thailand	-0.50	..	0.70	-0.50	..	0.70
Uruguay	..	..	..	..	..	..
Venezuela	-3.00	..	0.70	-3.00	..	0.70
Rest of world ^c	-0.50	..	0.70	-0.50	..	0.70

Continued ⇨

as Australia and New Zealand. As that outcome is not supported by historical evidence, the cheese demand elasticity in Argentina was lowered to -0.3 . However, it is worth noting in the simulation results that even with this smaller demand responsiveness, the estimated initial increase in cheese

24 Import demand elasticities for country models appended to the world dairy model *continued*

	Butter			Cheese		
	Import price d	Domestic price	Income	Import price d	Domestic price	Income
Australia	..	..	....	-1.20	0.85	0.80
Canada	-1.50	1.10	0.03..	-2.00	1.30	0.20
China	-1.90	0.35	0.25	-2.00	0.20	1.00
European Union (15)	-3.00	1.50	0.05	-3.00	1.50	0.40
Japan	-2.00	1.80	0.05	..	..	..
	2.50 b	1.40	0.05	..	..	..
Korea	-3.00	..	0.20	-2.00	..	1.00
United States	-2.60	1.70	0.05	-2.45	0.95	0.55
Algeria	-1.00	..	0.20	-1.50	..	1.00
Bangladesh	-1.50	..	0.20	..	..	..
Brazil	-1.00	..	0.20	-1.00	..	1.00
Chinese Taipei	-1.00	..	0.20	-0.50	..	1.00
Egypt	-1.00	..	0.20	-0.50	..	1.00
Hong Kong	-1.00	..	0.20	-0.50	..	1.00
India	-1.50	..	0.20	..	..	..
Indonesia	-1.00	..	0.20	-0.50	..	1.00
Malaysia	-1.00	..	0.20	-0.50	..	1.00
Philippines	-1.00	..	0.20	-0.50	..	1.00
Peru	-1.50	..	0.20	-0.50	..	1.00
Russia	-1.00	..	0.20	-0.50	..	1.00
Saudi Arabia	-1.00	..	0.20	-0.50	..	1.00
Singapore	-1.00	..	0.20	-0.50	..	1.00
South Africa	-3.00	..	0.20	-3.00	..	1.00
Sri Lanka	-2.00	..	0.20	-1.00	..	1.00
Switzerland	..	..	....	-0.20	..	0.60
Thailand	-2.00	..	0.20	-1.50	..	1.00
Uruguay	..	..	..	-0.50	..	1.00
Venezuela	-3.00	..	0.20	-3.00	..	1.00
Rest of world c	-1.00	..	0.20	-0.50	..	1.00

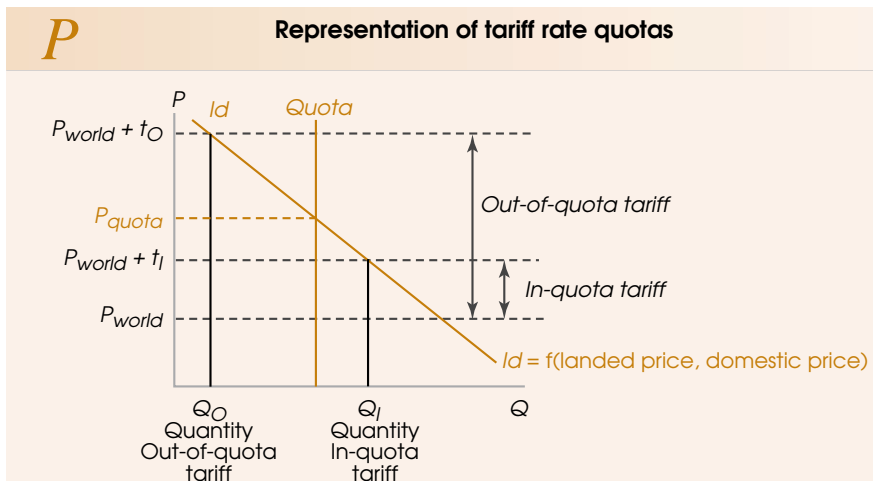
a Skim milk powder for feed. **b** Edible fat products. **c** Includes Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Romania, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Pakistan, Mauritius, Morocco, Rwanda, Senegal, Sudan, Tunisia, Democratic Republic of Korea, Viet Nam and Papua New Guinea. **d** World price plus tariffs and quota rents.

exports from Argentina is still considerably larger in absolute and relative terms than those in the model for either New Zealand or Australia.

The enhancements to AGLINK also include representations of import demand for the four major traded products, cheese, butter, skim milk powder and full cream milk powder. It is assumed for most country models that for each dairy product, imports and domestically produced product are heterogeneous but still substitute with each other. Consequently the model contains a specification of demand for each imported and domestically produced dairy product in which both depend on the price of imports as well as the local price. The import demand elasticities used in the model are reported in table 24.

The responsiveness of the demand for imports to the landed price (inclusive of tariff) is typically larger for the dairy products in countries that use TRQs to constrain imports, than in countries that only use tariffs. For the smaller tariff only countries, import demand elasticities for each product were chosen in the range -0.5 to -1.5 , very close to the range of elasticities reported for domestic demand in the original AGLINK model.

For countries with TRQ arrangements, which are not constraining imports, the import demand elasticities are of a similar magnitude. However, when a TRQ limits imports, the quota constrained quantity is smaller than what would be imported in the absence of the quota. Theory indicates that for linear demand schedules, the demand elasticity is larger at the smaller volumes such as would occur with the quota, than at higher quantities of imports.



These import demand representations are integral to incorporating the representation of tariffs and tariff rate quota arrangements for dairy product imports in each country. With tariff rate quota representations, the volume of imports is determined simultaneously by a set of conditional statements and the import demand equation. For any given level of import demand, the volume of imports is calculated initially at both the within-quota tariff rate and the above-quota tariff rate. Then a number of conditional statements determine whether the final volume of imports is under quota, constrained to the quota or above the quota.

The manner by which tariff rate quotas are represented in the world dairy model is depicted in figure P. The demand schedule for foreign product in the importing country is represented by $I_d I_d$ and is specified as a non-homogeneous or differentiated product so that the quantity imported is dependent on both the price of imports and the price of the similar domestic good. The implication is that the domestic good and the imported product substitute to some degree yet are still considered to be different. It is important to note that this approach can represent both the demand for imported and domestic origin goods that are very similar, like butter, by making them very substitutable, and for different goods, like cheese, by making them weak substitutes. Import demand increases or decreases when the price of the domestic substitute rises or falls, respectively.

The quota is denoted by the fixed volume of imports, $Quota$, and the price that consumers are prepared to pay for the quota volume of imports, $Pquota$ the 'shadow quota price', can be determined from the import demand schedule. The price paid by importers, the supply price, is given by either the world price plus the in-quota tariff, $Pworld + t_I$, or the world price plus the out of quota tariff, $Pworld + t_O$. The import supply price responds to changes in either the world price or the tariff rates and the shadow quota price varies with both the size of the quota and the price of the domestic substitute.

In figure P, at the world price plus in-quota tariff, consumer demand for imports is Q_I , a quantity that exceeds the $Quota$ amount. Also note that the quantity demanded at the world price plus out of quota tariff, Q_O , is below the $Quota$ amount. As shown in figure P, the volume of imports will be equal to the $Quota$ amount and the price that consumers are willing to pay for imports is $Pquota$. The differential between the consumer price of imports, $Pquota$, and the landed price of imports, $Pworld + t_I$, is termed the 'quota rent'.

If the world price and/or tariff rates increase to the extent that the landed price of imports, $P_{world} + t_I$ rises above P_{quota} , then imports (Q_I) would fall below the *Quota* amount. That is, the quota would no longer be binding. An analogous situation would occur if the demand for imports were to fall sufficiently due to a decrease in the price of the substitute domestic product.

Alternatively, if the world price and/or the out of quota tariff rate decrease to the extent that the landed price of imports, $P_{world} + t_O$, falls below P_{quota} , then imports (Q_O) would exceed the *Quota*. The same outcome would eventuate if the demand for imports increased sufficiently because of a rise in the price of the substitute domestic product.

A similar approach was also taken to incorporate export demands and the use of export subsidies. The export of a dairy product from any country that subsidises its product, is assumed to be different from but substitutable with similar internationally traded dairy products. Consequently, export demand not only depends on the supply price of the exporting country but also the world price of the similar product. Just as tariffs affect the price of imports, subsidies affect the supply price of exports.

The size of the subsidies are determined simultaneously with export volumes, and a number of conditional statements ensure that both the volume and value constraints that were agreed in the Uruguay Round are not violated.

In addition, the enhanced model also contains a specification of EU and US government stock accumulation. The same specification is also used to represent the disposal of stocks when the market price moves higher than the support level.

B

Appendix

Issues in quota underfill

Tariff-rate quotas in world dairy trade

The United States, the European Union, Canada, Japan and the Republic of Korea use tariff rate quotas (TRQs) to control access for most dairy products. These markets are protected by very high tariff rates that help to maintain high rates of support for domestic producers. Where TRQ access is provided the quota is generally small relative to the size of the domestic market (table 25). If TRQ access is not provided, high tariff rates effectively prohibit imports from entering the market. The exception is cheese access in Japan and Korea, where tariff rates are not set at prohibitive levels.

Some other countries use tariff rate quotas on selected products. Mexican milk powder imports are controlled by a semigovernment agency as part of

25 TRQ market shares and relative price differentials for dairy products in selected markets

	European Union ^a	United States ^b	Canada	Japan ^c	Korea
	%	%	%	%	%
Skim milk powder					
TRQ market share ^d	6.9	1.4	no TRQ	10.5	3.0
Price differential ^e	67.9	75.8	134.1	268.9	na
Full cream milk powder					
TRQ market share	no TRQ	5.0	no TRQ	no TRQ	10.1
Price differential ^e	80.3	103.9	na	354.6	na
Butter					
TRQ market share	5.1	1.2	3.7	17.9	8.5
Price differential ^e	125.2	89.6	156.3	500.9	na
Cheddar cheese					
TRQ market share	1.7	4.0	6.2	no TRQ	no TRQ
Price differential ^e	62.3	61.4	na	na	na

^a EU TRQ market share for butter includes 76 667 tonnes TRQ for New Zealand. ^b US TRQ market shares exclude TRQ access for Mexico under NAFTA. ^c Japan TRQ market share for skim milk powder excludes TRQ imports used for animal feed. ^d TRQ market share derived as 1999 TRQ access level ÷ domestic disappearance. ^e Defined as $100 \times [(\text{domestic wholesale price} \div \text{world price}) - 1]$.

na Not applicable.

Source: Australian Dairy Corporation (1999); TRQ notifications to WTO.

a domestic milk supply program. Since the implementation of the WTO Agreement on Agriculture, Mexican imports have substantially exceeded the TRQ volume of 120 000 tonnes. A tariff rate quota on Mexican cheese imports has not been activated — imports are determined by market demand. Thailand's tariff rate quota for skim milk powder imports has also been expanded beyond their WTO commitments. Venezuelan TRQs have not been activated and imports, after adjusting for tariffs, are determined by market conditions. South Africa operates tariff rate quotas for all major dairy products.

TRQ fill rates in highly protected dairy markets

Where tariff rate quotas are provided in highly protected markets, access is essentially fully used, with fill rates of 95–100 per cent (table 26). This is not surprising, as the high rates of protection in these markets ensure sizable quota profits are attached to the small amounts of access. The quota profits are large because in general:

- TRQ access is quite small relative to total consumption in the protected market;
- out-of-quota tariffs severely restrict the incentive to import products outside the quota; and
- internal support arrangements fix domestic prices substantially above prevailing world prices.

Actual market price information for 1999 shows very large price differentials between domestic prices and world prices for the same dairy products (see table 25). These price differentials are a reasonable indicator of the size of the TRQ rents in these markets. For most tradable dairy commodities, imports are highly substitutable with domestic output, as the opportunity for product differentiation is limited. This is especially so for milk powders, butter and natural cheddar. Noncheddar cheese types have more scope for product differentiation and price differentials may be a less reliable indicator of quota profits.

With minimal in-quota tariffs there is a substantial economic incentive for tariff rate quotas to be fully used. The size of the quota profits and the incentive to fill the tariff rate quotas will vary each year according to movements in world prices. World prices fluctuate while internal prices are reasonably stable owing to the operation of domestic support arrangements. The size of the price differentials confirms that it would be exceptional for the quota

26 Recent TRQ fill rates for dairy product imports in selected markets

	European Union ^a	United States ^b	Canada	Japan ^c	Korea
	1999-2000	1999	1998	JFY 1999	1999
	%	%	%	%	%
Skim milk powder	96.5	97.6	no TRQ	..	99.6
School lunch	..	..	..	52.4	..
Designated products	..	..	..	100.8	..
Other purposes	..	..	..	39.0	..
Full cream milk powder	no TRQ	97.7	no TRQ	no TRQ	19.0
Butter	96.3	98.4	100.0	..	100.0
Butter, butter oil	..	..	..	18.5	..
Edible fat	..	..	..	98.8	..
Cheese	..	..	101.0	no TRQ	no TRQ
Cheddar ^d	97.6	95.7	..	..	..
Noncheddar	64.8	94.3	..	..	..

a EU butter fill rate excludes results from 76 667 tonnes TRQ for New Zealand — WTO notification data unavailable. **b** US fill rate calculations exclude access for Mexico under NAFTA. **c** Japan TRQ on skim milk powder for other purposes is mostly used for animal feed. **d** Includes noncheddar cheese and processed cheddar TRQs in the European Union and noncheddar cheese and American cheese TRQs in the United States.

Source: TRQ notifications to WTO.

27 Unfilled 1999 TRQ access for dairy product imports in selected markets

	European Union ^a	United States ^b	Canada	Japan ^c	Korea	Total
	1999-2000	1999	1998	JFY 1999	1999	
	t	t	t	t	t	t
Skim milk powder ^b	2 177	105	no TRQ	3 296	3	5 581
Full cream milk powder	no TRQ	63	no TRQ	no TRQ	340	404
Butter	298	196	0	1 751	0	2 245
Cheese	..	..	0	no TRQ	no TRQ	0
Cheddar ^c	1 141	629	..	..	..	1 770
Noncheddar	14 205	6 738	..	..	..	20 943

a Unfilled EU butter access excludes the 76 667 tonnes TRQ for New Zealand — WTO notification data unavailable. **a** Unfilled US access excludes access for Mexico under NAFTA. **b** Excludes Japanese TRQ on skim milk powder for other purposes — mostly used for animal feed. **d** Includes noncheddar cheese and processed cheddar TRQs in the EU and noncheddar cheese and American cheese TRQs in the United States.

Source: TRQ notifications to WTO.

profits to fall sufficiently for the tariff rate quota to be underutilised. This may occur, for example, if there was a significant short term supply disruption in the major exporting countries.

A TRQ fill rate of less than 100 per cent could occur if internal market demand for the imported product was weak. However, to conclude from WTO notifications on tariff rate quotas that underfill represents underlying weak demand for imports ignores the commercial reality of the economic incentives operating in the market. Those incentives arise in highly protected markets from the big difference between the landed price of imports and the substitute domestic product. For example, it would suggest that with all prices unchanged a doubling of the US butter tariff rate quota (11 900 tonnes in 1999) would generate no increase in imports. In 1999 the US wholesale butter price was around US\$1285 a tonne (90 per cent) above the world price of US\$1435 a tonne.

In cases when a tariff rate quota is not completely filled, a condition that must be satisfied to conclude that the import demand is completely satisfied is that the market for those imports is characterised by perfect competition. That is, imports are determined by free market forces, with full information available to all participants. However, there are a number of possible commercial reasons why quotas may not be fully used that are unrelated to underlying market demand. Sometimes, profit seeking behavior can prevent agreement on a price acceptable to the parties. In other cases, access may not be fully used because of commercial realities like the expiry of import permits, production and shipping disruptions, rejection of shipments on phytosanitary grounds and problems with the administration of a tariff rate quota.

TRQ access conditions in world dairy trade

Nontariff barriers and the way tariff rate quotas are managed can also prevent the complete use of the tariff rate quota. Governments and importing authorities impose a variety of TRQ access conditions such as:

- limiting participation in bidding for available access (for example, historical performance criteria);
- limiting the amount allocated to individual importers;
- allocating access to specific countries that may not have the capacity to supply;

-
- an inability to reallocate unused access before the end of the TRQ access period; and
 - placing conditions on the end use of imports.

Low fill rates for skim milk powder access to the Japanese market (table 26) could suggest that low market demand is the cause of the underfill. The tariff rate quota covering skim milk powder for ‘other purposes’ is consistently underused with fill rates ranging from 38 to 49 per cent over the period 1995–99. In this case, however, the access availability exceeds market demand because import end use is restricted to animal feed producers and recombined milk producers in Okinawa. These end use limitations ensure a large portion of the fixed 85 900 tonnes of annual access remains unused.

The Japanese School Lunch tariff rate quota for skim milk powder is also underused, with a fill rate ranging from 52 to 64 per cent over the period 1995–99. Underuse in this case is caused by end use restrictions — imports are only available to historical distributors of skim milk powder for school lunches. In comparison, the tariff rate quota covering designated dairy products for general use is managed by Japan’s Agriculture and Livestock Industries Corporation (ALIC) and has no end use restrictions. Fill rates for the 21 200 tonnes of skim milk powder access exceeded 100 per cent throughout the 1995–99 period. This is a better reflection of demand conditions and indicates that increased TRQ access without end use restrictions would lead to larger Japanese imports of skim milk powder.

Japanese TRQ access for butter has fill rate rates of 19–27 per cent over the 1995–99 period. Again, this reflects the end use conditions imposed on imports and the small access volume — 1900 tonnes a year. Imports can only be used by producers of recombined milk in Okinawa, exhibitors at international exhibitions and food suppliers to international airlines. End use restrictions are not imposed on imports under the prepared edible fat tariff rate quota.

The fill rate for full cream milk powder access to the Korean market could also suggest that market demand is fully satisfied. This tariff rate quota had fill rates of 100 per cent in 2000 and 1995 but less than 10 per cent in 1996. The small volume — less than 500 tonnes — and TRQ management may be constraining the effectiveness of the market access arrangements for full cream milk powder. The Korean Dairy Industry Association is involved in TRQ allocations to importers, which prevents a direct link between end users and export suppliers. In addition a 40 per cent in-quota tariff compared with

a 20 per cent in-quota tariff for skim milk powder may be limiting demand for full cream milk powder imports.

Fill rates for tariff rate quotas allocated to noncheddar cheese imports by the European Union suggest that market demands are satisfied. Since 1995-96 access has been expanding by about 8000 tonnes a year. For the first three years the tariff rate quotas were fully used. More recently imports have increased but the fill rate dropped to 80 per cent in 1998-99, then to 65 per cent in 1999-2000. Further expansion in noncheddar tariff rate quotas is unlikely to generate additional imports. However, TRQ access for EU cheddar imports has been expanding and remains fully used. This suggests that increased access for cheddar cheese would lead to larger imports by the European Union.

Implications for market access reform

Effective market access reform in world dairy markets requires a combination of global trade policy adjustments. For markets without tariff rate quotas a substantial reduction in tariffs across all products would increase world demand for dairy products and expand trade. However, in highly protected markets, even substantial tariff reductions are unlikely to generate larger imports for most dairy products. Tariff rates are generally very high in these markets.

Reduced in-quota tariffs in the TRQ markets without volume growth would deliver little in the way of dairy trade liberalisation in the highly protected dairy markets. In general, in-quota tariffs are quite small and tariff rate quotas are fully used. Where quotas are limiting imports, reduced in-quota rates would increase the size of quota profits and reduce government revenues.

Improved TRQ management and the removal of nontariff barriers (for example, end use restrictions) may generate some gains for global dairy trade. For example, if all tariff rate quotas identified in table 26 were fully used, 1999 global trade levels would have increased by:

- 5600 tonnes of skim milk powder (excluding feed use skim milk powder in Japan);
- 400 tonnes of full cream milk powder;
- 2200 tonnes of butter;
- 1800 tonnes of cheddar cheeses; and
- 20 900 tonnes of noncheddar cheeses (table 27).

In the model, fill rates for the expanded tariff rate quotas are determined within the model according to changes in relative prices. For the 1999 baseline simulation, it was assumed that the tariff rate quotas in the highly protected markets — the United States, the European Union, Canada, Japan and Korea — were fully used if fill rates approaching 100 per cent per cent were achieved. Actual 1999 data for market prices and indicators of quota profits were used to cross check the validity of this position.



Appendix

Detailed country results

28 Impact of increased market access on milk

		1999		Initial impact		With supply response	
		Baseline	Change	%	Change	%	
European Union (15)							
Production	kt	120 800	0	0.0	0	0.0	
Fresh consumption	kt	39 109	229	0.6	291	0.7	
Producer price	ECU/100 kg	30	-0.4	-1.4	-1	-1.8	
Gross value of production	m ECU	36 531	-523	-1.4	-663	-1.8	
United States							
Production	kt	73 601	-21	0.0	-171	-0.2	
Fresh consumption	kt	25 906	45	0.2	41	0.2	
Producer price	US\$/100 kg	32	-0.4	-1.2	-0.3	-1.1	
Gross value of production	US\$m	23 301	-275	-1.2	-300	-1.3	
Japan							
Production	kt	8 460	0	0.0	0	0.0	
Producer price	'000 ¥/100 kg	8	0	0.0	0	0.0	
Australia							
Production	kt	10 494	0	0.0	246	2.3	
Fresh consumption	kt	1 914	-6	-0.3	-19	-1.0	
Producer price	Ac/L	29	2	7.3	3	11.3	
Gross value of production	A\$m	2 927	214	7.3	407	13.9	
New Zealand							
Production	kt	10 922	0	0.0	278	2.5	
Fresh consumption	kt	455	-4	-0.8	-5	-1.1	
Producer price	NZc/L	31	3	9.0	4	13.0	
Gross value of production	NZ\$m	3 264	294	9.0	519	15.9	
Argentina							
Production	kt	9 751	0	0.0	132	1.4	
Fresh consumption	kt	2 276	-23	-1.0	-8	-0.3	
Producer price	pesos/100 L	17	1	6.9	0	2.3	
Gross value of production	m pesos	1 614	111	6.9	59	3.7	
China							
Production	kt	9 136	15	0.2	10	0.1	
Fresh consumption	kt	3 066	-16	-0.5	3	0.1	
Producer price	yuan/t	2 680	11	0.4	-2	-0.1	

Continued ⇨

28 Impact of increased market access on milk *continued*

		1999 Baseline	Initial impact		With supply response	
			Change	%	Change	%
Korea						
Production	kt	2 063	0	0.0	-5	-0.2
Fresh consumption	kt	1 112	-1	-0.1	12	1.1
Producer price	won/L	601	1	0.2	-9	-1.6
Poland						
Production	kt	12 372	158	1.3	248	2.0
Fresh consumption	kt	3 052	-75	-2.5	-20	-0.7
Producer price	Zl/L	0.62	0	4.6	0	1.2
Hungary						
Production	kt	2 095	9	0.5	10	0.5
Fresh consumption	kt	571	-5	-0.8	-2	-0.3
Producer price	Ft/kg	60	1	0.9	0	0.4
Mexico						
Production	kt	8 474	11	0.1	14	0.2
Fresh consumption	kt	3 082	-7	-0.2	-4	-0.1
Producer price	MN\$/L	2.4	0	1.2	0	0.8
Canada						
Production	kt	8 162	-63	-0.8	-31	-0.4
Fresh consumption	kt	2 787	0	0.0	0	0.0
Producer price	C\$/hL	56	0	0.0	0	0.0
Uruguay						
Production	kt	1 549	1	0.1	9	0.6
Rest of world – small exporters a						
Production	kt	190 035	42	0.0	766	0.4
Rest of world – large exporters b						
Production	kt	10 022	30	0.3	288	2.9

a Includes Algeria, Egypt, Bangladesh, India, Pakistan, Sri Lanka, Hong Kong, Indonesia, Malaysia, the Philippines, Chinese Taipei, Thailand, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Brazil, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, Venezuela, Armenia, Georgia, Russian Federation, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Turkey, Israel, Jordan, Kuwait, United Arab Emirates, Morocco, Rwanda, Senegal, Sudan, Tunisia, Mauritius and South Africa. **b** Includes Singapore, Norway, Switzerland, Slovakia, Czech Republic and Saudi Arabia.

29 Impact of increased market access for skim milk powder

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	132	27	20.2	17	13.2
	ECU/100 kg	124	25	20.2	16	13.2
Trade	kt	1 193	45	3.7	81	6.8
Value of trade	US\$m	1 572	388	24.7	327	20.8
European Union (15)						
Production	kt	1 161	13	1.1	17	1.5
Production sold domestically	kt	907	-25	-2.7	-25	-2.7
Imports	kt	75	59	79.3	63	83.4
Total consumption	kt	982	35	3.5	38	3.8
Exports	kt	254	21	8.2	32	12.7
Stocks	kt	190	17	..	10 ^a	..
Import price	ECU/100 kg	210	-52	-24.6	-54	-25.8
Producer price	ECU/100 kg	211	-2	-0.9	-3	-1.2
Support price	ECU/100 kg	206	0	0.0	0	0.0
United States						
Production	kt	625	0	0.0	-1	-0.2
Production sold domestically	kt	364	-3	-0.9	-4	-1.0
Imports	kt	5	5	94.3	5	96.3
Total consumption	kt	369	1	0.4	1	0.3
Exports	kt	217	6	2.6	3	1.6
Stocks	kt	113	-3	..	-1 ^a	..
Import price	US\$/100 kg	199	-28	-14.1	-28	-14.0
Wholesale price	US\$/100 kg	228	1	0.2	1	0.4
Support price	US\$/100 kg	227	0	0.0	0	0.0
Japan						
Total consumption	kt	264	-4	-1.5	-3	-1.0
Imports	kt	56	20	36.0	22	38.4
- food	kt	24	24	100.0	24	100.0
- feed	kt	32	-4	-12.1	-3	-7.9
Import price - food	'000 ¥/100 kg	27	-6	-21.5	-6	-21.5
Import price - feed	'000 ¥/100 kg	15	3	20.2	2	13.2
Australia						
Production	kt	255	1	0.4	12	4.6
Production sold domestically	kt	36	0	-1.3	-1	-1.8
Imports	kt	3	0	0.0	0	0.0
Total consumption	kt	40	0	-1.2	-1	-1.6
Exports	kt	220	1	0.6	12	5.6
Export price	A\$/100 kg	225	21	9.2	29	12.8
Gross value of production	A\$m	575	55	9.6	103	18.0

Continued ⇨

29 Impact of increased market access for skim milk powder *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
New Zealand						
Production	kt	227	0	0.1	10	4.4
Total consumption	kt	8	0	-2.3	0	-3.1
Exports	kt	219	0	0.2	10	4.6
Export price	NZ\$/100 kg	265	26	9.7	36	13.5
Gross value of production	NZ\$m	600	59	9.8	111	18.5
Argentina						
Production	kt	44	-1	-3.2	-5	-11.0
Total consumption	kt	14	-1	-4.3	0	-0.7
Exports	kt	29	-1	-2.8	-5	-16.2
Wholesale price	pesos/100 kg	242	12	5.1	2	0.8
Gross value of production	m pesos	106	2	1.8	-11	-10.3
China						
Production	kt	48	2	4.1	0	0.2
Production sold domestically	kt	47	2	4.2	0	0.3
Imports	kt	45	-4	-9.3	-1	-1.9
Total consumption	kt	92	-2	-2.4	-1	-0.8
Exports	kt	1	0	0.0	0	0.0
Import price	yuan/100 kg	1 351	110	8.2	25	1.8
Korea						
Production	kt	24	-2	-6.2	-2	-7.2
Imports	kt	3	2	58.4	2	67.0
Import price	'000 won/100 kg	467	-92	-19.7	-114	-24.4
Poland						
Production	kt	124	10	8.4	16	13.0
Total consumption	kt	13	-1	-11.1	-1	-8.8
Exports	kt	115	12	10.3	17	15.0
Wholesale price	Zl/100 kg	497	105	21.1	69	13.8
Hungary						
Production	kt	5	0	-0.5	0	-0.2
Total consumption	kt	6	0	-0.4	0	-0.2
Mexico						
Production	kt	25	0	0.0	0	0.0
Total consumption	kt	130	-5	-4.2	-4	-2.8
Imports	kt	104	-5	-5.2	-4	-3.4
Import price	MN\$/100 kg	1 321	248	18.8	168	12.7
Canada						
Production	kt	73	-5	-6.8	-4	-5.2
Total consumption	kt	39	0	0.0	0	0.0
Exports	kt	39	-4	-10.0	-3	-7.2
Wholesale price	C\$/kg	4.47	0	0.0	0	0.0

Continued ⇨

29 Impact of increased market access for skim milk powder *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Algeria						
Imports	kt	97	-5	-5.3	-3	-3.0
Import price	US\$/100 kg	138	24	17.3	14	10.5
Bangladesh						
Imports	kt	2	0	-5.5	0	0.8
Import price	US\$/100 kg	181	7	3.8	-4	-2.3
Brazil						
Imports	kt	53	-2	-4.4	1	2.0
Import price	US\$/100 kg	171	11	6.3	0	0.1
Egypt						
Imports	kt	25	-2	-7.5	-1	-5.1
Import price	US\$/100 kg	138	24	17.3	14	10.5
Hong Kong						
Imports	kt	14	-1	-6.1	0	-3.6
Import price	US\$/100 kg	132	27	20.2	17	13.2
India						
Imports	kt	27	5	19.8	8	30.9
Import price	US\$/100 kg	211	-5	-2.4	-17	-8.1
Indonesia						
Imports	kt	49	-3	-6.1	-2	-3.6
Import price	US\$/100 kg	132	27	20.2	17	13.2
Sri Lanka						
Imports	kt	6	0	-3.5	0	-1.2
Import price	US\$/100 kg	158	16	10.2	6	3.7
Malaysia						
Imports	kt	72	-4	-6.1	-3	-3.6
Import price	US\$/100 kg	132	27	20.2	17	13.2
Peru						
Imports	kt	13	0	-1.7	1	4.3
Import price	US\$/100 kg	204	-2	-1.1	-14	-6.9
Philippines						
Imports	kt	87	-5	-5.6	-3	-3.2
Import price	US\$/100 kg	136	25	18.4	16	11.5
Russian Federation						
Imports	kt	90	-5	-5.3	-3	-3.0
Import price	US\$/100 kg	138	24	17.3	14	10.5
Saudi Arabia						
Imports	kt	26	-1	-4.4	-1	-2.1
Import price	US\$/100 kg	148	20	13.7	10	7.1

Continued ⇌

29 Impact of increased market access for skim milk powder *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Singapore						
Imports	kt	40	-2	-6.1	-1	-3.6
Import price	US\$/100 kg	132	27	20.2	17	13.2
South Africa						
Imports	kt	3	-1	-21.5	0	-8.0
Import price	US\$/100 kg	157	16	10.5	6	4.0
Chinese Taipei						
Imports	kt	35	-1	-4.1	-1	-1.8
Import price	US\$/100 kg	152	19	12.3	9	5.8
Thailand						
Imports	kt	56	-2	-3.4	-1	-1.1
Import price	US\$/100 kg	158	16	10.2	6	3.7
Uruguay						
Production	kt	19	0	1.0	0	2.3
Total consumption	kt	1	0	-3.9	0	-1.3
Exports	kt	18	0	1.3	0	2.5
Venezuela						
Imports	kt	5	2	30.6	2	40.8
Import price	US\$/100 kg	269	-28	-10.5	-42	-15.7
Rest of world b						
Imports	kt	186	-4	-2.2	0	-0.2
Import price	US\$/100 kg	159	16	9.7	5	3.3
Rest of world c						
Production	kt	271	0	0.0	1	0.3
- small exporters						
Production sold domestically	kt	263	-2	-0.7	0	-0.2
Exports	kt	8	2	23.4	1	15.3
Rest of world d						
Production	kt	431	2	0.3	9	2.1
- large exporters						
Production sold domestically	kt	358	-6	-1.7	-2	-0.5
Exports	kt	74	7	10.1	11	15.2

a Change in stocks from year 2. **b** Includes Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Romania, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Pakistan, Mauritius, Morocco, Rwanda, Senegal, Sudan, Tunisia, Democratic Republic of Korea, Viet Nam and Papua New Guinea. **c** Includes Norway, Czech Republic, Algeria, Egypt, Turkey, Brazil, Peru, Venezuela, Bangladesh, India, Sri Lanka, Malaysia, the Philippines, Chinese Taipei, Thailand, South Africa and Saudi Arabia. **d** Includes Pakistan, Hong Kong, Indonesia, Singapore, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Russian Federation, Ukraine, Slovakia, Tajikistan, Switzerland, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Morocco, Rwanda, Senegal, Sudan, Tunisia and Mauritius.

30 Impact of increased market access for full cream milk powder

		1999		Initial impact		With supply response	
		Baseline	Change	%	Change	%	
World							
World price	US\$/100 kg	152	24	16.0	18	11.8	
	ECU/100 kg	143	23	16.0	17	11.8	
Trade	kt	1 157	-25	-2.2	-16	-1.3	
Value of trade	US\$m	1 756	238	13.5	181	10.3	
European Union (15)							
Production	kt	944	-27	-2.9	-20	-2.2	
Production sold domestically	kt	502	-4	-0.8	-5	-1.0	
Imports	kt	5	3	51.1	3	57.8	
Total consumption	kt	507	-1	-0.3	-2	-0.5	
Exports	kt	441	-24	-5.3	-15	-3.4	
Import price	ECU/100 kg	271	-51	-18.7	-56	-20.7	
Producer price	ECU/100 kg	257	-8	-3.2	-7	-2.8	
United States							
Production	kt	55	0	0.0	0	0.0	
Production sold domestically	kt	50	0	0.0	0	0.0	
Imports	kt	3	2	71.4	2	83.4	
Total consumption	kt	53	2	3.8	2	4.5	
Exports	kt	5	0	0.0	0	0.0	
Import price	US\$/100 kg	218	-39	-17.8	-45	-20.8	
Japan							
Production	kt	53	0	0.0	0	0.0	
Australia							
Production	kt	145	-1	-0.8	-1	-0.5	
Production sold domestically	kt	32	0	-0.7	0	-1.1	
Imports	kt	6	0	0.0	0	0.0	
Total consumption	kt	38	0	-0.6	0	-0.9	
Exports	kt	126	-1	-0.7	0	-0.3	
Export price	A\$/100 kg	288	19	6.6	30	10.3	
Gross value of production	A\$m	418	24	5.8	41	9.8	
New Zealand							
Production	kt	336	-2	-0.6	2	0.6	
Total consumption	kt	1	0	0.0	0	0.0	
Exports	kt	335	-2	-0.6	2	0.6	
Export price	NZ\$/100 kg	318	25	7.9	39	12.4	
Gross value of production	NZ\$m	1067	77	7.2	139	13.1	

Continued ⇨

30 Impact of increased market access for full cream milk powder *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Argentina						
Production	kt	218	-1	-0.7	-3	-1.3
Total consumption	kt	70	-1	-2.1	0	0.1
Exports	kt	149	0	0.0	-3	-1.9
Wholesale price	pesos/100 kg	297	7	2.4	0	-0.1
Gross value of production	m pesos	649	11	1.7	-9	-1.3
China						
Production	kt	400	1	0.3	1	0.1
Production sold domestically	kt	393	1	0.4	1	0.1
Imports	kt	60	-3	-4.4	0	-0.6
Total consumption	kt	453	-1	-0.3	0	0.0
Exports	kt	7	0	0.0	0	0.0
Import price	yuan/100 kg	1556	69	4.4	10	0.6
Korea						
Production	kt	4	0	2.0	0	1.8
Imports	kt	0	0	-28.0	0	-24.1
Import price	'000 won/100 kg	253	-1	-0.5	-11	-4.2
Poland						
Production	kt	39	0	0.0	0	0.0
Hungary						
Production	kt	4	0	-0.1	0	0.0
Total consumption	kt	1	0	-0.5	0	-0.2
Mexico						
Production	kt	99	4	4.3	4	4.3
Total consumption	kt	138	2	1.4	2	1.5
Imports	kt	45	-2	-5.3	-2	-4.1
Producer price	MNS\$/100 kg	3 110	37	1.2	21	0.7
Algeria						
Imports	kt	117	-3	-2.3	-2	-1.9
Import price	US\$/100 kg	159	21	13.3	15	9.1
Bangladesh						
Imports	kt	21	1	2.5	1	3.5
Import price	US\$/100 kg	209	0	0.2	-7	-3.5
Brazil						
Imports	kt	121	-2	-1.8	-2	-1.4
Import price	US\$/100 kg	181	12	6.8	5	2.9
Egypt						
Imports	kt	15	0	2.1	0	2.3
Import price	US\$/100 kg	190	8	4.4	1	0.6

Continued ⇨

30 Impact of increased market access for full cream milk powder *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Hong Kong						
Imports	kt	47	-1	-3.0	-1	-2.6
Import price	US\$/100 kg	152	24	16.0	18	11.8
India						
Imports	kt	1	0	-29.0	0	-25.6
Import price	US\$/100 kg	175	15	8.5	8	4.5
Indonesia						
Imports	kt	3	0	-3.0	0	-2.6
Import price	US\$/100 kg	152	24	16.0	18	11.8
Sri Lanka						
Imports	kt	48	0	-0.6	0	-0.3
Import price	US\$/100 kg	182	12	6.4	5	2.5
Malaysia						
Imports	kt	54	-2	-3.0	-1	-2.6
Import price	US\$/100 kg	152	24	16.0	18	11.8
Peru						
Imports	kt	40	2	6.0	3	6.9
Import price	US\$/100 kg	235	-11	-4.5	-19	-8.0
Philippines						
Imports	kt	37	-1	-2.6	-1	-2.2
Import price	US\$/100 kg	156	22	14.4	16	10.2
Russian Federation						
Imports	kt	35	-1	-2.3	-1	-1.9
Import price	US\$/100 kg	159	21	13.3	15	9.1
Saudi Arabia						
Imports	kt	68	-1	-1.5	-1	-1.1
Import price	US\$/100 kg	170	17	9.8	10	5.8
Singapore						
Imports	kt	20	-1	-3.0	-1	-2.6
Import price	US\$/100 kg	152	24	16.0	18	11.8
South Africa						
Imports	kt	1	0	-4.3	0	-2.3
Import price	US\$/100 kg	181	12	6.7	5	2.8
Chinese Taipei						
Imports	kt	43	-1	-1.2	0	-0.8
Import price	US\$/100 kg	175	15	8.5	8	4.5

Continued ⇨

30 Impact of increased market access for full cream milk powder *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Thailand						
Imports	kt	50	0	-0.8	0	-0.5
Import price	US\$/100 kg	181	12	6.8	5	2.9
Uruguay						
Production	kt	35	0	-1.0	0	-1.0
Total consumption	kt	19	-1	-3.7	0	-1.2
Exports	kt	16	0	2.2	0	-0.7
Venezuela						
Imports	kt	60	-8	-14.1	-7	-11.0
Import price	US\$/100 kg	212	-1	-0.5	-9	-4.2
Rest of world a						
Imports	kt	255	-6	-2.5	-5	-2.1
Import price	US\$/100 kg	170	17	9.9	10	5.9
Rest of world b						
Production	kt	639	0	-0.1	0	-0.1
– small exporters						
Production sold domestically	kt	619	-2	-0.3	-2	-0.3
Exports	kt	20	2	7.6	1	5.9
Rest of world c						
Production	kt	21	0	-1.1	-1	-2.6
– large exporters						
Production sold domestically d	kt	-23	0	1.0	0	0.8
Exports	kt	44	0	0.0	0	-0.8

a Includes Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Romania, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Pakistan, Mauritius, Morocco, Rwanda, Senegal, Sudan, Tunisia, Democratic Republic of Korea, Viet Nam and Papua New Guinea. **b** Includes Algeria, Egypt, Bangladesh, India, Pakistan, Sri Lanka, Indonesia, the Philippines, Chinese Taipei, Thailand, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Brazil, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, Venezuela, Armenia, Georgia, Russian Federation, Tajikistan, Federal Republic of Yugoslavia, Turkey, Israel, Norway, Switzerland, Slovakia, Czech Republic, Jordan, Kuwait, United Arab Emirates, Saudi Arabia, Morocco, Rwanda, Senegal, Sudan, Tunisia and Mauritius. **c** Includes Hong Kong, Malaysia, Singapore, South Africa and Ukraine. **d** Defined as production less exports. Some of the countries in this group re-export part of their imports and total consumption is positive because imports exceed exports.

31 Impact of increased market access for butter

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	148	42	28.7	27	18.5
	ECU/100 kg	139	40	28.7	26	18.5
Trade	kt	615	40	6.5	81	13.1
Value of trade	US\$m	908	337	37.1	309	34.0
European Union (15)						
Production	kt	1 856	3	0.2	6	0.3
Production sold domestically	kt	1 650	-9	-0.6	-9	-0.5
Imports	kt	105	83	79.1	81	76.8
Total consumption	kt	1 755	74	4.2	72	4.1
Exports	kt	160	8	5.2	14	9.0
Stocks	kt	129	4	..	0 ^a	..
Import price	ECU/100 kg	306	-74	-24.0	-71	-23.2
Producer price	ECU/100 kg	369	-10	-2.6	-10	-2.7
Support price	ECU/100 kg	328	0	0.0	0	0.0
United States						
Production	kt	530	0	0.0	-1	-0.2
Production sold domestically	kt	520	0	0.0	-1	-0.1
Imports	kt	18	4	22.9	5	27.3
Total consumption	kt	538	4	0.8	4	0.8
Exports	kt	2	-1	-56.6	-1	-31.2
Stocks	kt	20	1	..	0 ^a	..
Import price	US\$/100 kg	276	-64	-23.1	-63	-22.9
Wholesale price	US\$/100 kg	276	-6	-2.0	-5	-1.7
Support price	US\$/100 kg	144	0	0.0	0	0.0
Japan						
Total consumption	kt	81	0	0.0	0	0.0
Imports	kt	27	27	100.0	28	103.9
- butter	kt	1	0	-24.1	0	-6.2
- edible fat	kt	27	27	102.5	28	106.1
Import price - butter	¥/'000 kg	23	3	12.0	1	3.1
Import price- edible fat	¥/'000 kg	141	-57	-40.1	-59	-41.5
Australia						
Production	kt	175	0	0.3	6	3.6
Total consumption	kt	67	-1	-2.0	-2	-2.5
Exports	kt	104	2	1.7	8	7.7
Export price	A\$/100 kg	282	29	10.4	38	13.6
Gross value of production	A\$m	495	53	10.7	88	17.7

Continued ⇨

31 Impact of increased market access for butter *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
New Zealand						
Production	kt	325	2	0.5	10	3.1
Total consumption	kt	31	-1	-3.0	-1	-3.9
Exports	kt	254	3	1.0	11	4.4
Export price	NZ\$/100 kg	362	47	13.1	62	17.2
Gross value of production	NZ\$m	1 174	160	13.7	244	20.8
Argentina						
Production	kt	55	-1	-1.3	-2	-3.7
Total consumption	kt	47	-4	-8.3	-2	-4.2
Exports	kt	9	3	37.2	0	-0.5
Wholesale price	pesos/100 kg	284	32	11.4	16	5.6
Gross value of production	m pesos	155	15	10.0	3	1.6
China						
Production	kt	80	2	2.0	0	0.1
Production sold domestically	kt	80	2	2.0	0	0.1
Imports	kt	15	-2	-13.8	0	2.3
Total consumption	kt	95	-1	-0.5	0	0.5
Import price	yuan/100 kg	1 816	132	7.3	-23	-1.3
Producer price	Index '99=100	100	0	0.1	0	-0.5
Korea						
Production	kt	4	-1	-23.9	-1	-27.5
Imports	kt	0.5	0	30.2	0	30.2
Import price	'000 won/100 kg	306	-31	-10.1	-31	-10.1
Poland						
Production	kt	170	15	8.6	13	7.6
Total consumption	kt	171	15	8.6	13	7.6
Wholesale price	Zl/100 kg	886	-126	-14.2	-113	-12.7
Hungary						
Production	kt	14	0	-0.3	0	-0.1
Total consumption	kt	13	0	-0.4	0	-0.1
Mexico						
Production	kt	11	0	0.0	0	0.0
Total consumption	kt	39	7	17.3	6	16.6
Imports	kt	28	7	24.1	6	23.3
Producer price	MNS\$/100 kg	2 196	-324	-14.7	-313	-14.3

Continued ⇨

31 Impact of increased market access for butter *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Canada						
Production	kt	85	-3	-3.5	-3	-3.5
Total consumption	kt	81	0	0.1	0	0.1
Imports	kt	3	3	103.4	3	103.4
Import price	C\$/kg	5.20	-2	-29.9	-2	-29.9
Wholesale price	C\$/kg	5.47	0	0.0	0	0.0
Algeria						
Imports	kt	9	-1	-15.9	-1	-6.6
Import price	US\$/100 kg	185	29	15.9	12	6.6
Bangladesh						
Imports	kt	1	0	-16.8	0	-3.5
Import price	US\$/100 kg	203	23	11.2	5	2.3
Brazil						
Imports	kt	14	-3	-18.5	-1	-9.0
Import price	US\$/100 kg	176	32	18.5	16	9.0
Egypt						
Imports	kt	30	-7	-24.2	-4	-14.3
Import price	US\$/100 kg	159	38	24.2	23	14.3
Hong Kong						
Imports	kt	13	-4	-28.7	-2	-18.5
Import price	US\$/100 kg	148	42	28.7	27	18.5
India						
Imports	kt	9	-1	-12.9	0	0.1
Import price	US\$/100 kg	215	18	8.6	0	-0.1
Indonesia						
Imports	kt	6	-2	-25.7	-1	-15.6
Import price	US\$/100 kg	155	40	25.7	24	15.6
Sri Lanka						
Imports	kt	1	0	-27.8	0	-9.6
Import price	US\$/100 kg	192	27	13.9	9	4.8
Malaysia						
Imports	kt	10	-3	-28.7	-2	-18.5
Import price	US\$/100 kg	151	43	28.7	28	18.5
Peru						
Imports	kt	5	0	-8.8	0	3.8
Import price	US\$/100 kg	229	13	5.9	-6	-2.6

Continued ⇨

31 Impact of increased market access for butter *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Philippines						
Imports	kt	10	-2	-20.3	-1	-10.7
Import price	US\$/100 kg	170	35	20.3	18	10.7
Russian Federation						
Imports	kt	55	-11	-20.3	-6	-10.7
Import price	US\$/100 kg	170	35	20.3	18	10.7
Saudi Arabia						
Imports	kt	28	-6	-21.8	-3	-12.1
Import price	US\$/100 kg	165	36	21.8	20	12.1
Singapore						
Imports	kt	17	-5	-28.7	-3	-18.5
Import price	US\$/100 kg	148	42	28.7	27	18.5
South Africa						
Imports	kt	1	0	31.9	1	53.3
Import price	US\$/100 kg	229	-24	-10.6	-41	-17.8
Chinese Taipei						
Imports	kt	15	-4	-22.9	-2	-13.1
Import price	US\$/100 kg	162	37	22.9	21	13.1
Thailand						
Imports	kt	11	-2	-17.5	0	-0.2
Import price	US\$/100 kg	214	19	8.8	0	0.1
Uruguay						
Production	kt	16	0	0.5	0	1.4
Total consumption	kt	4	0	-12.9	0	-6.3
Exports	kt	12.5	1	4.2	0	3.5
Venezuela						
Imports	kt	1	0	-41.6	0	-14.4
Import price	US\$/100 kg	192	27	13.9	9	4.8
Rest of world b						
Imports	kt	157	-31	-20.0	-17	-10.9
Import price	US\$/100 kg	167	36	21.4	19	11.7
Rest of world c						
Production	kt	3 083	2	0.1	30	1.0
- small exporters						
Production sold domestically	kt	3 057	-20	-0.6	-11	-0.4
Exports	kt	26	21	83.0	40	156.5

Continued ⇨

31 Impact of increased market access for butter *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Rest of world d						
Production	kt	176	1	0.5	5	2.9
– large exporters						
Production sold domestically	kt	139	–3	–2.1	–2	–1.2
Exports	kt	37	4	10.2	7	18.2

a Change in stocks from years 2. **b** Includes Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Romania, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Pakistan, Mauritius, Morocco, Rwanda, Senegal, Sudan, Tunisia, Democratic Republic of Korea, Viet Nam and Papua New Guinea. **c** Includes Algeria, Egypt, Bangladesh, India, Pakistan, Sri Lanka, Indonesia, Malaysia, the Philippines, Chinese Taipei, Thailand, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Brazil, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, Venezuela, Armenia, Georgia, Romania, Russian Federation, Tajikistan, Slovakia, Federal Republic of Yugoslavia, Norway, Switzerland, Turkey, Israel, Jordan, Kuwait, United Arab Emirates, Saudi Arabia, Morocco, Rwanda, Senegal, Sudan, Tunisia, Mauritius and South Africa. **d** Includes Hong Kong, Singapore, Czech Republic and Ukraine.

32 Impact of increased market access for cheese

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	175	43	24.5	30	17.1
	ECU/100 kg	165	40	24.5	28	17.1
Trade	kt	1 169	138	11.8	191	16.3
Value of trade	US\$m	2 052	805	39.2	744	36.3
European Union (15)						
Production	kt	6 699	24	0.4	10	0.2
Production sold domestically	kt	6 272	-65	-1.0	-48	-0.8
Imports	kt	145	97	66.6	98	67.6
Total consumption	kt	6 417	31	0.5	50	0.8
Exports	kt	447	79	17.7	58	13.1
Stocks	kt	126	11	..	-2 ^a	7.5
Import price	ECU/100 kg	311	-71	-22.9	-72	-23.0
Producer price	ECU/100 kg	452	-7	-1.6	-9	-2.0
United States						
Production	kt	3 595	-6	-0.2	-20	-0.6
Production sold domestically	kt	3 510	-13	-0.4	-24	-0.7
Imports	kt	195	70	35.9	95	48.6
Total consumption	kt	3 705	57	1.5	71	1.9
Exports	kt	38	6	14.6	4	10.9
Stocks	kt	282	2	..	0 ^a	..
Import price	US\$/100 kg	272	-43	-15.7	-56	-20.7
Wholesale price	US\$/100 kg	314	-4	-1.3	-4	-1.3
Support price	US\$/100 kg	246	0	0.0	0	0.0
Japan						
Total consumption	kt	225	-1	-0.3	2	1.1
Imports	kt	187	-1	-0.3	2	1.3
Import price	'000 ¥/100 kg	33	5	14.1	3	9.9
Australia						
Production	kt	341	1	0.3	16	4.8
Production sold domestically	kt	175	-8	-4.3	-11	-6.3
Imports	kt	31	-2	-6.1	-1	-2.2
Total consumption	kt	205	-9	-4.6	-12	-5.7
Exports	kt	175	8	4.8	27	15.6
Export price	A\$/100 kg	397	37	9.4	56	14.1
Gross value of production	A\$m	1 304	127	9.7	258	19.8

Continued ⇨

32 Impact of increased market access for cheese *continued*

		1999		Initial impact		With supply response	
		Baseline	Change	%	Change	%	
New Zealand							
Production	kt	230	1	0.5	18	7.7	
Total consumption	kt	38	-1	-2.5	-1	-3.7	
Exports	kt	256	2	0.8	19	7.4	
Export price	NZ\$/100 kg	379	41	10.7	61	16.1	
Gross value of production	NZ\$m	873	98	11.2	218	25.0	
Argentina							
Production	kt	438	5	1.2	22	5.1	
Total consumption	kt	418	-16	-3.9	-9	-2.2	
Exports	kt	20	21	106.6	31	155.7	
Wholesale price	pesos/100 kg	216	30	14.1	16	7.6	
Gross value of production	m pesos	944	146	15.4	123	13.0	
China							
Production	kt	171	0	-0.3	0	0.1	
Production sold domestically	kt	171	0	-0.3	0	0.1	
Imports	kt	9	0	0.0	0	0.0	
Total consumption	kt	180	0	-0.2	0	0.0	
Import price	yuan/100 kg	2 159	81	3.7	-51	-2.4	
Korea							
Production	kt	12	2	16.9	0	2.3	
Imports	kt	14	-2	-14.7	0	-2.0	
Import price	'000 won/100 kg	288	21	7.3	3	1.0	
Poland							
Production	kt	476	-6	-1.2	-1	-0.3	
Total consumption	kt	458	-6	-1.2	-1	-0.3	
Wholesale price	Zl/100 kg	1 041	48	4.6	12	1.2	
Hungary							
Production	kt	59	2	4.0	2	3.0	
Total consumption	kt	52	0	-0.4	0	-0.1	
Exports	kt	15	3	17.0	2	12.3	
Mexico							
Production	kt	138	-1	-0.4	0	-0.2	
Total consumption	kt	165	-1	-0.3	0	-0.2	
Producer price	MNS\$/100 kg	2 319	27	1.2	15	0.7	

Continued ⇌

32 Impact of increased market access for cheese *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Canada						
Production	kt	340	0	0.0	4	1.2
Total consumption	kt	331	0	0.0	0	0.0
Imports	kt	23	18	76.0	18	76.0
Exports	kt	28	0	0.0	4	15.1
Import price	C\$/kg	9.16	-3	-38.0	-3	-38.0
Wholesale price	C\$/kg	7.26	0	0.0	0	0.0
Algeria						
Imports	kt	18	-1	-7.8	0	1.5
Import price	US\$/100 kg	254	13	5.2	-3	-1.0
Brazil						
Imports	kt	20	-3	-14.5	-2	-7.8
Import price	US\$/100 kg	209	30	14.5	16	7.8
Egypt						
Imports	kt	15	-1	-9.4	-1	-5.9
Import price	US\$/100 kg	193	36	18.8	23	11.8
Hong Kong						
Imports	kt	8	-1	-12.2	-1	-8.6
Import price	US\$/100 kg	175	43	24.5	30	17.1
Indonesia						
Imports	kt	4	0	-10.8	0	-7.2
Import price	US\$/100 kg	184	40	21.5	26	14.4
Sri Lanka						
Imports	kt	1	0	-10.1	0	-3.6
Import price	US\$/100 kg	228	23	10.1	8	3.6
Malaysia						
Imports	kt	4	0	-10.8	0	-7.2
Import price	US\$/100 kg	184	40	21.5	26	14.4
Peru						
Imports	kt	1	0	-6.0	0	-2.7
Import price	US\$/100 kg	219	26	12.0	12	5.4
Philippines						
Imports	kt	15	-1	-9.4	-1	-5.9
Import price	US\$/100 kg	193	36	18.8	23	11.8
Russian Federation						
Imports	kt	40	-3	-8.2	-2	-4.8
Import price	US\$/100 kg	202	33	16.4	19	9.5

Continued ⇨

32 Impact of increased market access for cheese *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Saudi Arabia						
Imports	kt	55	-5	-8.9	-3	-5.4
Import price	US\$/100 kg	197	35	17.8	21	10.9
Singapore						
Imports	kt	6	-1	-12.2	-1	-8.6
Import price	US\$/100 kg	175	43	24.5	30	17.1
South Africa						
Imports	kt	3	1	21.7	1	38.6
Import price	US\$/100 kg	257	-18	-7.0	-32	-12.5
Switzerland						
Imports	kt	33	-1	-3.4	-1	-2.0
Import price	US\$/100 kg	199	34	17.1	20	10.2
Chinese Taipei						
Imports	kt	8	-1	-9.2	0	-5.7
Import price	US\$/100 kg	195	36	18.3	22	11.3
Thailand						
Imports	kt	1	0	-7.8	0	1.5
Import price	US\$/100 kg	254	13	5.2	-3	-1.0
Uruguay						
Production	kt	27	0	0.5	1	2.6
Production sold domestically	kt	10	-1	-7.2	0	-3.9
Imports	kt	1.5	0	-7.2	0	-3.9
Total consumption	kt	11	-1	-7.2	0	-3.9
Exports	kt	18	-1	4.8	1	6.1
Import price	US\$/100 kg	209	30	14.5	16	7.8
Venezuela						
Imports	kt	7	1	20.8	3	37.3
Import price	US\$/100 kg	354	-25	-6.9	-44	-12.4
Rest of world b						
Imports	kt	274	-23	-8.5	-14	-5.1
Import price	US\$/100 kg	199	34	17.1	20	10.2
Rest of world c						
Production	kt	2159	1	0.0	15	0.7
- small exporters						
Production sold domestically	kt	2131	-9	-0.4	-5	-0.3
Exports	kt	28	10	35.6	20	73.6

Continued ⇨

32 Impact of increased market access for cheese *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Rest of world d						
Production	kt	437	1	0.3	18	4.2
– large exporters						
Production sold domestically	kt	322	–8	–2.6	–5	–1.5
Exports	kt	115	10	8.4	23	20.0

a Change in stocks from year 2. **b** Includes Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Romania, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Pakistan, Mauritius, Morocco, Rwanda, Senegal, Sudan, Tunisia, Democratic Republic of Korea, Viet Nam and Papua New Guinea. **c** Includes Algeria, Egypt, Bangladesh, India, Pakistan, Sri Lanka, Hong Kong, Indonesia, Malaysia, the Philippines, Chinese Taipei, Thailand, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Brazil, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, Venezuela, Armenia, Georgia, Russian Federation, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Turkey, Israel, Jordan, Kuwait, United Arab Emirates, Morocco, Rwanda, Senegal, Sudan, Tunisia, Mauritius and South Africa. **d** Includes Singapore, Norway, Switzerland, Slovakia, Czech Republic and Saudi Arabia.

33 Impact of reduced subsidised exports on milk

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
European Union (15)						
Production	kt	120 800	0	0.0	0	0.0
Fresh consumption	kt	39 109	796	2.0	1116	2.9
Producer price	ECU/100 kg	30	-1	-4.9	-2	-6.7
Gross value of production	m ECU	36 531	-1773	-4.9	-2452	-6.7
United States						
Production	kt	73 601	0	0.0	-9	0.0
Fresh consumption	kt	25 906	0	0.0	5	0.0
Producer price	US\$/100 kg	32	0	0.0	0	-0.1
Gross value of production	US\$m	23 301	1	0.0	-32	-0.1
Japan						
Production	kt	8 460	0	0.0	0	0.0
Producer price	'000 ¥/100 kg	8	0	0.0	0	0.0
Australia						
Production	kt	10 494	0	0.0	219	2.1
Fresh consumption	kt	1 914	-6	-0.3	-16	-0.8
Producer price	Ac/L	29	2	6.7	3	8.9
Gross value of production	A\$m	2 927	198	6.7	326	11.1
New Zealand						
Production	kt	10 922	0	0.0	275	2.5
Fresh consumption	kt	455	-4	-0.8	-4	-1.0
Producer price	NZc/L	31	3	9.4	4	11.4
Gross value of production	NZ\$m	3 264	306	9.4	465	14.2
Argentina						
Production	kt	9 751	0	0.0	345	3.5
Fresh consumption	kt	2 276	-46	-2.0	-27	-1.2
Producer price	pesos/100 L	17	2	14.6	1	8.3
Gross value of production	m pesos	1 614	235	14.6	196	12.1
China						
Production	kt	9 136	72	0.8	98	1.1
Fresh consumption	kt	3 066	-73	-2.4	-5	-0.2
Producer price	yuan/t	2 680	51	1.9	3	0.1
Korea						
Production	kt	2 063	8	0.4	21	1.0
Fresh consumption	kt	1 112	-43	-3.9	-11	-1.0
Producer price	won/L	601	35	5.9	9	1.5
Poland						
Production	kt	12 372	219	1.8	326	2.6
Fresh consumption	kt	3 052	-103	-3.4	-24	-0.8
Producer price	Zl/L	0.62	0	6.4	0	1.4

Continued ⇨

33 Impact of reduced subsidised exports on milk *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Hungary						
Production	kt	2 095	6	0.3	6	0.3
Fresh consumption	kt	571	-3	-0.5	-1	-0.2
Producer price	Ft/kg	60	0	0.6	0	0.2
Mexico						
Production	kt	8 474	17	0.2	21	0.2
Fresh consumption	kt	3 082	-11	-0.4	-5	-0.2
Producer price	MN\$/L	2.4	0	1.8	0	0.8
Canada						
Production	kt	8 162	-1	0.0	18	0.2
Fresh consumption	kt	2 787	0	0.0	0	0.0
Producer price	C\$/hL	56	0	0.0	0	0.0
Uruguay						
Production	kt	1 549	2	0.1	24	1.6
Rest of world a						
Production	kt	190 035	44	0.0	780	0.4
Rest of world b						
Production	kt	10 022	36	0.4	383	3.8

a Includes Algeria, Egypt, Bangladesh, India, Pakistan, Sri Lanka, Hong Kong, Indonesia, Malaysia, the Philippines, Chinese Taipei, Thailand, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Brazil, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, Venezuela, Armenia, Georgia, Russian Federation, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Turkey, Israel, Jordan, Kuwait, United Arab Emirates, Morocco, Rwanda, Senegal, Sudan, Tunisia, Mauritius and South Africa. **b** Includes Singapore, Norway, Switzerland, Slovakia, Czech Republic and Saudi Arabia.

34 Impact of reduced subsidised exports of skim milk powder

		1999		Initial impact		With supply response	
		Baseline	Change	Change	%	Change	%
World							
World price	US\$/100 kg	132	36	27.2	22	16.5	
	ECU/100 kg	124	34	27.2	20	16.5	
Trade	kt	1 193	-95	-8.0	-69	-5.7	
Value of trade	US\$m	1 572	268	17.0	154	9.8	
European Union (15)							
Production	kt	1 161	59	5.1	32	2.8	
Production sold domestically	kt	907	13	1.4	11	1.2	
Imports	kt	75	-2	-2.4	-1	-1.5	
Total consumption	kt	982	11	1.1	10	1.0	
Exports	kt	254	-95	-37.5	-97	-38.3	
Stocks	kt	190	141	..	118 a	..	
Import price	ECU/100 kg	210	-2	-0.8	-2	-0.9	
Producer price	ECU/100 kg	211	-5	-2.1	-5	-2.3	
Support price	ECU/100 kg	206	0	0.0	0	0.0	
United States							
Production	kt	625	-1	-0.1	-3	-0.4	
Production sold domestically	kt	364	2	0.5	2	0.5	
Imports	kt	5	0	-7.8	0	-4.8	
Total consumption	kt	369	1	0.3	1	0.4	
Exports	kt	217	-43	-19.8	-46	-21.2	
Stocks	kt	113	41	..	42 a	..	
Import price	US\$/100 kg	199	0	-0.2	0	-0.2	
Wholesale price	US\$/100 kg	228	-1	-0.6	-1	-0.6	
Support price	US\$/100 kg	227	0	0.0	0	0.0	
Japan							
Total consumption	kt	264	-5	-2.0	-3	-1.2	
Imports	kt	56	-5	-9.3	-3	-5.7	
- food	kt	24	0	0.0	0	0.0	
- feed	kt	32	-5	-16.3	-3	-9.9	
Import price - food	'000 ¥/100 kg	27	0	0.0	0	0.0	
Import price - feed	'000 ¥/100 kg	15	4	27.2	2	16.5	
Australia							
Production	kt	255	0	0.1	10	4.0	
Production sold domestically	kt	36	-1	-1.7	-1	-2.2	
Imports	kt	3	0	0.0	0	0.0	
Total consumption	kt	40	-1	-1.6	-1	-2.0	
Exports	kt	220	1	0.4	11	5.0	
Export price	A\$/100 kg	225	28	12.4	36	16.1	
Gross value of production	A\$m	575	72	12.5	119	20.6	

Continued ⇨

34 Impact of reduced subsidised exports of skim milk powder *continued*

		1999 Baseline	Initial impact		With supply response	
			Change	%	Change	%
New Zealand						
Production	kt	227	-2	-0.9	-7	-3.3
Total consumption	kt	8	0	-3.0	0	-3.8
Exports	kt	219	-2	-0.8	-7	-3.2
Export price	NZ\$/100 kg	265	35	13.1	45	17.0
Gross value of production	NZ\$m	600	73	12.1	79	13.2
Argentina						
Production	kt	44	1	1.1	8	18.0
Total consumption	kt	14	-2	-14.1	-1	-9.1
Exports	kt	29	2	8.3	9	31.3
Wholesale price	pesos/100 kg	242	46	18.8	28	11.4
Gross value of production	m pesos	106	21	20.2	33	31.5
China						
Production	kt	48	5	10.7	3	6.3
Production sold domestically	kt	47	5	11.0	3	6.4
Imports	kt	45	-13	-28.5	-8	-17.5
Total consumption	kt	92	-8	-8.3	-5	-5.3
Exports	kt	1	0	0.0	0	0.0
Import price	yuan/100 kg	1 351	367	27.2	223	16.5
Korea						
Production	kt	24	1	3.7	1	2.8
Imports	kt	3	-1	-34.3	-1	-26.0
Import price	'000 won/100 kg	467	127	27.2	77	16.5
Poland						
Production	kt	124	14	11.6	21	16.6
Total consumption	kt	13	-2	-14.1	-1	-10.7
Exports	kt	115	16	14.1	22	19.1
Wholesale price	Zl/100 kg	497	142	28.5	86	17.3
Hungary						
Production	kt	5	0	-0.3	0	-0.1
Total consumption	kt	6	0	-0.3	0	-0.1
Mexico						
Production	kt	25	0	0.0	0	0.0
Total consumption	kt	130	-7	-5.0	-4	-3.4
Imports	kt	104	-7	-6.3	-4	-4.2
Import price	MN\$/100 kg	1 321	375	28.4	214	16.2

Continued ⇨

34 Impact of reduced subsidised exports of skim milk powder *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Canada						
Production	kt	73	0	-0.1	1	0.8
Total consumption	kt	39	0	0.0	0	0.0
Exports	kt	39	0	-0.2	1	1.4
Wholesale price	C\$/kg	4.47	0	0.0	0	0.0
Algeria						
Imports	kt	97	-6	-5.7	-4	-4.3
Import price	US\$/100 kg	138	38	27.2	23	16.5
Bangladesh						
Imports	kt	2	0	-17.2	0	-13.0
Import price	US\$/100 kg	181	49	27.2	30	16.5
Brazil						
Imports	kt	53	-9	-17.2	-7	-13.0
Import price	US\$/100 kg	171	47	27.2	28	16.5
Egypt						
Imports	kt	25	-1	-5.7	-1	-4.3
Import price	US\$/100 kg	138	38	27.2	23	16.5
Hong Kong						
Imports	kt	14	-1	-5.7	-1	-4.3
Import price	US\$/100 kg	132	36	27.2	22	16.5
India						
Imports	kt	27	-9	-34.3	-7	-26.0
Import price	US\$/100 kg	211	57	27.2	35	16.5
Indonesia						
Imports	kt	49	-3	-5.7	-2	-4.3
Import price	US\$/100 kg	132	36	27.2	22	16.5
Sri Lanka						
Imports	kt	6	0	-5.7	0	-4.3
Import price	US\$/100 kg	158	43	27.2	26	16.5
Malaysia						
Imports	kt	72	-4	-5.7	-3	-4.3
Import price	US\$/100 kg	132	36	27.2	22	16.5
Peru						
Imports	kt	13	-2	-17.2	-2	-13.0
Import price	US\$/100 kg	204	56	27.2	34	16.5

Continued ⇨

34 Impact of reduced subsidised exports of skim milk powder *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Philippines						
Imports	kt	87	-5	-5.7	-4	-4.3
Import price	US\$/100 kg	136	37	27.2	22	16.5
Russian Federation						
Imports	kt	90	-5	-5.7	-4	-4.3
Import price	US\$/100 kg	138	38	27.2	23	16.5
Saudi Arabia						
Imports	kt	26	-2	-5.7	-1	-4.3
Import price	US\$/100 kg	148	40	27.2	24	16.5
Singapore						
Imports	kt	40	-2	-5.7	-2	-4.3
Import price	US\$/100 kg	132	36	27.2	22	16.5
South Africa						
Imports	kt	3	-1	-34.3	-1	-26.0
Import price	US\$/100 kg	157	43	27.2	26	16.5
Chinese Taipei						
Imports	kt	35	-2	-5.7	-2	-4.3
Import price	US\$/100 kg	152	41	27.2	25	16.5
Thailand						
Imports	kt	56	-3	-5.7	-2	-4.3
Import price	US\$/100 kg	158	43	27.2	26	16.5
Uruguay						
Production	kt	19	0	0.9	0	0.1
Total consumption	kt	1	0	-8.8	0	-5.9
Exports	kt	18	0	1.5	0	0.4
Venezuela						
Imports	kt	5	-2	-34.3	-1	-26.0
Import price	US\$/100 kg	269	73	27.2	44	16.5

Continued ⇨

34 Impact of reduced subsidised exports of skim milk powder *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Rest of world b						
Imports	kt	186	-10	-5.3	-7	-4.0
Import price	US\$/100 kg	159	43	27.2	26	16.5
Rest of world c						
Production	kt	271	0	0.0	1	0.2
– small exporters						
Production sold domestically	kt	263	-5	-1.8	-3	-1.2
Exports	kt	8	5	60.1	4	48.3
Rest of world d						
Production	kt	431	4	0.9	25	5.9
– large exporters						
Production sold domestically	kt	358	-16	-4.6	-10	-2.8
Exports	kt	74	20	27.6	35	48.0

a Change in stocks from year 2. **b** Includes Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Romania, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Pakistan, Mauritius, Morocco, Rwanda, Senegal, Sudan, Tunisia, Democratic Republic of Korea, Viet Nam and Papua New Guinea. **c** Includes Norway, Czech Republic, Algeria, Egypt, Turkey, Brazil, Peru, Venezuela, Bangladesh, India, Sri Lanka, Malaysia, the Philippines, Chinese Taipei, Thailand, South Africa and Saudi Arabia. **d** Includes Pakistan, Hong Kong, Indonesia, Singapore, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Russian Federation, Ukraine, Slovakia, Tajikistan, Switzerland, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Morocco, Rwanda, Senegal, Sudan, Tunisia and Mauritius.

35 Impact of reduced subsidised exports of full cream milk powder

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	152	48	31.5	24	15.7
	ECU/100 kg	143	45	31.5	22	15.7
Trade	kt	1 157	-159	-13.8	-69	-6.0
Value of trade	US\$m	1 756	235	13.4	154	8.8
European Union (15)						
Production	kt	944	-168	-17.8	-174	-18.4
Production sold domestically	kt	502	23	4.5	19	3.8
Imports	kt	5	-3	-68.5	-2	-45.0
Total consumption	kt	507	19	3.8	17	3.4
Exports	kt	441	-190	-43.2	-193	-43.7
Import price	ECU/100 kg	271	41	15.0	20	7.5
Producer price	ECU/100 kg	257	-41	-15.7	-39	-15.1
United States						
Production	kt	55	0	0.0	0	0.0
Production sold domestically	kt	50	3	5.0	3	5.0
Imports	kt	3	0	0.0	0	0.0
Total consumption	kt	53	3	4.7	3	4.7
Exports	kt	5	-3	-50.0	-3	-50.0
Import price	US\$/100 kg	218	0	-0.2	0	-0.2
Japan						
Production	kt	53	0	0.0	0	0.0
Australia						
Production	kt	145	2	1.5	14	9.5
Production sold domestically	kt	32	0	-1.3	0	-1.5
Imports	kt	6	0	0.0	0	0.0
Total consumption	kt	38	0	-1.1	0	-1.3
Exports	kt	126	3	2.0	14	11.3
Export price	A\$/100 kg	288	37	12.9	44	15.1
Gross value of production	A\$m	418	61	14.6	109	26.0
New Zealand						
Production	kt	336	7	2.2	60	17.7
Total consumption	kt	1	0	0.0	0	0.0
Exports	kt	335	7	2.2	60	17.8
Export price	NZ\$/100 kg	318	49	15.5	57	18.1
Gross value of production	NZ\$m	1 067	192	18.0	416	39.0

Continued ⇨

35 Impact of reduced subsidised exports of full cream milk powder

continued

		1999		Initial impact		With supply response	
		Baseline	Change	%	Change	%	
Argentina							
Production	kt	218	3	1.3	15	6.8	
Total consumption	kt	70	-11	-15.1	-6	-8.2	
Exports	kt	149	14	9.1	21	13.8	
Wholesale price	pesos/100 kg	297	61	20.4	30	10.2	
Gross value of production	m pesos	649	143	22.0	115	17.7	
China							
Production	kt	400	12	3.0	8	2.0	
Production sold domestically	kt	393	12	3.1	8	2.0	
Imports	kt	60	-20	-33.1	-10	-16.4	
Total consumption	kt	453	-8	-1.7	-2	-0.4	
Exports	kt	7	0	0.0	0	0.0	
Import price	yuan/100 kg	1 556	490	31.5	244	15.7	
Korea							
Production	kt	4	0	3.9	0	1.6	
Imports	kt	0	0	-53.7	0	-22.4	
Import price	'000 won/100 kg	253	80	31.5	40	15.7	
Poland							
Production	kt	39	0	0.0	0	0.0	
Hungary							
Production	kt	4	0	-0.1	0	0.0	
Total consumption	kt	1	0	-0.3	0	-0.1	
Mexico							
Production	kt	99	6	6.5	5	4.6	
Total consumption	kt	138	2	1.4	2	1.5	
Imports	kt	45	-5	-10.3	-2	-5.4	
Producer price	MN\$/100 kg	3 110	56	1.8	25	0.8	
Algeria							
Imports	kt	117	-10	-9.0	-4	-3.7	
Import price	US\$/100 kg	159	50	31.5	25	15.7	
Bangladesh							
Imports	kt	21	-6	-26.9	-2	-11.2	
Import price	US\$/100 kg	209	66	31.5	33	15.7	
Brazil							
Imports	kt	121	-11	-9.0	-5	-3.7	
Import price	US\$/100 kg	181	57	31.5	28	15.7	

Continued ⇨

35 Impact of reduced subsidised exports of full cream milk powder *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Egypt						
Imports	kt	15	-1	-9.0	-1	-3.7
Import price	US\$/100 kg	190	60	31.5	30	15.7
Hong Kong						
Imports	kt	47	-4	-9.0	-2	-3.7
Import price	US\$/100 kg	152	48	31.5	24	15.7
India						
Imports	kt	1	-1	-53.7	0	-22.4
Import price	US\$/100 kg	175	55	31.5	27	15.7
Indonesia						
Imports	kt	3	0	-9.0	0	-3.7
Import price	US\$/100 kg	152	48	31.5	24	15.7
Sri Lanka						
Imports	kt	48	-4	-9.0	-2	-3.7
Import price	US\$/100 kg	182	57	31.5	29	15.7
Malaysia						
Imports	kt	54	-5	-9.0	-2	-3.7
Import price	US\$/100 kg	152	48	31.5	24	15.7
Peru						
Imports	kt	40	-11	-26.9	-4	-11.2
Import price	US\$/100 kg	235	74	31.5	37	15.7
Philippines						
Imports	kt	37	-3	-9.0	-1	-3.7
Import price	US\$/100 kg	156	49	31.5	25	15.7
Russian Federation						
Imports	kt	35	-3	-9.0	-1	-3.7
Import price	US\$/100 kg	159	50	31.5	25	15.7
Saudi Arabia						
Imports	kt	68	-6	-9.0	-3	-3.7
Import price	US\$/100 kg	170	54	31.5	27	15.7
Singapore						
Imports	kt	20	-2	-9.0	-1	-3.7
Import price	US\$/100 kg	152	48	31.5	24	15.7
South Africa						
Imports	kt	1	-1	-53.7	0	-22.4
Import price	US\$/100 kg	181	57	31.5	28	15.7

Continued ⇨

35 Impact of reduced subsidised exports of full cream milk powder

continued

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Chinese Taipei						
Imports	kt	43	-4	-9.0	-2	-3.7
Import price	US\$/100 kg	175	55	31.5	27	15.7
Thailand						
Imports	kt	50	-4	-9.0	-2	-3.7
Import price	US\$/100 kg	181	57	31.5	28	15.7
Uruguay						
Production	kt	35	0	-0.1	3	8.6
Total consumption	kt	19	-4	-21.0	-2	-10.6
Exports	kt	16	4	24.8	5	31.4
Venezuela						
Imports	kt	60	-32	-53.7	-13	-22.4
Import price	US\$/100 kg	212	67	31.5	33	15.7
Rest of world a						
Imports	kt	255	-23	-8.9	-9	-3.7
Import price	US\$/100 kg	170	53	31.5	27	15.7
Rest of world b						
Production	kt	639	2	0.3	21	3.3
- small exporters						
Production sold domestically	kt	619	-7	-1.1	-3	-0.4
Exports	kt	20	9	43.7	24	119.5
Rest of world c						
Production	kt	21	1	2.9	2	11.7
- large exporters						
Production sold domestically d	kt	-23	-1	3.6	0	1.5
Exports	kt	44	1	3.3	3	6.3

a Includes Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Romania, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Pakistan, Mauritius, Morocco, Rwanda, Senegal, Sudan, Tunisia, Democratic Republic of Korea, Viet Nam and Papua New Guinea. b Includes Algeria, Egypt, Bangladesh, India, Pakistan, Sri Lanka, Indonesia, the Philippines, Chinese Taipei, Thailand, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Brazil, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, Venezuela, Armenia, Georgia, Russian Federation, Tajikistan, Federal Republic of Yugoslavia, Turkey, Israel, Norway, Switzerland, Slovakia, Czech Republic, Jordan, Kuwait, United Arab Emirates, Saudi Arabia, Morocco, Rwanda, Senegal, Sudan, Tunisia and Mauritius. c Includes Hong Kong, Malaysia, Singapore, South Africa and Ukraine. d Defined as production less exports. Some of the countries in this group re-export part of their imports and total consumption is positive because imports exceed exports.

36 Impact of reduced subsidised exports of butter

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	148	21	14.0	8	5.8
	ECU/100 kg	139	19	14.0	8	5.8
Trade	kt	615	-65	-10.5	-27	-4.5
Value of trade	US\$m	908	18	2.0	9	1.0
European Union (15)						
Production	kt	1 856	15	0.8	-1	0.0
Production sold domestically	kt	1 650	17	1.1	23	1.4
Imports	kt	105	-1	-1.2	-1	-1.0
Total consumption	kt	1 755	16	0.9	22	1.3
Exports	kt	160	-87	-54.1	-87	-54.1
Stocks	kt	129	85	..	63 a	..
Import price	ECU/100 kg	306	-12	-3.8	-15	-5.0
Producer price	ECU/100 kg	369	-41	-11.0	-54	-14.5
Support price	ECU/100 kg	328	0	0.0	0	0.0
United States						
Production	kt	530	-1	-0.2	-2	-0.4
Production sold domestically	kt	520	0	0.0	-1	-0.2
Imports	kt	18	-1	-5.8	0	-2.2
Total consumption	kt	538	-1	-0.2	-2	-0.3
Exports	kt	2	-1	-42.1	-1	-46.9
Stocks	kt	20	0	..	0 a	..
Import price	US\$/100 kg	276	0	0.0	1	0.2
Wholesale price	US\$/100 kg	276	0	0.0	2	0.6
Support price	US\$/100 kg	144	0	0.0	0	0.0
Japan						
Total consumption	kt	81	0	0.0	0	0.0
Imports	kt	27	-2	-6.0	-1	-2.5
- butter	kt	1	0	-28.0	0	-11.5
- edible fat	kt	27	-1	-5.6	-1	-2.3
Import price - butter	'000 ¥/100 kg	23	3	14.0	1	5.8
Import price - edible fat	'000 ¥/100 kg	141	3	2.2	1	0.9
Australia						
Production	kt	175	0	0.1	6	3.6
Total consumption	kt	67	-1	-1.0	-1	-0.9
Exports	kt	104	1	0.8	7	6.6
Export price	A\$/100 kg	282	14	5.1	12	4.4
Gross value of production	A\$m	495	25	5.1	40	8.2

Continued ⇨

36 Impact of reduced subsidised exports of butter *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
New Zealand						
Production	kt	325	0	-0.1	-1	-0.3
Total consumption	kt	31	0	-1.5	0	-1.4
Exports	kt	254	0	0.0	-1	-0.2
Export price	NZ\$/100 kg	362	23	6.4	20	5.6
Gross value of production	NZ\$m	1 174	73	6.3	62	5.3
Argentina						
Production	kt	55	1	1.0	6	11.6
Total consumption	kt	47	-3	-6.4	-1	-2.8
Exports	kt	9	4	41.9	8	88.8
Wholesale price	pesos/100 kg	284	25	8.7	10	3.6
Gross value of production	m pesos	155	15	9.8	24	15.5
China						
Production	kt	80	4	5.2	2	3.0
Production sold domestically	kt	80	4	5.2	2	3.0
Imports	kt	15	-4	-27.1	-2	-11.4
Total consumption	kt	95	0	0.1	1	0.7
Import price	yuan/100 kg	1 816	254	14.0	104	5.8
Producer price	Index '99=100	100	-1	-1.2	-1	-1.4
Korea						
Production	kt	4	1	14.6	0	10.9
Imports	kt	0.5	0	-34.9	0	-17.3
Import price	'000 won/100 kg	306	36	11.6	18	5.8
Poland						
Production	kt	170	20	11.9	17	9.9
Total consumption	kt	171	20	11.9	17	9.9
Wholesale price	Zl/100 kg	886	-166	-18.8	-142	-16.0
Hungary						
Production	kt	14	0	-0.2	0	-0.1
Total consumption	kt	13	0	-0.2	0	-0.1
Mexico						
Production	kt	11	0	0.0	0	0.0
Total consumption	kt	39	0	-0.1	0	-0.8
Imports	kt	28	0	-0.1	0	-1.1
Producer price	MN\$/100 kg	2 196	1	0.1	18	0.8

Continued ⇨

36 Impact of reduced subsidised exports of butter *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Canada						
Production	kt	85	0	-0.1	0	0.0
Total consumption	kt	81	0	0.0	0	0.0
Imports	kt	3	0	1.7	0	1.7
Import price	C\$/kg	5.20	0	0.0	0	0.0
Wholesale price	C\$/kg	5.47	0	0.0	0	0.0
Algeria						
Imports	kt	9	-1	-14.0	-1	-5.8
Import price	US\$/100 kg	185	26	14.0	11	5.8
Bangladesh						
Imports	kt	1	0	-21.0	0	-8.6
Import price	US\$/100 kg	203	28	14.0	12	5.8
Brazil						
Imports	kt	14	-2	-14.0	-1	-5.8
Import price	US\$/100 kg	176	25	14.0	10	5.8
Egypt						
Imports	kt	30	-4	-14.0	-2	-5.8
Import price	US\$/100 kg	159	22	14.0	9	5.8
Hong Kong						
Imports	kt	13	-2	-14.0	-1	-5.8
Import price	US\$/100 kg	148	21	14.0	8	5.8
India						
Imports	kt	9	-2	-21.0	-1	-8.6
Import price	US\$/100 kg	215	30	14.0	12	5.8
Indonesia						
Imports	kt	6	-1	-14.0	0	-5.8
Import price	US\$/100 kg	155	22	14.0	9	5.8
Sri Lanka						
Imports	kt	1	0	-28.0	0	-11.5
Import price	US\$/100 kg	192	27	14.0	11	5.8
Malaysia						
Imports	kt	10	-1	-14.0	-1	-5.8
Import price	US\$/100 kg	151	21	14.0	9	5.8
Peru						
Imports	kt	5	-1	-21.0	0	-8.6
Import price	US\$/100 kg	229	32	14.0	13	5.8

Continued ⇨

36 Impact of reduced subsidised exports of butter *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Philippines						
Imports	kt	10	-1	-14.0	-1	-5.8
Import price	US\$/100 kg	170	24	14.0	10	5.8
Russian Federation						
Imports	kt	55	-8	-14.0	-3	-5.8
Import price	US\$/100 kg	170	24	14.0	10	5.8
Saudi Arabia						
Imports	kt	28	-4	-14.0	-2	-5.8
Import price	US\$/100 kg	165	23	14.0	10	5.8
Singapore						
Imports	kt	17	-2	-14.0	-1	-5.8
Import price	US\$/100 kg	148	21	14.0	8	5.8
South Africa						
Imports	kt	1	0	-3.3	0	-3.3
Import price	US\$/100 kg	229	3	1.1	3	1.1
Chinese Taipei						
Imports	kt	15	-2	-14.0	-1	-5.8
Import price	US\$/100 kg	162	23	14.0	9	5.8
Thailand						
Imports	kt	11	-3	-28.0	-1	-11.5
Import price	US\$/100 kg	214	30	14.0	12	5.8
Uruguay						
Production	kt	16	0	0.6	0	1.6
Total consumption	kt	4	0	-9.8	0	-4.0
Exports	kt	12.5	0	3.5	0	3.2
Venezuela						
Imports	kt	1	0	-42.0	0	-17.3
Import price	US\$/100 kg	192	27	14.0	11	5.8
Rest of world b						
Imports	kt	157	-21	-13.1	-8	-5.4
Import price	US\$/100 kg	167	23	14.0	10	5.8
Rest of world c						
Production	kt	3 083	1	0.0	26	0.8
- small exporters						
Production sold domestically	kt	3 057	-13	-0.4	-5	-0.2
Exports	kt	26	14	55.2	31	120.0

Continued ⇨

36 Impact of reduced subsidised exports of butter *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Rest of world d						
Production	kt	176	2	1.3	14	8.2
– large exporters						
Production sold domestically	kt	139	–2	–1.4	–1	–0.6
Exports	kt	37	4	11.3	15	40.8

a Change in stocks from year 2. **b** Includes Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Romania, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Pakistan, Mauritius, Morocco, Rwanda, Senegal, Sudan, Tunisia, Democratic Republic of Korea, Viet Nam and Papua New Guinea. **c** Includes Algeria, Egypt, Bangladesh, India, Pakistan, Sri Lanka, Indonesia, Malaysia, the Philippines, Chinese Taipei, Thailand, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Brazil, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, Venezuela, Armenia, Georgia, Romania, Russian Federation, Tajikistan, Slovakia, Federal Republic of Yugoslavia, Norway, Switzerland, Turkey, Israel, Jordan, Kuwait, United Arab Emirates, Saudi Arabia, Morocco, Rwanda, Senegal, Sudan, Tunisia, Mauritius and South Africa. **d** Includes Hong Kong, Singapore, Czech Republic and Ukraine.

37 Impact of reduced subsidised exports of cheese

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
World						
World price	US\$/100 kg	175	27	15.5	17	9.5
	ECU/100 kg	165	26	15.5	16	9.5
Trade	kt	1 169	-67	-5.8	-43	-3.7
Value of trade	US\$m	2 052	181	8.8	113	5.5
European Union (15)						
Production	kt	6 699	159	2.4	261	3.9
Production sold domestically	kt	6 272	216	3.4	324	5.2
Imports	kt	145	-4	-2.9	-3	-2.4
Total consumption	kt	6 417	212	3.3	320	5.0
Exports	kt	447	-106	-23.8	-105	-23.6
Stocks	kt	126	50	..	1 a	..
Import price	ECU/100 kg	311	-6	-1.8	-8	-2.6
Producer price	ECU/100 kg	452	-24	-5.3	-35	-7.7
United States						
Production	kt	3 595	2	0.1	4	0.1
Production sold domestically	kt	3 510	1	0.0	4	0.1
Imports	kt	195	-2	-1.0	-1	-0.6
Total consumption	kt	3 705	-1	0.0	3	0.1
Exports	kt	38	1	3.5	0	0.1
Stocks	kt	282	0	..	0 a	..
Import price	US\$/100 kg	272	0	0.0	0	-0.1
Wholesale price	US\$/100 kg	314	0	-0.1	-1	-0.3
Support price	US\$/100 kg	246	0	0.0	0	0.0
Japan						
Total consumption	kt	225	-7	-3.0	-4	-1.9
Imports	kt	187	-7	-3.6	-4	-2.3
Import price	'000 ¥/100 kg	33	3	8.9	2	5.5
Australia						
Production	kt	341	-1	-0.3	2	0.6
Production sold domestically	kt	175	-5	-2.8	-6	-3.6
Imports	kt	31	-1	-4.2	0	-1.6
Total consumption	kt	205	-6	-3.0	-7	-3.3
Exports	kt	175	4	2.3	9	4.9
Export price	A\$/100 kg	397	24	6.0	31	7.8
Gross value of production	A\$m	1 304	74	5.7	111	8.5

Continued ⇨

37 Impact of reduced subsidised exports of cheese *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
New Zealand						
Production	kt	230	-1	-0.5	-1	-0.5
Total consumption	kt	38	-1	-1.6	-1	-2.1
Exports	kt	256	-1	-0.2	0	-0.2
Export price	NZ\$/100 kg	379	26	6.8	34	8.9
Gross value of production	NZ\$m	873	54	6.2	72	8.3
Argentina						
Production	kt	438	2	0.4	16	3.6
Total consumption	kt	418	-17	-4.1	-11	-2.6
Exports	kt	20	19	94.1	27	134.1
Wholesale price	pesos/100 kg	216	32	15.0	20	9.2
Gross value of production	m pesos	944	146	15.4	125	13.2
China						
Production	kt	171	-2	-1.2	0	-0.1
Production sold domestically	kt	171	-2	-1.2	0	-0.1
Imports	kt	9	0	0.2	0	-0.1
Total consumption	kt	180	-2	-1.1	0	-0.1
Import price	yuan/100 kg	2 159	334	15.5	206	9.5
Korea						
Production	kt	12	4	35.6	3	21.9
Imports	kt	14	-4	-31.0	-3	-19.1
Import price	'000 won/100 kg	288	45	15.5	27	9.5
Poland						
Production	kt	476	-8	-1.6	-2	-0.4
Total consumption	kt	458	-8	-1.7	-2	-0.4
Wholesale price	Zl/100 kg	1 041	67	6.4	15	1.4
Hungary						
Production	kt	59	2	2.6	1	1.7
Total consumption	kt	52	0	-0.2	0	-0.1
Exports	kt	15	2	10.9	1	6.9
Mexico						
Production	kt	138	-1	-0.6	0	-0.3
Total consumption	kt	165	-1	-0.5	0	-0.2
Producer price	MNS\$/100 kg	2 319	41	1.8	18	0.8

Continued ⇨

37 Impact of reduced subsidised exports of cheese *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Canada						
Production	kt	340	0	0.0	2	0.7
Total consumption	kt	331	0	0.0	0	0.0
Imports	kt	23	-3	-12.0	-3	-12.0
Exports	kt	28	0	0.0	2	8.1
Import price	C\$/kg	9.16	1	6.0	1	6.0
Wholesale price	C\$/kg	7.26	0	0.0	0	0.0
Algeria						
Imports	kt	18	-4	-23.2	-3	-14.3
Import price	US\$/100 kg	254	39	15.5	24	9.5
Brazil						
Imports	kt	20	-3	-15.5	-2	-9.5
Import price	US\$/100 kg	209	32	15.5	20	9.5
Egypt						
Imports	kt	15	-1	-7.7	-1	-4.8
Import price	US\$/100 kg	193	30	15.5	18	9.5
Hong Kong						
Imports	kt	8	-1	-7.7	0	-4.8
Import price	US\$/100 kg	175	27	15.5	17	9.5
Indonesia						
Imports	kt	4	0	-7.7	0	-4.8
Import price	US\$/100 kg	184	29	15.5	18	9.5
Sri Lanka						
Imports	kt	1	0	-15.5	0	-9.5
Import price	US\$/100 kg	228	35	15.5	22	9.5
Malaysia						
Imports	kt	4	0	-7.7	0	-4.8
Import price	US\$/100 kg	184	29	15.5	18	9.5
Peru						
Imports	kt	1	0	-7.7	0	-4.8
Import price	US\$/100 kg	219	34	15.5	21	9.5
Philippines						
Imports	kt	15	-1	-7.7	-1	-4.8
Import price	US\$/100 kg	193	30	15.5	18	9.5

Continued ⇌

37 Impact of reduced subsidised exports of cheese *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Russian Federation						
Imports	kt	40	-3	-7.7	-2	-4.8
Import price	US\$/100 kg	202	31	15.5	19	9.5
Saudi Arabia						
Imports	kt	55	-4	-7.7	-3	-4.8
Import price	US\$/100 kg	197	30	15.5	19	9.5
Singapore						
Imports	kt	6	0	-7.7	0	-4.8
Import price	US\$/100 kg	175	27	15.5	17	9.5
South Africa						
Imports	kt	3	-1	-27.3	-1	-20.0
Import price	US\$/100 kg	257	23	8.8	17	6.5
Switzerland						
Imports	kt	33	-1	-3.1	-1	-1.9
Import price	US\$/100 kg	199	31	15.5	19	9.5
Chinese Taipei						
Imports	kt	8	-1	-7.7	0	-4.8
Import price	US\$/100 kg	195	30	15.5	19	9.5
Thailand						
Imports	kt	1	0	-23.2	0	-14.3
Import price	US\$/100 kg	254	39	15.5	24	9.5
Uruguay						
Production	kt	27	0	0.1	0	-0.1
Production sold domestically	kt	10	-1	-7.7	0	-4.8
Imports	kt	1.5	0	-7.7	0	-4.8
Total consumption	kt	11	-1	-7.7	-1	-4.8
Exports	kt	18	1	4.3	0	2.4
Import price	US\$/100 kg	209	32	15.4	20	9.5
Venezuela						
Imports	kt	7	-3	-46.5	-2	-28.6
Import price	US\$/100 kg	354	55	15.5	34	9.5
Rest of world b						
Imports	kt	274	-21	-7.7	-13	-4.7
Import price	US\$/100 kg	199	31	15.5	19	9.5

Continued ⇨

37 Impact of reduced subsidised exports of cheese *continued*

		1999	Initial impact		With supply response	
		Baseline	Change	%	Change	%
Rest of world c						
Production	kt	2 159	0	0.0	7	0.3
– small exporters						
Production sold domestically	kt	2 131	–8	–0.4	–5	–0.2
Exports	kt	28	8	29.1	12	44.4
Rest of world d						
Production	kt	437	–1	–0.3	7	1.5
– large exporters						
Production sold domestically	kt	322	–7	–2.3	–5	–1.4
Exports	kt	115	6	5.2	11	9.8

a Change in stocks from year 2. **b** Includes Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Armenia, Georgia, Romania, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Israel, Jordan, Kuwait, United Arab Emirates, Pakistan, Mauritius, Morocco, Rwanda, Senegal, Sudan, Tunisia, Democratic Republic of Korea, Viet Nam and Papua New Guinea. **c** Includes Algeria, Egypt, Bangladesh, India, Pakistan, Sri Lanka, Hong Kong, Indonesia, Malaysia, the Philippines, Chinese Taipei, Thailand, Democratic Republic of Korea, Viet Nam, Papua New Guinea, Brazil, Chile, Columbia, Dominican Republic, Cuba, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, Venezuela, Armenia, Georgia, Russian Federation, Ukraine, Tajikistan, Federal Republic of Yugoslavia, Turkey, Israel, Jordan, Kuwait, United Arab Emirates, Morocco, Rwanda, Senegal, Sudan, Tunisia, Mauritius and South Africa. **d** Includes Singapore, Norway, Switzerland, Slovakia, Czech Republic and Saudi Arabia.

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