TURKISH ECONOMIC ASSOCIATION

DISCUSSION PAPER 2013/2
http ://www.tek. org.tr

THE EVOLUTION OF AGRICULTURAL TRADE FLOWS

M. Ataman Aksoy and Francis Ng

Jan, 2013

WPS5308

Policy Research Working Paper 5308

The Evolution of Agricultural Trade Flows

M. Ataman Aksoy
Francis Ng

The World Bank
Development Research Group
Trade and Integration Team
May 2010

Policy Research Working Paper 5308

Abstract

Earlier research showed that during the 1980s and 1990s most of the global agricultural trade expansion took place among the industrial countries and among countries within trade blocs. These were also periods of declining agricultural prices. These prices increased during the 2000s, there were continuous trade reforms, and many developing countries started to support their agricultural sectors. This paper analyzes trade flows during the past two decades, and tries to measure whether all these developments have changed the trade balances and the share of different groups within the global trade flows. In addition, it looks at the trade balances on food to see the impact of these changes on net food importing countries. In conclusion, unlike the case with manufacturing, developing countries have not been able to increase their export shares in agriculture as significantly. They have maintained their trade shares by primarily expanding exports to other developing countries.

This paper—a product of the Trade and Integration Team, Development Research Group—is part of a larger effort in the department to understand the patterns of growth and structure in agricultural trade and policies in industrial and developing countries. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at fng@worldbank.org.

The Evolution of Agricultural Trade Flows

M. Ataman Aksoy and Francis Ng [1]

JEL classification: F01, F10, F13, Q17, Q18

Keywords: Agriculture, agricultural trade, agricultural prices, agricultural growth, net food exporters and importers

[1] Development Research Group – Trade and International Integration at the World Bank. Corresponding Emails: ataman.aksoy@gmail and fng@worldbank.org. The authors would like to thank Soamiely Andriamananjara for his helpful comments. The findings, interpretations, and conclusions expressed herein are those of the authors and do not necessarily reflect the views of the World Bank and its affiliated organizations.

I. Introduction

The last few decades have been a period of very rapid export growth from developing countries, aided by the growth of the world economy, lowering of trade barriers, and increasing supply capabilities in developing countries. Increased import and export shares in total output have been a key source of growth in many developing countries. This growth has been fastest in manufacturing, where global levels of protection have been reduced significantly.[2] Growth has been slower in agriculture, where significant protection still remains.

Aksoy (2004), in a summary paper on trade flows, concluded that while there has been tremendous change in the past 20 years in global specialization and trade in manufacturing, there has been relatively little structural change in global agricultural trade flows. His data started in 1980 and ended in 2001. Since then, world trade has expanded at a faster rate, and the period around the year 2001 was a period of declining agricultural prices. For most agricultural commodities, 2002 is the bottom of the price cycle. The late 2000s, on the other hand, have seen very different developments. Towards the end of this period there was a major agricultural price spike, shortage of commodities, and reevaluation of the basic hypotheses about agricultural surpluses (World Bank, 2008). New developments such as such using grains for bio-fuels, export controls, and greater demand by China and other developing countries for meats, grains etc, have led to agricultural, and especially food prices increasing very rapidly.

While the 1990s were a period of rapid trade reform in developing countries and of implementation of Uruguay Round commitments, the Uruguay Round seems not to have yielded any meaningful reduction in agricultural protection in industrial countries. Protection in OECD countries increased during the 1960s and 1970s, reaching its peak in the late 1980s. There is little evidence that protection decreased significantly in the 1990s (Nogues 2002; Ingco 1997). The 2000s are somewhat better because support to agricultural has declined during the late 2000s, caused mainly by the price increases for agricultural commodities.[3] In most of the middle income developing countries, support for agriculture has increased during the last decade. In addition, there are new sets of information on the level of protection in developing countries that indicate an increase in support to agriculture by many developing countries (Kym Anderson et al, 2009). Furthermore, these price increases have led to developments where many countries have placed export restrictions on food products distorting the agricultural trade policies even further.

This paper examines the growth and structure of agricultural trade between 1990 and 2007. Data include 2007 but miss the agricultural price peak in 2008. Even with this limitation, we think that even this shorter period is instructive to observe the changes that have taken place. In this updating, the focus is again on the agricultural performance of industrial and developing countries and of specific commodity groups.

[2] Annex shows the changes in trade shares and gives and example where trade growth depends more on changes in markets shares than demand growth.

[3] In most countries, support to agriculture is given on the basis of price levels. This is done either by setting the supports on nominal levels, or setting fixed nominal value tariffs. If prices go down, then the support levels increase. When prices go up, as was the case in late 2000s, support levels decrease. In addition to this cyclical adjustment, many countries also lower their trade barriers when food prices go up (WB 2008).

II. Price Behavior

One of the important developments recently is the gradual increase in agricultural prices, especially after the mid 2000s (Table 1).

Table 1: Changes in Agricultural Price Indices and Manufacturing Unit Value, 1990/91-2007/08

	In % Change		
Price Index	1990-91/2000-01	2000-01/2006-07	2000-01/2007-08
Manufacturing Unit Value (MUV)	-5.2	15.8	22.0
Raw Commodities (world trade weights)	-13.9	61.4	99.0
Raw Commodities (developing country trade weights)	-14.6	67.7	108.0

Source: World Bank Commodity Price database.

While agricultural prices were declining during the 1990s, they increased very rapidly during the 2000s. This is a period of low inflation and price increases, outside basic commodities, was very limited. MUV index which measures the traded prices of manufactured goods do not increase at the same rate. Within agriculture, the difference between the weights for developing country exports and world exports is now very small, showing greater decline in 1990s and faster increase in the 2000s.[4]

Figure 1: Agricultural and Manufactured Good Price Indices

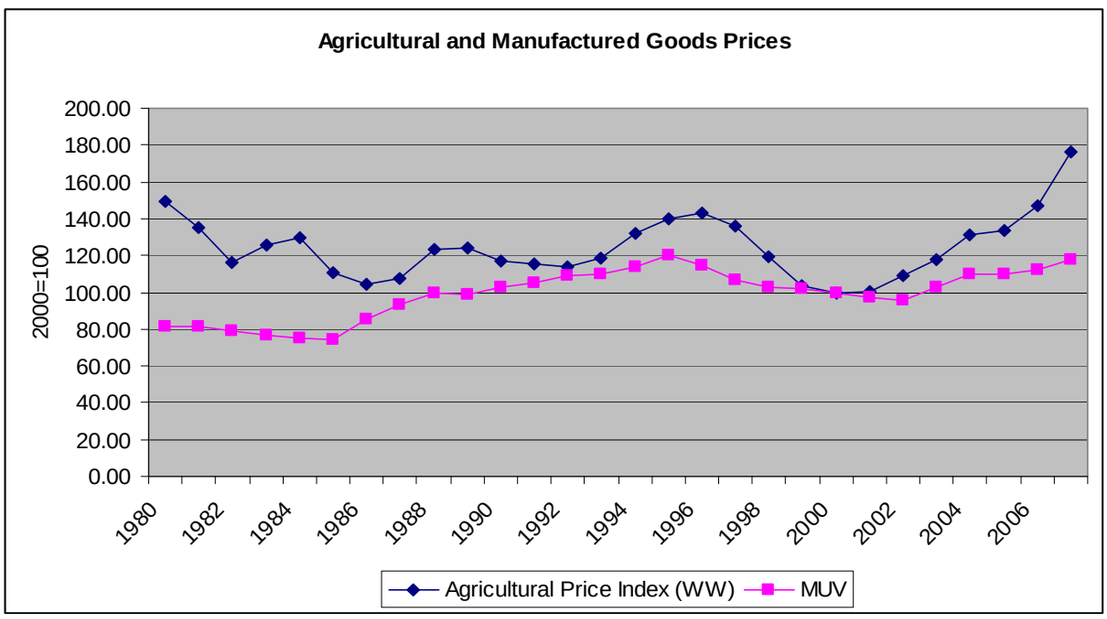


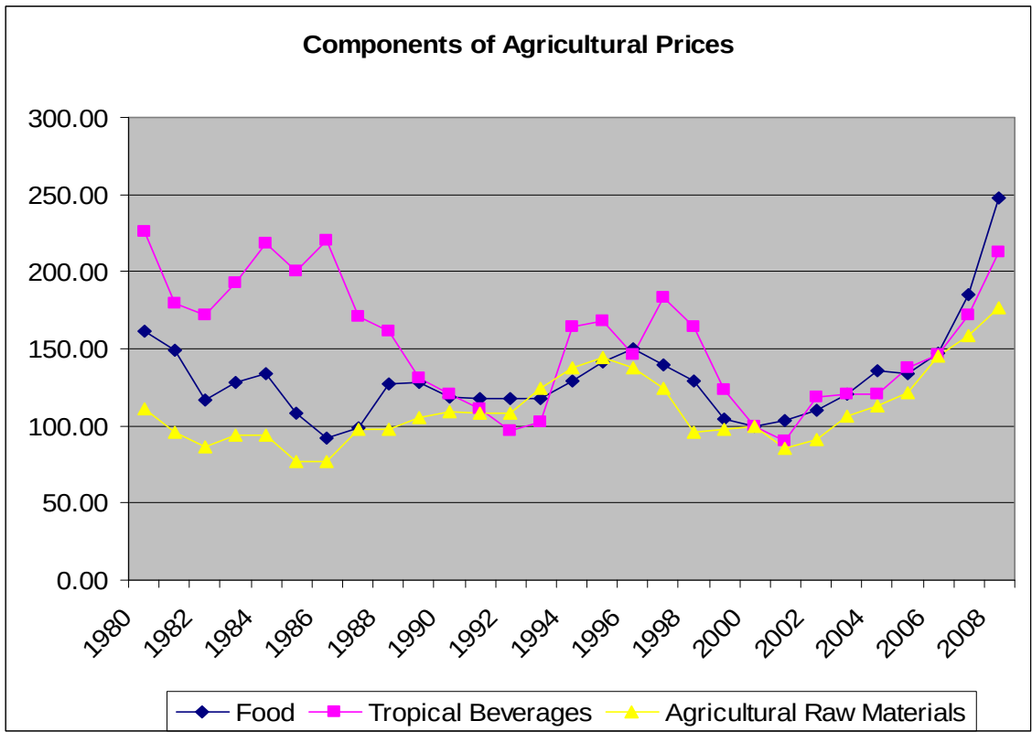
Figure 1 shows the price series for agricultural prices with world weights and the MUV going back to 1980. There is declining prices until 2001 with cyclical fluctuations in the mid 1990s. Agricultural prices came down 23 percent during the 1980s and 15 percent during the 1990s. After 2002, there is a steady rate of price increase until 2008 of more than 60 percent. The price increases since 2002 are quite unusual and during the postwar period price spikes of similar proportions is seen during the Korean War around 1953 and during the oil price shock around 1974. Finally, 2000/01 which is used as a

[4] These updated and revised data is somewhat different than the series used in Aksoy (2004), large differences between agricultural prices with developing country weight and world weights have disappeared with the updated data series.

base year, and an end point of earlier exercises, is a period where agricultural prices are the lowest whereby give a distorted picture of price developments.

In the common agricultural price indexes, many of the new product groups are not fully covered. The main agricultural price index is created by the World Bank and IMF. From the price indexes, it is possible to separate agricultural prices into three components. First is the food category which includes mostly temperate food products such as meats, and grains. It partially corresponds to the temperate product category we use in this paper. Tropical beverages are items such as coffee, tea, and cocoa, the traditional commodities exported by developing countries. Final group is agricultural raw materials, a group which includes cotton. Figure 2 shows the behavior of food and other agricultural prices since 1980.

Figure 2: Food and Non food agricultural price series



As can be seen from figure 2, all prices have increased significantly after 2002. Food prices have increased more than other prices and end up being much higher than prices during the earlier period. Beverages prices decreased significantly during the 1990s and then had a smaller price increase during the mid 1990s. It is the groups whose volatility is the highest. Raw materials prices showed very little cyclical behavior until last few years. Food prices are somewhere in between but increased much more than other prices during the last price spike. Prices of a recently expanding food group which is fruits and vegetables and categories such as seafood and processed foods do not have very reliable price indexes. Thus, we can not usually have real trade flows at a disaggregated level and many of these are biased in favor of traditional traded commodities.

III. Growth in Agricultural Trade

World agricultural trade in 2000/01 was $1,014 billion, up from $385 billion in 1990/91.[5] Table 2 shows the growth rates of world exports. Real manufacturing export growth increased at similar rates during the two periods (about 8.5 percent p.a.). Agricultural trade on the other hand, decelerated significantly from close to 6 percent p.a. to 1.5 percent (table 2). Developing country export rates also decelerated both for agriculture and manufacturing. For manufacturing the decline in growth rates are modest, from a very high rate of 14.6 percent p.a. to 12.3 percent p.a. These are both very high rates. For real agricultural export growth, the decline is much larger. Annual export growth rates decline from 7.5 percent p.a. to only 2.7 percent p.a.[6]

Table 2. Average Annual Real Export Growth Rates, 1990/91- 2006/07

			Developing Countries Exports (%)					
	World Exports (%)		Total		Developing to Developing Countries		Developing to Industrial Countries	
Sector	1990-91/ 2000-01	2000-01/ 2006-07	1990-91/ 2000-01	2000-01/ 2006-07	1990-91/ 2000-01	2000-01/ 2006-07	1990-91/ 2000-01	2000-01/ 2006-07
Agriculture	5.7	1.5	7.5	2.7	15.0	4.5	4.4	1.1
Manufacturing	8.5	8.4	14.5	12.3	22.4	15.8	11.8	9.7

Notes: Manufacturing imports are adjusted by the manufacturers' unit value; world agricultural trade are adjusted by agricultural commodity price index with world trade weights, and developing country agricultural exports are adjusted by the same index with developing country trade weights.
Manufacturing is defined as SITC (5+6+7+8-68) and agriculture as SITC (0+1+2+4-27-28) in Revision 3.
Industrial countries include Australia, Canada, EU15, Iceland, Japan, Norway, New Zealand, USA, and Switzerland; developing countries are included the rest of world excluding 23 industrial countries.
Sources: Based on mirror data from UN COMTRADE Statistics and World Bank Commodity Price database.

When one looks at the components of the agricultural export growth rates for developing countries, there is a deceleration in their export growth rates to both developing and industrial countries. Export growth to other developing countries decrease from 15 percent p.a. to only 4.5 percent. Still, the growth rates to other developing countries are much higher at 4.5 percent p.a. versus only 1.1 percent for the exports to industrial countries.

[5] Agricultural trade and output show large year to year fluctuations. To minimize the variance, we use two year averages throughout the paper.
[6] One should remember that the price indices we use show a very large increase in the end years of 2006 and 2007. If the prices are overestimated, the deflated real values would be understated generating lower growth rates for the period.

Table 3: Shares of Developing and Industrial Countries in World Exports, 1990/91-2006/07

	Developing Countries Export Share (%)			Industrial Countries Exports share (%)		
Sector by Destination	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07
Agriculture						
Total	31.8	37.4	41.5	68.2	62.6	58.5
Developing Countries	7.3	15.9	19.8	17.2	17.3	16.5
Industrial Countries	24.5	21.5	21.7	51.0	45.3	42.0
Manufacturing						
Total	19.9	34.1	42.0	80.1	65.9	58.0
Developing Countries	4.3	13.1	19.5	21.1	20.2	19.7
Industrial Countries	15.6	21.0	22.5	60.0	45.7	38.3

Source: Based on mirror data from UN COMTRADE Statistics.

These differential growth rates are reflected in the shares of exports in world trade in developing countries (Table 3). Their share in manufacturing exports rose dramatically, from 20 percent in 1990/91, to 34 percent in 2000/01, and to 42 percent in 2006/07; with higher exports to both developing countries and industrial countries. It is the expansion of their exports to developing countries that is much more dramatic, from 4 percent in 1990/01 to 20 percent in 2006/07. It is also in an area where the world trade has grown very rapidly.

In agricultural trade developing countries also had some increases in their market shares, but not as big as the market shares in manufacturing. Their share in world agricultural exports increased from 32 percent in 1990/91 to only 42 percent in 2006/07. Most of this gain came from expansion of exports to other developing countries (about 12 percentage points). The share of their exports to industrial countries actually declined. Overall, the weight of industrial countries gradually decreases in world agricultural trade (see Table 6 also). In 1990/01, they constituted 76 percent of world imports and by 2006/07 this ratio had declined to 64 percent. In 1990/01 almost 67 percent of these imports were met by other industrial countries. In 2006/07, 66 percent were met by other industrial countries. So the change is not very large and there is little real structural change. In manufacturing, their import share decreased from 76 percent to 60 percent. More important, in 1990/01, 79 percent of these manufacturing imports were met by other industrial countries. In 2006/07 only 63 percent was supplied by industrial countries, a very large structural change.

In 1990/01, only 7 percent of world agricultural exports were among the developing countries. Despite the growth of intra developing country agricultural trade, it only accounted for about 20 percent of world exports in 2006/07. Developing countries still export a greater amount to industrial countries than to other developing countries. Despite these changes in the shares, nearly half of world agricultural trade still takes place between industrial countries.

The last point is the pattern of agricultural production growth in industrial and developing countries (Table 4). Growth rates have accelerated in developing countries and decelerated in industrial countries. So it is not the increases in domestic supply that has reduced the growth of agricultural exports from developing countries. There is also a decline in the demand for these commodities.[7]

[7] As we will see in the following sections, greater growth takes place in processed commodities where the industrial countries still have some comparative advantage.

Table 4: Average Annual Agricultural Output Growth Rates, 1990s and 2000s

Period	Industrial Countries (%)	Developing Countries (%)
1990-91/2000-01	0.7	1.9
2000-01/2005-06	-0.2	2.1

Source: FAO web data on Agricultural Production Index.

Agricultural Trade Shares: Direction of Aggregate Trade flows

A trade flow matrix for the years 1990/91, 2000/01, and 2006/07 shows the details of nominal agricultural trade flows among different groups of countries (table 5).[8] The European Union (EU 15) is the largest trader, with exports of $377 and imports of $420 billion. Developing countries as a block are the second largest trader, with exports of $420 and imports of $368 billion.

[8] In reality, total merchandise imports and exports do not equal each other in world trade. First there are the differences where exports are valued at FOB, while imports are valued at CIF. In addition, the data here is derived from "mirror" accounts because not all countries report their trade accounts on time and fully. In table 5, the "real" numbers are the exports, and imports are adjusted to equal these export numbers. In a sense the import data is the residual. Despite these problems, we think the errors would be small and the data very close to reality.

Table 5: Global Agricultural Trade Flows

Importer	Period Avg	Exporter ($ billion)							
		Low income	Middle income	All developing	EU-15	Japan	NAFTA	Other industrial	Total Imports
Low income	1990-91	0.7	1.7	2.4	0.5	0.1	0.9	0.3	4.2
Countries	2000-01	3.0	7.2	10.3	3.1	0.1	2.0	1.4	16.9
	2006-07	6.2	15.6	22.0	4.3	0.2	4.1	1.6	32.2
Middle income	1990-91	3.2	20.1	24.2	10.4	1.5	17.4	5.2	58.5
Countries	2000-01	9.8	71.2	81.4	32.1	3.4	44.3	14.0	174.2
	2006-07	19.2	158.7	178.8	63.3	5.3	68.2	21.2	335.7
All developing	1990-91	3.8	21.8	26.5	10.9	1.5	18.2	5.5	62.7
Countries	2000-01	12.8	78.4	91.7	35.2	3.5	46.3	15.3	191.1
	2006-07	25.4	174.3	200.8	67.6	5.5	72.3	22.8	367.8
EU-15	1990-91	7.3	43.5	51.4	133.8	0.4	15.8	8.6	209.9
	2000-01	9.0	49.9	59.2	142.5	0.4	14.8	8.9	225.3
	2006-07	15.2	104.3	119.9	267.4	0.6	18.0	15.1	420.1
Japan	1990-91	1.6	19.5	21.0	4.1	..	21.6	5.1	51.7
	2000-01	2.2	23.8	26.0	5.7	..	22.4	5.9	59.6
	2006-07	2.6	29.2	31.8	7.1	..	21.8	7.2	67.3
NAFTA	1990-91	1.3	20.1	21.5	8.5	0.5	23.4	3.5	54.0
	2000-01	3.0	32.5	35.5	13.5	0.7	48.1	4.8	95.8
	2006-07	5.0	58.9	63.9	22.9	1.0	70.5	6.8	152.5
Other industrial	1990-91	0.3	2.4	2.7	6.2	0.1	1.5	1.0	11.6
Countries	2000-01	0.4	3.4	3.8	7.0	0.1	1.6	1.7	14.1
	2006-07	0.9	6.7	7.7	13.8	0.1	2.2	3.2	26.8
Total Exports	1990-91	14.2	106.6	122.4	162.9	2.6	76.9	23.4	384.5
	2000-01	27.3	186.4	214.5	203.2	4.7	123.6	36.3	573.7
	2006-07	48.9	370.3	420.7	377.7	7.2	168.8	54.7	1,013.8

Note: The classification of income group is based on the World Bank World Development Indicators 2007.

Source: Based on import data from UN COMTRADE Statistics.

Trade among industrial countries still dominates global agricultural trade, most of it within the trade blocs such as EU and NAFTA[9]. This intra-bloc trade accounts for more than a third of global agricultural trade. In 1990/01 industrial country agricultural exports to other industrial countries totaled $233 billion. Of that, $134 billion was intra-EU trade (almost 58 percent) and $23 billion (10 percent) was intra-NAFTA trade. Agricultural trade among industrial countries that are not members of these trade blocs accounted for only $76 billion. In 2006/07, their total exports to each other had increased to $456 billion and still 58 percent of it was intra EU-15 trade and intra NAFTA trade had increased to 16 percent of intra industrial country trade. 64 percent of EU-15 imports were from other EU countries in 1990/01, and this ratio stayed the same despite the advances made by developing country exports.[10] Intra NAFTA trade of 46 percent also stayed the same.

Trade among developing countries is also increasing, with almost 55 percent of their agricultural imports coming from other developing countries. However, only 47

[9] Here we are not including the new members of EU because there is a change in their trading status in the middle of the periods and thus they are included in middle income developing countries.

[10] If we include 12 new EU countries in the intra EU trade, it has increased.

percent of their agricultural exports are to other developing countries, showing the continuing importance of industrial country markets for their exports. In 1990/01, these ratios were 42 and 22 percent respectively. This is a very large swing, where developing countries are trading much more among themselves than was the case two decades ago.

For low-income countries, other developing countries accounted for 51 percent of their exports and 69 percent of imports in 2006/07; up from 27 percent and 57 percent respectively in 1990/91. Thus, other developing countries are now a bigger market for the exports of low income countries than the industrial ones. Shares for middle-income countries were similar, with other developing countries accounting for 47 percent of their exports and 50 percent of their imports in 2006/07. Developing countries have become major players in the world agricultural trade, especially if intra-EU and intra-NAFTA trade are excluded.

Table 6 shows the net trade flows derived from table 5. They show that, while low income countries have continued to increase their agricultural trade surpluses, middle income countries have had a more mixed performance. They still have an export surplus but a relatively much smaller one. This is contrary to the common belief that low income countries have not benefited from the global trading system, they not only have increased their exports, and their exports have increased more then their imports.

For industrial countries, there are few important developments. Japan continues to be the biggest net agricultural importer in the world. NAFTA has a decrease in its export surplus. It is gradually becoming less of a net exporter. Other industrial countries are becoming bigger net exporters.

Table 6 Agricultural Trade Flows (excluding Intra-EU and Intra-NAFTA Trade), 1990/91–2006/07

		Trade Value ($ billion)		
Country Group	Period Avg.	Exports	Imports	Net Imports
Low income countries	1990-91	14.2	4.2	-10.1
	2000-01	27.3	16.9	-10.5
	2006-07	48.9	32.2	-16.8
Middle income countries	1990-91	106.6	58.5	-48.0
	2000-01	186.4	174.2	-12.2
	2006-07	370.3	335.7	-34.7
EU-15, excl. intra-eu15 trade	1990-91	29.1	76.0	46.9
	2000-01	60.8	82.8	22.0
	2006-07	110.4	152.8	42.4
NAFTA, excl. intra-nafta trade	1990-91	53.5	30.6	-22.9
	2000-01	75.6	47.7	-27.9
	2006-07	98.4	82.0	-16.4
Japan	1990-91	2.6	51.7	49.1
	2000-01	4.7	59.6	54.9
	2006-07	7.2	67.3	60.1
Other industrial countries	1990-91	23.4	11.6	-11.9
	2000-01	36.3	14.1	-22.3
	2006-07	54.7	26.8	-27.8

Source: Based on mirror data from UN COMTRADE Statistics.

Developing countries, even if we separate them as low or middle income, are much more heterogeneous. There are small and large low income countries and their performance might be different. China and India, with their large populations and GDP overwhelm other country groups. Some middle income countries, in Asia and Latin America are major exporters. There are industrialized East Asian countries that are major importers. Therefore we have separated developing countries into six groups. These are: small low income countries; large low income countries; China and India; middle income large exporters; middle income East Asian importers; and other middle income countries.[11]

A contentious issue in the literature has been the trade performance of low-income countries. Many analysts have argued that the low-income countries have not benefited from the expansion in global trade. This is only partially true in agriculture. From table 5, Low-income countries' share of world exports increased from 3.7 percent 1990/01 to 4.7 percent in 2000/01 and to 4.8 percent in 2006/07. But if intra-EU and intra-NAFTA trade are excluded, their share increases from 6.2 percent in 1990/91 to 7.2 percent in 2006/07. Thus as measured by agricultural export and import performance, they have not been marginalized during this period. Their overall trade surpluses, however, have risen throughout the period, from $7.8 billion in 1980/81 to $17 billion in 2006/07. Low-income developing countries have a trade surplus with industrial countries and with middle-income developing countries, and both of these surpluses have increased over the last two decades. Their exports have increased as well, primarily to other developing countries.

Table 7 Agricultural Trade Flows of Developing Countries by Group, 1990/91–2006/07

		Trade Value ($ billion)		
Country Group	Period Avg.	Exports	Imports	Net Imports
Low income, small countries	1990-91	9.8	1.6	-8.2
	2000-01	18.0	8.8	-9.2
	2006-07	32.2	14.2	-18.0
Low income, large countries /a	1990-91	1.5	1.6	0.1
	2000-01	2.5	4.1	1.6
	2006-07	4.1	10.0	5.9
Middle income, large exporters /b	1990-91	29.1	4.3	-24.8
	2000-01	55.6	18.4	-37.2
	2006-07	117.4	23.0	-94.4
Middle income, East Asian Importers /c	1990-91	9.2	12.7	3.5
	2000-01	10.6	36.3	25.7
	2006-07	13.4	45.7	32.3
China and India	1990-91	12.5	5.8	-6.7
	2000-01	27.1	22.1	-5.0
	2006-07	51.0	60.2	9.2
Other middle income countries	1990-91	60.2	36.7	-23.5
	2000-01	100.7	101.4	0.7
	2006-07	202.7	214.9	12.2

Notes: /a Bangladesh, Ethiopia, Nigeria, and Pakistan.
/b Argentina, Brazil, Indonesia and Thailand.
/c Republic of Korea, Hong Kong (China), Singapore, Taiwan, China.
Source: Based on mirror data from UN COMTRADE Statistics and World Bank calculations

[11] Within the other middle income country group, there are the 12 new EU members. One option was to separate them into another subgroup. However, their inclusion or exclusion does not change any of the conclusions.

Some analysts have argued that it is primarily small low-income countries that are more vulnerable. In table 7 we separate the trade of low income countries into large and small. We also separate India which dominates the low income country group. The results are very different for the two groups. While small low income countries have a trade surplus large low income countries have a trade deficit. While export surplus of small low income countries increased during this period, the deficits of large countries increased. Thus the vulnerable groups that have done badly are the large low income countries.

Middle income-countries, however, performed worse during the 1990s, becoming smaller net exporters, with a shrinking trade surplus with the rest of the world. However, since 2001, their export surplus has started to increase again. There are large differences in agricultural trade performance among the middle-income countries. Argentina, Brazil, Indonesia, and Thailand are becoming major exporters (see table 7). These countries, which do not have highly distorted agricultural trade regimes, are frequently cited as potential gainers from global liberalization. Their export surplus has increased significantly throughout this period, reaching almost 10 percent of world agricultural trade. The upper-middle-income manufacturing exporters in East Asia, another group of developing countries, are becoming major importers of agricultural commodities, along with Japan. Of these, the Republic of Korea, and Taiwan, China, have distorted trade regimes, while Hong Kong (China), China, and Singapore have liberal trade regimes. Thus, these quite industrialized countries of East Asia, along with Japan, now account for 10 percent of world imports.

China and India, with one-third of the world's population, could emerge as major global exporters and importers. They have also behaved more like the large low income countries. Their trade surpluses have disappeared and they have a trade deficit in 2006/07. This deficit is created by the large deficits of China.

The remaining middle-income countries experienced rapid trade growth during the 1990s, but their trade surpluses shrank considerably during this period. As of 2006/07 they have a small deficit in agricultural trade. The significant trade liberalization among developing countries during the last two decades, especially many middle-income countries, could explain some of the expanding imports of these countries.

Big Exporters and Importers

Table 8: The 20 Largest Agricultural Exporters and Importers in World Markets, 1990/91-2006/07

	Agricultural Exports ($ million)			World Market Share (%)		
Exporter	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07
United States	52,403	77,157	105,951	14.0	13.6	10.5
Netherlands	30,867	35,180	63,717	8.2	6.2	6.3
Germany	21,464	29,473	62,956	5.7	5.2	6.2
France	32,621	35,210	61,491	8.7	6.2	6.1
Canada	20,348	37,705	47,438	5.4	6.6	4.7
Brazil	9,944	19,610	45,511	2.7	3.4	4.5
China	8,023	19,543	36,849	2.1	3.4	3.7
Spain	10,070	17,739	33,777	2.7	3.1	3.4
Italy	11,728	16,191	31,923	3.1	2.8	3.2
Argentina	7,152	12,919	27,944	1.9	2.3	2.8
Belgium	12,650	14,422	27,667	3.4	2.5	2.7
United Kingdom	12,492	16,623	24,752	3.3	2.9	2.5
Australia	10,706	18,478	24,386	2.9	3.2	2.4
Indonesia	4,439	10,026	22,335	1.2	1.8	2.2
Thailand	7,577	12,996	21,591	2.0	2.3	2.1
Russian Federation	..	8,587	19,693	0.0	1.5	2.0
Malaysia	8,809	8,477	17,925	2.4	1.5	1.8
Denmark	10,309	10,900	17,479	2.8	1.9	1.7
Mexico	4,140	8,783	15,436	1.1	1.5	1.5
Chile	3,619	7,730	15,403	1.0	1.4	1.5
All above countries	279,363	417,748	724,223	74.6	73.4	71.8
	Agricultural Imports ($ million)			World Market Share (%)		
Importer	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07
United States	31,412	61,895	96,471	9.2	11.8	9.9
Germany	37,323	42,647	75,708	11.0	8.1	7.8
United Kingdom	22,918	29,223	55,423	6.7	5.6	5.7
Japan	37,250	47,097	54,561	10.9	9.0	5.6
China	4,833	18,086	52,299	1.4	3.4	5.4
France	23,182	27,494	49,423	6.8	5.2	5.1
Italy	25,963	26,576	48,741	7.6	5.1	5.0
Netherlands	20,180	25,054	48,120	5.9	4.8	5.0
Spain	9,593	15,430	31,040	2.8	2.9	3.2
Belgium	15,632	16,534	29,284	4.6	3.1	3.0
Canada	8,678	15,193	25,199	2.5	2.9	2.6
Russian Federation	..	9,336	24,407	0.0	1.8	2.5
Mexico	4,548	10,385	18,096	1.3	2.0	1.9
Korea, Rep.	6,953	10,607	17,190	2.0	2.0	1.8
Hong Kong (China)	5,137	9,471	11,969	1.5	1.8	1.2
Austria	2,861	5,119	11,114	0.8	1.0	1.1
Denmark	4,200	5,370	10,814	1.2	1.0	1.1
Sweden	3,331	4,943	10,351	1.0	0.9	1.1
Poland	1,569	3,333	10,243	0.5	0.6	1.1
Taiwan, China	5,221	6,766	9,644	1.5	1.3	1.0
All above countries	270,783	390,558	690,099	79.6	74.3	71.0

Note: Agriculture is defined as SITC (0+1+2+4-27-28) in Revision 3.

Source: Based on mirror data from UN COMTRADE Statistics.

Table 8 shows the imports and exports of the top 20 countries in terms of sizes of imports and exports. This table also shows the shares of these top 20 countries in total exports and imports over the last two decades. Few things stand out. First, consistent with our earlier findings, most of the large importers and exporters are industrial countries. USA is the world's largest importer and exporter. Among the top 10 exporters, there are 3 developing countries, China, Brazil, and Argentina. Among the top 10 importers, there is only one developing country, namely China.

Second, among exporters, most industrial countries have seen a decline in their export shares between 1990/01 and 2006/07. The only exceptions are Spain and Italy. All developing countries, on the other hand have increasing export shares. Among importers, the patterns are more mixed, with some industrial countries and some developing countries having increasing shares. The results are not as clear cut. Most dramatic changes are in China and Japan. China, from being a small importer (1.4 percent of world imports in 1990/01), increased its imports to be the fifth largest importer at 5.4 percent of world imports in 2006/07. Japan, on the other hand, went from the world's almost largest importer to being the fifth. Its imports went down from 11 percent of world imports to about 6 percent.

There are some interesting changes in the net trade position of some of the large industrial countries. For example, Germany was a large net importer of agricultural products in 1990/01. Its net imports constituted about $16 billion which was about 6 percent of world imports. In 2006/07, its net imports had declined to $13 billion, which now constituted only 1.9 percent of world imports. USA moved in the opposite direction. It had a trade surplus $21 billion in 1990/01 which was almost 8 percent of world imports. By 2006/07, its surplus had decreased to $8 billion which constitutes only 1.4 percent of world imports. Among the developing countries, China has moved from being a large net exporter to a large net importer. Its net imports in 2006/07 were $15 billion, more than Germany.

Third, share of top 20 countries in total exports and imports have decreased, indicating lower concentration. This means that other smaller exporters and importers have increased their shares, contributing more to world trade.

In this context, SSA countries are quite small in the global scale. The top 5 exporters from SSA, in order of size, are South Africa, Cote d'Ivoire, Ghana, Kenya, and Cameroon. South Africa, which is the largest by far, ranks 29th and Cote d'Ivoire ranks 42nd among the world exporters. In the case of imports, top five are South Africa, Nigeria, Angola, Ghana, and Senegal. South Africa, which is the largest importer in SSA, ranks 37th among the world importers.

IV. Trade Intensities

Another related question is whether there have been significant changes in the trade intensities in different groups of countries. Expansion of world trade, lowering of trade barriers have led to much greater specialization, and greater exports and imports with respect to domestic output. More specifically, have there been more specialization and more imports and exports compared to both agricultural and overall GDP?

Table 9: Shares of Agricultural Trade in Agricultural -GDP by Income Group and Region, 1990/91 – 2006/07

	Agric Exports/ Agric-GDP (%)			Agric Imports/ Agric-GDP (%)		
Group/Region	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07
Industrial Countries	95.0	145.5	177.1	70.8	116.5	156.7
Developing Countries	42.3	51.3	55.0	33.4	48.1	60.0
East Asia & Pacific	42.5	49.8	70.7	23.1	33.6	42.2
Europe & Central Asia	29.4	50.9	59.3	52.4	62.5	84.1
Latin America & Caribbean	81.4	85.2	84.4	42.8	60.6	74.7
Middle East & North Africa	15.9	26.2	26.5	76.9	95.0	104.5
South Asia	6.4	8.9	13.1	6.8	10.1	17.3
Sub-Saharan Africa	29.5	43.2	40.9	16.9	28.9	35.9
World	51.1	63.9	71.3	39.7	57.3	72.9

Notes: Trade ratios are computed as simple averages in the country groups.
Due to the cases of agricultural GDPs are very small (less than 1%), some small countries or Island economies are excluded, e.g. Luxembourg, Brunei, Hong Kong (China), Macau, Singapore, Palau, Bahrain, Djibouti, Kuwait, Trinidad & Tobago, Seychelles etc.
Sources: Based on mirror data from UN COMTRADE Statistics and World Bank WDI database.

Table 9 shows the ratio of exports and imports to agricultural GDP for selected subgroups of countries. First, unlike other tables, we use the unweighted averages for the subgroups because few countries would dominate the averages. These give equal weights to each country within the subgroups thus showing the average behaviour of countries. We also separated the country groupings by level of development, i.e. industrial versus developing, and by regions with developing. We have 6 regions identified.

Table 8 clearly shows that on average, there have been greater specialization and greater shares of both imports and exports for most subgroups of countries. Industrial countries show a large increase in their export and import ratios. This is consistent with increases in their exports and imports, and a decline in their real outputs. Thus, they end up with very high trade to GDP ratios.[12] Of course, as pointed out before, the existence of trade blocks such as EU and NAFTA lead to greater trade among each trade groups.

Trade intensities are much lower for developing countries. They have larger agricultural GDPs, and greater protection. Their agricultural GDP have increased during the 2000s. So the increase in trade intensities (trade to GDP ratios) is much more modest. They have increased to about 60 percent in 2006/07, compared to more than 150 percent for the industrial countries.

Among developing countries, South Asia has the lowest trade intensities, both for exports and imports. They were almost self-sufficient during the 1990/01 period with import and export to agricultural GDP ratios of about 6 percent. This is by far the lowest ratio for any subgroup. While their trade intensities increased, it was still 13 percent for exports and 17 percent of imports.

As expected, Latin America has the highest export to GDP ratio and Middle East has the highest import to GDP ratios. Latin America has emerged as a major exporting region, while the oil exporters in Middle East have become major importers.

Sub-Saharan Africa has seen its import to GDP ratio increase continuously. Its export to GDP ratio has increased between 1990/01, and 2000/01, but decreased since then. This is somewhat different than the other regions.

[12] One should not forget that most of this trade is between industrial countries. Thus the expansion might not signify market penetration by developing countries.

Despite the variation, every subgroup within developing countries has increasing trade intensities. This implies that agricultural trade is playing a more important role, and agricultural self-sufficiency is losing out.

V. Disaggregated Export Performance

To get an accurate sense of changes in trade, it is important to measure the contributions of different product groups to those changes. Many analysts argue that the markets for traditional exports to industrial countries are static because of both low income elasticities and product substitution. For example, coffee and tea have been partially displaced by soft drinks, cotton by synthetic fibers, and sugar by high-fructose corn syrup.

One problem in analyzing the performance of detailed product groups is the absence of disaggregated price series to deflate the nominal trade data. The price series are not consistent with the trade categories so the disaggregated flows discussed in this section are based on nominal trade data. This forces us to use nominal values and changes in these values over time. Thus it is not possible to separate the price and quantity changes for agricultural product subgroups.[13]

To examine the detailed trade flows, agricultural products were separated into four groups. One group consists mainly of developing country tropical products, such as coffee, cocoa, tea, nuts, spices, textile fibers (mostly cotton), and sugar and confectionary products. A second is made up of highly protected temperate zone products of industrial countries, such as meats, milk and milk products, grains, animal feed, and edible oil and oilseeds. A third category consists of dynamic nontraditional products, such as seafood, fruits, vegetables, and cut flowers, for which global protection rates are lower. A fourth group consists of other products, including processed agricultural products such as tobacco and cigarettes, beverages, other processed foods, and agricultural raw materials such as hides and skins, crude rubber, wood products etc. Exports of these products are further separated into exports from developing countries, exports from industrial countries, and world exports. World exports show how the world trade has evolved, and which product groups are increasing or reducing their market shares in world trade.

Table 10 shows the disaggregated structure of world exports, where each cell is expressed as a percentage of world exports. Table10 clearly shows that the structure of world trade in agriculture has only changed marginally over the last two decades. Fruits and vegetables, which as a subgroup have the largest share of world exports at 14 percent and were growing rapidly during the 1980s, have stagnated. Other products such as alcoholic and nonalcoholic beverages, at almost 7 percent of world exports, have increased. Temperate food product trade has increased more than other groups. Especially the trade in grains has expanded more rapidly than others. Other two items that have somewhat increased their shares are beverages, and processed foods. We will analyze processed food issues in the next section.

[13] There are unit value indexes from the trade data but these are not consistent or reliable.

Table 10: The Structure of Agricultural Exports by Product in Developing and Industrial Countries, 1990s and 2000s

Agricultural Product	Developing Country Export (%)			Industrial Country Exports (%)			World Exports (%)		
	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07
Tropical Products									
Coffee, cocoa, and tea	9.4	7.1	6.7	2.4	2.9	3.6	4.8	4.5	4.9
Nuts and spices	2.2	2.4	1.9	0.6	0.6	0.9	1.1	1.3	1.3
Sugar and confectionary	3.8	3.8	3.7	2.1	2.3	2.3	2.7	2.8	2.9
Textile fibers	5.9	4.4	3.3	4.8	3.8	2.9	5.1	4.0	3.1
Subtotal: above products	21.3	17.6	15.6	9.9	9.6	9.8	13.7	12.6	12.2
Temperate Products									
Meats, fresh and processed	4.7	4.1	5.3	10.2	10.3	9.9	8.6	8.0	8.0
Milk and dairy products	0.6	1.3	1.8	6.7	7.1	7.5	4.9	4.9	5.1
Grains, raw and processed	3.4	6.3	7.3	9.5	10.4	10.5	7.5	8.9	9.1
Edible oils and oilseeds	3.1	3.2	3.9	2.8	2.7	2.5	2.8	2.9	3.1
Animal feeds	8.6	9.6	11.6	5.8	6.2	6.7	6.8	7.4	8.7
Subtotal: above products	20.4	24.6	29.8	35.0	36.7	37.1	30.7	32.1	34.1
Seafood, Fruits and Vegetables									
Seafood, fresh and processed	15.2	15.8	12.2	7.3	6.4	6.1	9.6	9.9	8.6
Fruits and vegetables, fresh & proc.	19.9	16.9	17.2	11.7	11.1	12.0	14.4	13.3	14.1
Cut flowers & crude veg. materials	2.5	2.4	2.1	3.2	2.9	2.9	3.0	2.7	2.6
Subtotal: above products	37.6	35.1	31.5	22.2	20.4	21.0	27.0	25.9	25.4
Other Processed Products									
Beverages, alcohol & non-alcohol	1.3	2.9	3.1	7.4	8.1	9.3	5.3	6.1	6.7
Tobacco and cigarettes	2.5	2.9	2.4	3.2	4.0	3.1	3.0	3.6	2.8
Other processed food	0.7	2.2	2.6	2.7	4.3	5.2	2.1	3.5	4.1
Other agricultural goods	17.5	16.0	16.1	20.1	17.4	15.2	18.9	16.9	15.6
Subtotal: above products	22.0	24.0	24.2	33.4	33.8	32.9	29.4	30.1	29.3
All Agricultures	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Based on mirror data from UN COMTRADE Statistics.

In world trade, basic temperate food categories have increased their share. While all subgroups under this heading have increased their shares, grains, and animal feed have larger export share gains. Earlier assumptions by Aksoy (2004) where new products such as fruits and vegetables, seafood, processed foods, would end up dominating the world agricultural trade have not materialized.[14] It has been the temperate food commodities which are traditionally exported by industrial countries have increased their shares. On the other hand, tropical products have continued to lose market shares.

For developing countries the biggest decline in export shares has come in their traditional tropical products, such as coffee and cocoa, and cotton. Along with losing share in traditional commodities, Exports of new and dynamic nontraditional exports, such as seafood and fruits and vegetables have also lost some market shares. There is a large decline in share of exports of seafood, and a marginal decrease in fruits, vegetables and cut flowers. The biggest gains have come in temperate food products. Exports of grains have expanded much faster than others. Export market share gains for beverages

[14] These are some differences of measurement between this table and earlier similar table in Aksoy (2004). In that table, the category which we now call “other agricultural products” was not included. So the shares are bigger but the changes are very similar.

come primarily from expanding exports of wine and beer to both developing and industrial country markets. They also increased their exports of processed foods.

Despite these changes, whatever the causes might be, analysis of agricultural trade for developing countries now needs to focus on the non-traditional commodities. Currently vegetables and cut flowers constitute almost 20 percent of the exports of developing countries. Temperate zone products constitute another 30 percent. Exports of beverages and other processed foods now are almost equal to total exports of coffee, cocoa, and tea. Exports of fruits and vegetables alone are more than total exports of tropical products. While the traditional products that have received most of the attention in the literature, they now constitute only 16 percent of the exports of developing countries. Attention also has to be placed on the expanding trade within developing countries in temperate zone products such as milk, grains, and meats. These developments show that many developing countries can compete in the product categories historically dominated by industrial countries and that trade reforms in industrial countries could lead to a large expansion of exports from these developing countries.

Industrial country export structures have also changed very little.[15] And product groups that have changes are very similar to those of developing countries. As expected, they are the main exporters of temperate food products, which constitute 37 percent of their exports. Temperate products plus beverages and processes foods now constitute more than half their exports.

Export Shares by Product and Region

Next question is what has happened to the shares of exports of different regions, and to which markets they have exported these product groups. Table 11 shows the direction of exports from developing countries by product categories and by regions. The geographical structure of developing country total exports has shown some small changes in the past two decades. Almost every region has increased its share of world exports. The decline in the share of industrial country exports have been shared by most of the developing country regions. This is especially pronounced for Europe and Central Asia (ECA) which was primarily a closed region before 1991.[16] The increases are very limited for Middle East and South Asia. Sub-Saharan Africa is the only region that has a decrease in its export share and the loss of market shares from 1980s are still continuing. Despite preferential access, Africa's export share in industrial country markets has decreased and the increase in its exports to developing countries has not made up for this decline.

[15] This data includes re exports. That is why there is a large tropical product exports form industrial countries.
[16] Intra Warsaw Pact trade might be underestimated previous to 1990.

Table 11: Agricultural Export Shares by Product and Region, 1990s and 2000s

	Exports to DCs			Exports to Indus Co.			Total Exports		
Product/Region	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07
Tropical Products									
Industrial countries	1.8	2.3	2.1	4.6	3.7	3.6	6.4	6.0	5.7
Developing countries	1.6	3.1	3.2	5.1	3.5	3.3	6.8	6.6	6.5
East Asia and Pacific	0.5	0.9	0.8	0.9	0.8	0.8	1.5	1.7	1.6
Europe and Central Asia	0.0	0.4	0.5	0.2	0.3	0.3	0.3	0.7	0.8
Latin America and Caribbean	0.4	0.8	0.8	2.1	1.3	1.2	2.5	2.1	2.0
Middle East and North Africa	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.3	0.3
South Asia	0.2	0.3	0.4	0.3	0.3	0.2	0.5	0.5	0.6
Sub-Saharan Africa	0.2	0.5	0.4	1.2	0.7	0.7	1.5	1.3	1.1
Subtotal	**3.5**	**5.4**	**5.3**	**10.2**	**7.2**	**6.9**	**13.7**	**12.6**	**12.2**
Temporate Products									
Industrial countries	5.3	7.7	6.9	17.3	15.2	14.8	22.6	22.9	21.7
Developing countries	2.3	5.7	7.8	4.2	3.5	4.6	6.5	9.2	12.4
East Asia and Pacific	0.9	1.7	2.0	1.3	1.0	1.2	2.2	2.7	3.2
Europe and Central Asia	0.1	0.8	1.4	0.4	0.4	1.0	0.6	1.2	2.4
Latin America and Caribbean	0.7	2.4	3.4	2.0	1.7	2.1	2.8	4.1	5.5
Middle East and North Africa	0.1	0.2	0.3	0.1	0.1	0.1	0.2	0.3	0.4
South Asia	0.2	0.4	0.4	0.1	0.1	0.1	0.3	0.5	0.5
Sub-Saharan Africa	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.3	0.2
Subtotal	**7.7**	**13.4**	**14.7**	**22.9**	**18.7**	**19.4**	**30.7**	**32.1**	**34.1**
Seafood, Fruits & Vegetables									
Industrial countries	1.6	2.1	2.3	12.5	10.3	9.5	14.1	12.5	11.8
Developing countries	1.4	3.0	3.7	10.1	9.7	8.9	11.5	12.7	12.6
East Asia and Pacific	0.6	1.2	1.5	3.5	3.4	2.9	4.2	4.6	4.4
Europe and Central Asia	0.1	0.4	0.7	1.0	1.1	1.0	1.1	1.5	1.8
Latin America and Caribbean	0.3	0.6	0.7	3.4	3.4	3.4	3.7	4.1	4.1
Middle East and North Africa	0.1	0.3	0.3	0.8	0.5	0.6	0.9	0.8	0.9
South Asia	0.1	0.2	0.2	0.3	0.5	0.4	0.4	0.6	0.5
Sub-Saharan Africa	0.1	0.2	0.2	0.7	0.8	0.7	0.8	1.0	0.9
Subtotal	**3.0**	**5.1**	**6.0**	**23.3**	**20.0**	**18.5**	**26.2**	**25.1**	**24.4**
Other Processed Food									
Industrial countries	1.5	2.4	2.3	7.1	7.9	8.1	8.6	10.3	10.3
Developing countries	0.3	1.5	1.8	1.1	1.5	1.6	1.4	3.0	3.4
East Asia and Pacific	0.1	0.5	0.5	0.2	0.3	0.3	0.3	0.8	0.8
Europe and Central Asia	0.0	0.3	0.6	0.2	0.2	0.3	0.2	0.5	0.8
Latin America and Caribbean	0.0	0.4	0.4	0.4	0.8	0.8	0.5	1.1	1.2
Middle East and North Africa	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.1
South Asia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Sub-Saharan Africa	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.3
Subtotal	**1.8**	**3.9**	**4.1**	**8.6**	**9.3**	**9.6**	**10.4**	**13.3**	**13.7**
Other Agricultural Products									
Industrial countries	2.5	2.8	2.8	10.6	8.1	6.1	13.0	10.9	8.9
Developing countries	1.7	2.7	3.4	3.9	3.3	3.3	5.6	6.0	6.7
East Asia and Pacific	1.1	1.4	1.6	1.7	1.1	1.2	2.8	2.4	2.8
Europe and Central Asia	0.1	0.6	0.9	0.4	1.0	0.9	0.5	1.6	1.8
Latin America and Caribbean	0.1	0.3	0.5	0.6	0.8	0.8	0.8	1.2	1.3
Middle East and North Africa	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1
South Asia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub-Saharan Africa	0.1	0.2	0.2	0.5	0.4	0.3	0.6	0.6	0.5
Subtotal	**4.2**	**5.4**	**6.2**	**14.9**	**11.5**	**9.4**	**18.9**	**16.9**	**15.6**
All Agricultural Products									
Industrial countries	12.8	17.3	16.5	52.0	45.3	42.1	64.7	62.6	58.5
Developing countries	7.4	16.0	19.8	24.5	21.5	21.7	31.8	37.4	41.5
East Asia and Pacific	3.4	5.6	6.5	7.7	6.6	6.4	11.0	12.3	12.8
Europe and Central Asia	0.5	2.5	4.2	2.1	2.8	3.5	2.6	5.4	7.7
Latin America and Caribbean	1.6	4.5	5.8	8.6	8.1	8.3	10.2	12.6	14.1
Middle East and North Africa	0.4	1.0	1.0	1.1	0.8	0.8	1.5	1.7	1.7
South Asia	0.5	0.9	1.0	0.7	0.8	0.7	1.2	1.7	1.7
Sub-Saharan Africa	0.5	1.3	1.2	2.8	2.2	1.9	3.3	3.4	3.0
Subtotal	**20.2**	**33.3**	**36.3**	**79.8**	**66.8**	**63.8**	**100.0**	**100.0**	**100.0**

Source: Based on mirror data from UN COMTRADE Statistics.

In tropical products, developing countries' exports to industrial countries have declined significantly as a proportion of world exports, and Sub-Saharan Africa has lost relatively more from this change.

Temperate product exports have increased and essentially because of the increasing exports to developing countries. Again, ECA and Latin America are the major beneficiaries of this increase.

The dynamic products of seafood, fruits and vegetables, etc have not increased as much over the last decades.[17] The reason for it is the decline in the share of exports going to industrial countries, which are not fully made up by the increases in exports to developing countries. The same situation applies to Other Processed foods.

Degree of Processing

Despite significant tariff escalation in processed products, trade has moved toward processed (final) agricultural products and away from raw material and intermediate products.[18] In 1990/91 final products made up about 33 percent of world exports, and raw and intermediate products made up two-thirds. By 2006/07 the share of final products had increased to 41 percent of total exports (table 12). The share of final products in exports increased for both developing and industrial countries, but in 2006/07 final products still constituted only 20 percent of the exports from low-income countries, compared with 46 percent for industrial countries.

Table 12: Share of Agricultural Final Products in Exports, 1990/91-2006/07

	Export Share (%)				
Period Avg.	World	Developing Countries	Low Income Countries	Middle Income Countries	Industrial Countries
1990-91	32.6	24.0	13.6	25.4	35.9
2000-01	37.3	30.8	17.3	32.8	41.3
2006-07	40.8	34.3	19.9	36.2	45.5

Note: Includes China and India.
Source: Based on mirror data from UN COMTRADE Statistics.

On the other hand, there are significant gains made by developing countries in increasing their share of world trade in processed products. This increases their value added and industrial capabilities. Low income countries have also increased the share of processed products in their exports.

More detailed disaggregation of export flows by degree of processing does not yield much more information than the aggregate flows. The export share of final products increased for tropical and temperate product groups. For seafood and fruits and vegetables the shares of final product stayed the same because of the higher value of fresh produce. In tropical products trade among industrial countries is now mostly trade in final products.

[17] These product groups grew very rapidly during the 1980s and early 1990. Part of the slower growth could also caused be the lower price increases for seafood and fruits and vegetables as compared to temperate foods. Our data is in nominal US dollars.
[18] To have consistent data going back, this analysis uses Standard International Trade Classification (SITC 3), which is not as precise as the Harmonized System (HS) in separating the products by degree of processing. Thus the results are not as precise.

A few other points are also important. Intra industrial country trade has much higher proportion of final products. For example, the share of their final products in their exports to developing countries was 42 percent. The same share in their exports to other industrial countries was 52 percent. In 1990/01 these shares were 42 percent for both groups of countries. Thus, the share of final product within intra industrial country trade has increased probably due to lower protection. On the other hand, the share of final products in developing country export to both industrial and developing countries have increased by about 10 percentage points. This probably has more to do with capacity improvements in developing countries.

Table 13: Agricultural Export Shares by Level of Processing, 1990/91- 2006/07 (in % of World Trade)

	Developing Exports to DCs			Developing Exp to Indus Co.			Industrial Exports to DCs			Industrial Exports to Indus Co.			World Total Exports		
Product	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07	1990-91	2000-01	2006-07
Tropical Products															
Raw	1.5	2.7	2.6	4.7	3.1	2.8	1.9	1.9	1.7	3.1	1.9	1.6	11.2	9.7	8.8
Final	0.1	0.4	0.5	0.4	0.4	0.5	0.5	0.4	0.5	1.5	1.8	1.9	2.5	2.9	3.4
Subtotal	1.6	3.1	3.2	5.1	3.5	3.3	2.4	2.3	2.1	4.6	3.7	3.6	13.7	12.6	12.2
Temperate Products															
Raw	0.8	2.2	3.3	1.9	1.4	1.8	3.7	4.6	4.1	9.3	7.3	6.3	15.8	15.6	15.5
Final	1.3	3.5	4.5	2.2	2.1	2.8	3.4	3.0	2.8	8.0	8.0	8.5	14.9	16.5	18.5
Subtotal	2.2	5.7	7.8	4.2	3.5	4.6	7.0	7.7	6.9	17.3	15.2	14.8	30.7	32.1	34.1
Seafood, Fruits & Veg															
Raw	1.1	2.4	2.9	7.5	7.3	6.5	1.7	1.7	1.8	9.8	7.9	7.2	20.2	19.3	18.4
Final	0.2	0.6	0.8	2.6	2.4	2.4	0.6	0.4	0.5	2.7	2.5	2.4	6.1	5.8	6.0
Subtotal	1.3	3.0	3.7	10.1	9.7	8.9	2.3	2.1	2.3	12.5	10.3	9.5	26.2	25.1	24.4
Other Processed Food															
Raw	0.1	0.3	0.3	0.6	0.4	0.3	0.1	0.2	0.1	0.5	0.3	0.1	1.3	1.2	0.8
Final	0.2	1.2	1.5	0.5	1.1	1.3	1.8	2.2	2.2	6.6	7.5	7.9	9.1	12.1	12.9
Subtotal	0.3	1.5	1.8	1.1	1.5	1.6	2.0	2.4	2.3	7.1	7.9	8.1	10.4	13.3	13.7
Other Agric. Products															
Raw	1.4	2.1	2.8	3.5	2.8	2.9	2.1	1.8	1.7	7.5	5.9	4.6	14.5	12.6	12.0
Final	0.2	0.6	0.6	0.4	0.5	0.5	0.8	1.0	1.1	3.1	2.2	1.4	4.5	4.2	3.6
Subtotal	1.6	2.7	3.4	3.9	3.3	3.3	2.9	2.8	2.8	10.6	8.1	6.1	18.9	16.9	15.6
All Agricultures															
Raw	4.9	9.7	11.9	18.4	15.1	14.3	9.5	10.2	9.5	30.2	23.3	19.9	63.0	58.4	55.5
Final	2.0	6.2	7.9	6.1	6.4	7.5	7.1	7.0	6.9	21.9	22.0	22.2	37.0	41.6	44.5
Subtotal	6.9	16.0	19.8	24.5	21.5	21.7	16.6	17.2	16.4	52.0	45.3	42.1	100.0	100.0	100.0

Note: "Raw" includes both raw and intermediate goods, because their movements were highly correlated.

Source: Based on mirror data from UN COMTRADE Statistics.

VI. Net Food Importers

The vulnerability of net food importing countries to food price increases was acknowledged during the Uruguay Round Negotiations leading to a ministerial decision that special measures should be taken to minimize the negative effects of global reforms on food importing developing countries and Least Developed Countries (WTO, 1994). An FAO report on Trade Liberalization and Food Security points out that the majority of low-income countries, especially Least Developed Countries, are net food importers (FAO, 2002). This point has been highlighted by Panagariya (2006), who argues that global reforms that increase food prices would hurt these poor countries, especially the low-income countries in Sub-Saharan Africa (SSA), as well as the poor rural households in the poorest countries.

Evidence for these conclusions relies primarily on the analysis undertaken by Valdes and McCalla (1999) and McCalla (2001). These authors showed that the majority of developing countries are net food importers. But they also show that developing countries are heterogeneous in terms of their food and agricultural trade status.

Ng and Aksoy (2008a) have argued that this worry, while highly important, has been somewhat exaggerated. They analyze the food and agriculture trade balances of different groups of countries for the period after 1980. To minimize yearly fluctuations, they use two-year averages for the years 1980/01, 1990/01, 2000/01 and 2004/05, last year of comprehensive trade data, and report primarily on the trade balances in 2004/5. They define food as meats and dairy, grains, and fruits and vegetables.[19] Their results show that many low-income countries that have larger food deficits are either oil exporters or countries in conflict. The remaining low-income countries, as a group, have a trade surplus in food. If trade balances are measured using broad agricultural commodities, rather than just the narrowly defined food, then low-income countries, and the low-income countries in SSA, have a large agricultural trade surplus. Food deficits of most low-income countries are not that significant as a percentage of their imports.[20] On

[19] There are problems even with this classification. In excluding processed foods, we have excluded items such as refined sugars, peanut oil, cocoa oil and paste, etc. Depending on in which form the products are exported makes a big difference in estimating net trade balance. For example, Senegal exports peanut oil which is in the category of processed foods and are not included in the food trade balance. For exact definitions of food and agriculture, see Annex table 1.

[20] Their results also show that only 6 low-income countries have food deficits (food defined narrowly) that are more than 10 percent of their imports. Of these 6, 1 is a large oil exporter, 2 are in conflict, and only 3 – Benin, Guinea-Bissau, and Senegal – are in this category. These three countries export other agricultural products. Benin exports cotton, Guinea-Bissau has a large trade surplus in nuts, and Senegal exports peanut oil. Of these three, only Senegal has an agricultural trade deficit.

the other hand, there are a group of countries experiencing civil conflicts that are large importers of food, and cannot easily adjust their production and meet their basic needs. They also need special assistance in the distribution of food within their boundaries. Therefore, one should modify the WTO Ministerial Declaration, and focus on these conflict countries along with a few really vulnerable ones.

Ng and Aksoy (2008b) extended their results and measured the changes in net food importing and exporting status between 2000/01 and 2004/05, before the prices increased further. Their results show a small deterioration in food trade balances of low income countries. Their food imports increased at a faster rate than their food exports. For middle income countries, the opposite is true. Their food exports grew at a much faster pace than their food imports. Agricultural trade balances of low income countries deteriorated both as a percentage of their imports or their GDP. Most important, low income countries had much lower agricultural GDP growth rates than middle income countries. Thus agricultural supply responses of low income countries to food price increases have not been as positive as the middle income countries. These results suggest that, in low-income countries, the answers to food vulnerability should probably be addressed in the context of incentives for agricultural production.

Here we use the same definitions as the earlier studies but extend the time period to include 2006/07. We also select two, two year averages (average of 2000/01 and 2006/07) to observe the impact of changing prices. These last two years are interesting because 2000/01 is the years where food prices are the lowest since 1980. 2006/07 is the years where food prices are among the highest. Global food price index was 102 for 2000/01 and. For 2007, last year for which there is annual data, the index is 185, much higher than earlier years. For 2006/07, average the food price index is 165. While this average does not include the price increases of 2008, it still is a very large price change in historical context.

In most of the earlier work, focus has been on major staples, especially grains as the primary group representing food. The debates on protection and trade policy are carried out usually on individual staples such as rice or maize. To the basic staples, we add fruits and vegetables, which now constitute the largest part of developing country exports, and these are also products that are highly substitutable with the staple foods.

Countries are categorized by income level, with additional differentiation as follows. First category is oil exporters, defined as countries where oil constitutes more

than 40 percent of exports between 2000 and 2005. A second category is countries in conflict, where armed conflicts affect food production and markets. These countries have great food needs but solutions to their problems lie beyond reforms in global trade regimes or agricultural policies; their food requirements and its distribution within the conflict areas require other support mechanisms. A third category is the small island states. They usually sell services and import most of their needs, including some food. Although their numbers are large, their trade is very small, along with their populations. Thus, in addition to the differentiation by income as middle and low income, three other subcategories were added to the developing countries classification; small island economies, oil exporters, and countries in conflict. Annex table 2 shows the classification of countries in each group.

In the following tables, we analyze the changes in net food imports, and see what has happened to the vulnerability of different groups of countries between 2000/01 and 2006/07. Here we use 2 separate definitions of vulnerability, in terms of external trade and as a part of their income. Table 14 shows the number of countries that are net food exporters and importers and the changes in them over this period.

Table 14: Country Classification by Food Trade in 2000/01-2006/07

	No. of Net Exporters		No. of Net Importers		Total No. of
Country Group	2000-01	2006-07	2000-01	2006-07	Countries
Industrial Countries	11	12	22	21	33
Middle Income, all	31	37	66	60	97
Oil Exporters	3	3	17	17	20
Civil Conflict States	0	1	4	3	4
Small Islanders	5	5	18	18	23
Other Middle income	23	28	27	22	50
Low Income, all	19	13	36	42	55
Oil Exporters	2	1	5	6	7
Civil Conflict States	0	0	7	7	7
Other Low income	17	12	24	29	41
Total	61	62	123	122	185

Notes: Food is defined as raw food products, including meats and dairy products, grains and cereals, fruits and vegetables, but excluding cash crops and feeds, processed food, and seafood.
The classification of income group is based on 2007 per capita GNI from World Bank WDI.
Countries are excluding those small island economies that are colonized and dependent territories.
Data is computed as two-year average of trade values in SITC Revision 3.

Source: Based on mirror data from UN COMTRADE Statistics.

As expected more countries are net food importers, and overall there is little change during this price increase.[21] Net food importing countries actually decreased from 123 to 122. 5 low income countries switched from a net food exporter to a net importer. As was the case with earlier findings of Ng and Aksoy (2008b), the changes are reversed for middle income countries. In that group six countries switched from being a net importer to a net exporter.

Table 15: Trade Balance in Food by Selected Country Group in 2000/01-2006/07

	Net Exports ($ million)		Net Exp as % Total Imports		Net Exports as % of GDP	
Country Group (No. of Country)	2000-01	2006-07	2000-01	2006-07	2000-01	2006-07
Industrial Countries (33)	12,268	9,893	0.29	0.13	0.05	0.03
Middle Income, all (97)	-1,164	3,431	-0.07	0.09	-0.02	0.03
Oil Exporters (20)	-6,950	-15,339	-3.46	-2.40	-0.66	-0.56
Civil Conflict States (4)	-595	-706	-3.63	-1.96	-1.25	-0.73
Small Island States (23)	-120	-239	-1.20	-0.90	-0.69	-1.47
Other Middle income (50)	6,501	19,715	0.44	0.60	0.12	0.19
Low Income, all (55)	396	-2,484	0.31	-0.61	0.05	-0.13
Oil Exporters (7)	-828	-2,167	-4.72	-4.12	-0.90	-0.75
Civil Conflict States (8)	-206	-656	-2.09	-2.81	-0.92	-1.33
Other Low income (40)	1,430	338	1.40	0.10	0.19	0.02

Notes: Food is defined as raw food products, including meats and dairy products, grains and cereals, fruits and vegetables, but excluding cash crops and feeds, processed food, and seafood.
Number of countries is showed in the parentheses that based on countries reporting GDP data.
Data is computed as two-year average of trade values in SITC Revision 3.

Source: Based on mirror data from UN COMTRADE Statistics.

Table 15 shows the net food trade balance of same groups of countries. Trade surplus of industrial countries have declined. Middle income countries have become net exporters. And low income countries have become a large net importer. In terms of vulnerability, either in terms of trade or GDP, most vulnerable groups are either oil exporters or countries in conflict. The reversal in the balances of low income countries have also come primarily from increased imports of oil exporting and civil conflict countries.

[21] For most commodities or groups of commodities, there are more importers than exporters. This is because there is specialization by countries where selected products are produced by few countries and consumed by many.

VII. Conclusion

This paper examines the growth and structure of agricultural trade between 1990 and 2007, focusing on the performance of industrial and developing countries and specific commodity groups. Data include 2007 but miss the agricultural price peak in 2008. Despite tremendous change in the past 20 years in global specialization and trade in manufacturing, remarkably little structural change has occurred in global agricultural trade flows.

The developing country share in world agricultural exports increased from 32 percent in 1990/91 to only 42 percent in 2006/07. Most of this gain came from expansion of exports to other developing countries (about 12 percentage points). However, only 47 percent of their agricultural exports are to other developing countries, showing the continuing importance of industrial country markets for their exports. For low-income countries, other developing countries accounted for 51 percent of their exports and 69 percent of imports in 2006/07; up from 27 percent and 57 percent respectively in 1990/91. Thus, other developing countries are now a bigger market for the exports of low income countries than the industrial ones.

There has been some change in the product mix of global agricultural trade. Currently vegetables and cut flowers constitute almost 20 percent of the exports of developing countries, seafood constituting another 20 percent. Temperate zone products such as grains, dairy, and meats constitute another 30 percent. Traditional exports, such as tea, coffee, cocoa, sugar, cotton, nuts, and spices, now constitute a small share of exports at 16 percent. This suggests the need for more attention to global and country policies for non-traditional product groups.

In conclusion, unlike the case with manufacturing, developing countries have not been able to increase their export shares in agriculture as significantly. They have maintained their trade shares by primarily expanding exports to other developing countries. However, like the case with manufacturing and services, trade to output ratios

in agriculture have increased which are consistent with significant trade liberalization. For most countries, biggest structural shift is in the increasing share of processed products in international trade. Even low income countries have increased the share of processed exports. There is also a move toward greater trade in final products. But most of this trade takes place within trade blocs, such as the European Union and NAFTA, primarily because of steeply escalating tariffs. Sub-Saharan Africa is the only developing country region that has not regained the market share lost during the 1980s. On the other hand, import growth rates decelerated in developing countries and in industrial countries during the 2000s. Developing countries lost export market shares during the 1980s, due mainly to the collapse in the value of tropical products, and made it up during the 1990s by increasing their shares of other commodities.

Trade among industrial countries still dominates world agricultural trade flows, with much of the trade taking place within trading blocs, such as the European Union and NAFTA. Trade among developing countries has expanded, especially during the 1990s, when most developing countries grew faster and liberalized their trade regimes. The middle-income developing countries have now become the biggest single market for the exports of low-income developing countries. Despite the belief of many to the contrary, low-income countries have increased their trade surplus in agricultural commodities over the last two decades, especially during the 1990s.

References

Aksoy, M.A. (2004), "The Evolution of Agricultural Trade Flows" in M.A. Aksoy and J. C. Beghin (eds), *Global Agricultural Trade and Developing Countries*, Washington D.C.: World Bank.

Aksoy, M. Ataman, Z. Ersel, and B. Sivri (2003), "Demand Growth versus Market Share Gains: Decomposing Export Growth in the 1990s," Washington, D.C.: World Bank.

Anderson, Kym and et al (2009), *Distortions to Agricultural Incentives: A Global Perspective, 1955-2007*, (eds), A copublication of Palgrave Macmillan and the World Bank.

Beghin, J. C., and M. A. Aksoy (2003), "Agricultural Trade and the Doha Round: Preliminary Lessons from the Commodity Studies," Paper Presented at *the ABCDE Europe Conference, Paris*, May, 15-16.

FAO (2002), "Trade Liberalization and Food Security: Conceptual Links", Chapter 3 in *Trade Reform and Food Security*, Rome: FAO Document.

Ingco, M. (1997), "Has Agricultural Trade Liberalization Improved Welfare in the Least-Developed Countries? Yes." *Policy Research Working Paper*, No. 1748, Washington, D.C.: World Bank.

McCalla, Alex (2001), "What the Developing Countries Want from the WTO", *The Estey Centre Journal of International Law and Trade Policy*, 2(1): 165-177.

Ng, Francis and Ataman Aksoy (2008a), "Who are the Net Food Importing Countries", *Policy Research Working Paper*, No. 4457, Washington D.C.: World Bank.

Ng, Francis and Ataman Aksoy (2008b), "Food Price Increase and net Food Importing Countries: Lessons from the Recent Past", *Agricultural Economics*, 39, Supplement: 443-452.

Nogues, Julio J. (2002), "Comment to 'Trade, Growth, and Poverty—A Selective Survey," by Andrew Berg and Anne Krueger, and 'Doha and the World Poverty Target,' by Alan Winters", Commentary presented at *the ABCDE Europe Confereence, Brussels*, May 10-11.

OECD (2001), *The Uruguay Round Agreement on Agriculture: An Evaluation of its Implementation in OECD countries*. Paris: OECD Publications.

Panagariya, Arvind (2006), "Agricultural Liberalization and the Least Developed Countries: Six Fallacies", *The World Economy: Global Trade Policy 2005*, edited by David Greenaway, Boston: Blackwell Publishers.

Valdes, A and Alex McCalla (1999), "Issues, Interests and Options of Developing Countries", paper presented at the *World Bank Conference on Agriculture and the New Trade Agenda in WTO 2000 Negotiations*, Geneva, October.

WTO (1994), "Net Food-Importing Developing Countries", *Agriculture: Explanation*, web info at http://www.wto.org/English/tratop_e/agric_e/ag_intro06_netfood_e.htm.

World Bank (2008), "*Global Economic Prospects and the Developing Countries 2009*," Washington, D.C.: World Bank, September.

Appendixes

This study uses a broad definition of the agricultural sector that includes fisheries and both raw agricultural commodities and processed food products. This classification includes all stages of processing and results in economically consistent data series. See the annex for the details of the coverage and definition of subgroups. Data for the EU-15 have been used for all periods. Mexico is included in NAFTA and not in developing countries. For comparability over time, trade within the Commonwealth of Independent States (CIS) is excluded from developing country trade data for 1990–2001, as is trade within the former Yugoslavia and within Southern African Customs Union. Data on imports are used in most cases, but export data are used for the following countries and years: United Arab Emirates 2000/01, Bulgaria 1980/81 and 1990/91, German Democratic Republic 1980/81, Iran 1980/81 and 1990/91, Kuwait 2000/01, Lebanon 1980/81 and 1990/91, Libya 2000/01, Romania 1980/81, Sudan 1990/91, Soviet Union 1980/81, South Africa 1990/91, China 1980/81, and intra-EU flows for 2000/01.

Appendix Table 1: The Classification of Agricultural Products in SITC Revision 3

				Of which: Final Goods	
All Agricultures	(SITC 0+1+2+4-27-28)	SITC	Product Name	SITC	Product Name
Tropical Products	Coffee, Cocoa and Tea	071	Coffee	0712, 0713	Coffee roasted, extr/essen/sub
		072	Cocoa	0722, 0723, 0724, 0725	Cocoa powder, paste, waste
		073	Chocolate/preps	073	Chocolate/preps
		074	Tea and mate	0743	Tea extracts/preps
	Nuts and Spices	0577	Edible nuts, fresh/dried		
		075	Spices		
	Sugar and Confectionery	06	Sugar and honey	062	Sugar confectionery
	Textile Fibers	26	Textile fibres, silk, cotton, jute		
Temperate Products	Meats	01	Meats and products	016, 017	Meat/offal preserved
	Dairy Products	02	Milks, cheese & eggs	0222, 0223, 0224, 023, 024, 0252, 0253	Milk concentr., powder, butter, whey, cheese, egg processed
	Grains	04	Cereals	0423, 046, 047, 048	Rice milled, flour, meal, bakery
	Edible Oils and Seeds	22	Oil seeds	2239	Oilseed flour/meal
	Animal Feeds	08+4	Animal feeds, veg oils/fats	08113, 08119, 0812, 0813, 0814, 0815, 0819, 4	Fodder, residues, oil cakes, fish meal, starch, fixed oils/fats
Seafood, Fruits and Veg	Seafood	03	Fish, shell fish etc.	0353, 0354, 0355, 037	Fish, smoked, preps/presv.
	Fruits and Vegetables	05-0577	Fruits & veg, excl. nuts	0547, 056, 058, 059	Fruit & veg presv/preps, juices
	Flowers & Crude Veg Matl	292	Cut flowers, roots & lac/gums		
Other Processed Food	Tobacco	12	Tobacco /manufactures	122	Tobacco, manufactured
	Beverages	11	Beverages, alcohol/non-alc	111, 112	Beverages, alcohol/non-alcohol
	Other Processed Food	09	Other food preps/sauces	09	Other food preps/sauces

Other Agricultures	Other Raw Agric. Products	00	Live animals		
		21	Hides and skins/fur		
		23	Crude rubber, synthetic		
		24, 25	Wood/cork and papers	251	Pulp and waste paper
		291	Crude animal & veg materials		

Appendix Table 2: The Classification of Country Groups

Country	Industrial Group (33)	Low Income Group (55)	Middle Income Group (97)	
Income Group (122)	Australia Austria Belgium Canada Cyprus Czech Republic Denmark Estonia Finland France Germany Greece Hungary Iceland Ireland Italy Japan Latvia Lithuania Luxembourg Malta Netherlands New Zealand Poland Portugal Spain Slovak Republic Slovenia Sweden Switzerland United Kingdom United States	Bangladesh Benin Bhutan Burkina Faso Burundi Cambodia Central African Republic Chad Cote d'Ivoire Ethiopia Gambia, The Ghana Guinea Guinea-Bissau India Kenya Kyrgyz Republic Lao PDR Lesotho Madagascar Malawi Mali Mauritania Moldova Mongolia Mozambique Nepal Nicaragua Niger Pakistan Papua New Guinea Rwanda Senegal Tajikistan Tanzania Togo Uganda Uzbekistan Vietnam Zambia	Albania Argentina Armenia Belarus Belize Bolivia Botswana Brazil Bulgaria Chile China Colombia Costa Rica Croatia Djibouti Dominican Republic Egypt, Arab Rep. Georgia Guatemala Guyana Honduras Hong Kong (China) Indonesia Israel Jamaica	Jordan Korea, Rep. Macao, China Macedonia, FYR Malaysia Mauritius Mexico Morocco Namibia Panama Paraguay Peru Philippines Romania Singapore South Africa Sri Lanka Suriname Swaziland Taiwan, China Thailand Tunisia Turkey Ukraine Uruguay
Oil Exporters (27)	Norway *	Angola Cameroon Congo, Rep. Equatorial Guinea Nigeria Sudan Yemen Rep.	Algeria Azerbaijan Bahrain Brunei Ecuador Gabon Iran, Islamic Rep. Iraq Kazakhstan Kuwait	Libya Oman Qatar Russian Federation Saudi Arabia Syrian Arab Republic Trinidad and Tobago Turkmenistan United Arab Emirates Venezuela
Conflict Countries (12)		Afghanistan Congo, Dem. Rep. East Timor Eritrea	Bosnia and Herzegovina El Salvador Lebanon Serbia and Montenegro	

		Haiti Liberia Sierra Leone Zimbabwe		
Small Islanders (23)		Comoros ** Sao Tome and Principe ** Solomon Islands **	Antigua and Barbuda Aruba Bahamas, The Barbados Cape Verde Dominica Fiji Grenada Kiribati Maldives	Marshall Islands Micronesia, Fed. Sts. Palau Samoa Seychelles St. Kitts and Nevis St. Lucia St. Vincent & Grenadines Tonga Vanuatu

Notes: The classification of income groups is based on 2007 GNI per capita from World Bank WDI,
where low income = $905 or less, middle income = $906 - $11,115; and high income = $11,116 or more.
Industrial country Group is based on traditional high income 23 OECDs and new EU-10 countries.
Oil exporters are based on at least 40 percent of fuels in total merchandise exports from COMTRADE Statistics.
Small islanders are those small economies with independent or autonomous administration, excluding colonized or dependent territories.
Civil conflict countries are drawn from countries with recent serious war outbreaks from the study by Paul Collier on "Economic Cause of Civil Conflict and their Implications for Policy", 2000.

* Excluded from oil exporter group.

** Included in the middle income small islander group.

Sources: World Bank World Development Indicators database and UN COMTRADE Statistics.

Annex: Role of Demand and Changes in Market Share

Low income elasticities for agricultural products, especially in industrial countries, are identified as the primary reason for the slowdown in global agricultural trade growth. These low income elasticities are contrasted with higher income elasticities for manufactured products. While this is true in the long run, it is not clear whether trade and demand growth are highly correlated in the medium run. Variables such as level and changes in protection and the degree of comparative advantage play an important role.

If world trade expands primarily because of increases in demand, then slower agricultural trade can be explained by lower income elasticities and lower income growth in industrial countries. But if the primary cause of trade expansion over the medium run is restructuring of production and changes in both imports and exports, without commensurate changes in total demand, then changes in trade regimes can explain a significant part of trade growth. Over the last three decades merchandise trade has expanded much faster than demand, showing the importance of production restructuring. Unfortunately, the systemic information that is necessary to decompose the determinants of export growth exists only for manufacturing. There is very limited information for agriculture.

When manufacturing (including food processing) import growth to industrial countries (Canada, Germany, Japan, and the United States) is decomposed between demand and market share changes, growth accounted for 32 percent of import growth and changes in market share for 68 percent. For imports from developing countries growth contributed only 21 percent while changes in market share contributed 79 percent (Aksoy, Ersel, Sivri 2003).

Table 1: Demand and Import Growth in Selected Industrial Countries, 1991-99 *(percent)*

	Industrial country demand growth[a]	Import growth from the world	Import growth from developing countries	1991 market shares	
				World	Developing countries
Food Processing	15.82	26.65	14.46	6.41	2.42
Garments	14.35	57.29	73.08	43.19	33.80
Glass Products	13.06	63.54	71.99	14.24	4.30

a. Includes Canada, Germany, Japan, and the United States.

Source: Aksoy, Ersel, Sivri 2003.

The examples of food processing, garments, and glass products illustrate the lack of a strong relationship between import and demand growth. The three sub sectors have similar demand growth rates but very different import growth rates. The import growth rates are different not only for imports from developing countries but for imports from rest of the world as well. Depending on policy regimes and changes in policy regimes, trade growth rates can be very different from growth rates in demand.