The Impacts of Lesser Developed Countries on Southern Region Agricultural Exports

Mary A. Marchant and Fred J. Ruppel

Lesser developed countries (LDCs) serve as both customers and competitors for agricultural commodities produced in the Southern region of the United States. This paper focuses on the impacts of LDCs on exports of the major agricultural commodities produced in the South (cotton, rice, tobacco, poultry, and, to a lesser extent, citrus and peanuts). First the importance of LDCs as export markets for Southern commodities is explored. Then the role LDCs play as producers and exporters of these commodities is considered. Finally, these separate roles are combined into an index of LDC competitiveness with Southern agricultural commodities. Data analysis shows that Southern agricultural interests truly are divided over the role LDCs play in Southern agriculture, where poultry and rice rank highest, and peanuts lowest, in terms of a LDC markets/competition index. Thus, it is not surprising that calls for protectionism (e.g., the Bumpers' Amendment) should arise from the South.

Lesser developed countries (LDCs) serve as both customers and competitors for agricultural commodities produced in the Southern region of the United States. Since the late 1970s LDCs have claimed a growing share of worldwide agricultural exports, with expectations of that trend continuing. LDCs have also served as major suppliers of raw materials and complementary imports for Developed Market Economies (DMEs). In supplying non-competing commodities, LDCs have filled a market niche that DME producers could not fill, and in that sense have been both beneficial and non-threatening to DME agricultural producers. In recent years, however, a number of LDCs have become increasingly important as producers and exporters of competing or supplementary agricultural commodities and products. For example, Brazil has captured a large share of U.S. and European citrus markets and has become the world's number two supplier of soybeans, the largest supplier of soybean meal, and a leading supplier of soybean oil. Thailand has become the world's largest rice exporter, while China's increased production of cotton and wheat threatens to disrupt those markets. In addition, Mexican and Central American fruit and vegetable exports threaten the economic welfare of growers in California, Texas and Florida.

Southern U.S. agricultural producers are particularly susceptible to swings in LDC production and consumption levels. Because of the dual nature of LDCs as both consumers and producers of commodities grown by Southern producers, Southern agricultural interests are somewhat divided over the role LDCs play in world commodity markets. Many of the agricultural commodities typically produced in the Southern Region are increasingly being produced by LDC farmers. This outcome is due in large measure to climatic and geographic similarities between Southern states and LDCs, but is also the result of historical relationships and overall U.S. trade flows and production patterns.

This paper focuses on the impacts of LDCs on exports of the major agricultural commodities produced in the Southern Region of the United States. These commodities include cotton, rice, tobacco, and poultry, and, to a lesser extent, citrus and peanuts. First the importance of LDCs as export markets for Southern commodities is explored. Then the role LDCs play as producers and exporters of these commodities is considered. Finally, these

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separate roles are combined into an index of LDC competitiveness with Southern agricultural commodities. The analysis shows that Southern agricultural interests truly are divided over the role LDCs play in Southern agriculture, and that it is not surprising that calls for protectionism, such as legislation like the Bumpers' Amendment, should arise within the South.

Literature Review

Others have investigated in various degrees the extent to which LDCs are customers or competitors in Southern commodities. The International Trade Task Force has provided leadership in this area. The Task Force, an offshoot of the Southern Extension Marketing Committee and the Southern Extension Public Affairs Committee, is composed primarily of extension and research economists from the 13 Southern universities. They have been responsible for at least two conferences and an information packet entitled "Southern Agriculture in a World Economy."

Three items in the packet have bearing on this research. Rosson, Vocke, and Scearce analyzed the competitive position of U.S. and Southern agriculture in light of changes taking place in global agricultural trade in the early 1980s. They argued that the U.S. was well-positioned to capture a large share of any increase in grain imports by developing countries, but left unanswered the question of the Southern region's competitiveness in its own primary crops. In a second leaflet, Rosson and Vocke focused on how Third World development might affect Southern agricultural exports. They noted declining self-sufficiency trends in both food grains and feed grains in LDCs, and argued that income growth spearheaded by the agricultural sectors in these countries would lead to increased LDC imports of U.S. commodities. In response to the contention that LDCs could potentially compete with particular U.S. agricultural exports, they offered Brazil, Malaysia and India as examples of countries that had become competitive with U.S. exports in some commodities but also become bigger customers in others.

Finally, Harris and Benson maintained that the South is "the most trade-oriented and trade-sensitive region of the country." Both history (Southern exports dating back to colonial times) and geography (their proximity to export ports) have favored the South's trade orientation. Harris and Benson highlighted the contrast between the South's position as the major producer of a number of "specialty" crops (tobacco, cotton, rice, peanuts, sugarcane, citrus, catfish, and a variety of fruits and vegetables) and a marginal producer of the major, nationally grown export commodities (wheat, corn, soybeans, and dairy products). They argued that these two factors left the South particularly vulnerable to world events affecting agriculture.

Vollrath and Scott analyzed the level of competitiveness between U.S. and LDC exports. Using a complementarity index relating overall agricultural trade patterns, they found a high level of complementarity between U.S. and LDC trade patterns during the last three decades. In addition, overall complementarity was evident in each of the LDC sub-regions analyzed independently. However, the principal U.S. commodities driving these high levels of complementarity were the major "Midwestern" commodities: wheat, coarse grains, and oilseeds. That is, the United States is very competitive in the production of these major field crops while LDCs are at a comparative disadvantage. Likewise, LDCs have relative comparative advantages in tropical products which are not grown in U.S. climates (with the possible exception of Hawaii). Unfortunately, in spite of the complementarity between U.S. and LDC trade patterns, growth in LDC imports of U.S. commodities, which had been strong in the 1960s and 1970s, had diminished substantially and became negative during the 1980s. Moreover, over each of the past three decades, LDC imports from sources other than the United States grew more rapidly than did their imports from U.S. suppliers.

Tweeten (1986) compared the South with other regions of the country. He found the South's comparative advantage to be diminishing in traditional crops, such as cotton and sugar, and possibly in tobacco, rice, fruits, and vegetables, such that an unsupported, unrestricted market would disadvantage Southern production of these commodities. On the other hand, freer trade would enhance the South's position (in the absence of domestic programs) in wheat, soybeans, cattle and calf production.

Henneberry, Ackerman and Eshleman reviewed the history and current state of U.S. overseas market promotion programs. They noted that about 20 percent of total U.S. agricultural exports were accounted for by various food aid, export enhancement and credit guarantee programs. In addition to highly aggregate commodity and regional profiles, the authors analyzed 1986 and 1988 program budgets and U.S. agricultural exports by targeted country development level (highly developed, newly industrialized and less developed). LDCs constituted 38 percent of U.S. total agricultural

exports in these two years. Although they were targeted to receive 43 percent of Foreign Market Development Program funds (for these two years), they were slated to receive only eight percent of Targeted Export Assistance (TEA) funds. The authors noted that since its inception in 1986, the TEA program had spent 74 percent of its funds in highly developed countries. However, a large proportion of expenditures of TEA funds are for branded products, presumably products which would be something of a luxury in LDCs. The authors left their readers with a reasonable question: if developing countries are often cited as potential growth markets, why are additional program funds not directed to these countries?

Identification of Southern Commodities

The remainder of this paper is devoted to analyzing the role LDCs play in the major Southern commodity markets. Maps published by the U.S. Census of Agriculture highlight a certain set of crops which are either unique to the Southern region of the United States or in which the South dominates as the major producer. These crops include cotton, rice, tobacco, poultry, peanuts, citrus, sugarcane, and a number of specialty fruits and vegetables. Following Marchant's 1991 analysis, we chose to analyze the first six crops from this list. We eliminated sugarcane because of the severe international market distortions which exist due to U.S. border policies, and fruits and vegetables because (other than citrus) no one particular fruit or vegetable species is dominant in Southern production. A 1986 article by Sumner corroborates the use of these crops. In analyzing the competitive position of Southern commodities, he found eight commodities from a list of the 25 most important commodities in the United States that he labeled "Southern" because over half the sales of the commodities came from the 13 Southern states. His list of eight included our six plus forest products and sugar cane. On the basis of cash receipts, other commodities (cattle and soybeans in particular) are more important to the South. However, the South contributes only about 30 percent of the total U.S. production of these commodities.

Three primary sources of data were used to examine the role LDCs play as customers and competitors for Southern commodities. In analyzing export markets for these commodities our primary data source was the USDA/ERS publication *FATUS (Foreign Agricultural Trade of the United States)*. *FATUS* publishes monthly and annual value and volume statistics for U.S. agricultural exports to all destinations and imports from all sources. In the evaluation of worldwide export competition, *FAO Trade Yearbooks* (United Nations Food and Agriculture Organization) were used in conjunction with USDA/ERS's *PS&D VIEW* data base program. The *FAO Trade Yearbooks* also include volume and value trade flow data on the major agricultural commodities involved in world trade. *PS&D VIEW* includes import and export volume data, plus coverage on a number of other variables (acreage, yield, production, consumption, stocks) for nearly 200 countries and regions for over 60 major agricultural commodities.

Although the South is not the exclusive producer of the commodities under analysis, because the majority of production of these crops occurs in the South, U.S. export data on these crops serve as a reasonable proxy for Southern exports. According to Sumner, in 1982 the South produced 68 percent of the total U.S. output of cotton, 75 percent of the rice, 93 percent of the tobacco, 75 percent of the broilers, 72 percent of the oranges, and 88 percent of the peanuts. Owing to their proximity to port, Southern export shares would likely be even higher.

LDCs as Export Markets for Southern Commodities

In spite of the lack of funds directed to marketing U.S. agricultural products in LDCs, as a group LDCs are, nonetheless, important customers for U.S. agricultural products. They are important customers for the major field crops produced primarily in the Midwest, and they are important customers for the specialty crops produced in the South. In this section the role of LDCs as customers for Southern commodities is examined, first across all six commodities and then individually for cotton, rice, tobacco and poultry.

Southern Commodities

In order to rank these six Southern commodities in terms of relative importance, their total U.S. export value from 1970 to 1991 is plotted in Figure 1. In terms of overall export value, cotton has been the most important Southern export crop, followed in order by tobacco, rice, citrus, poultry and peanuts. Cotton's total export value has approached three billion dollars on a number of occasions, peaking in 1980 at $2.86 billion. Cotton has led all other Southern commodities in every year since the early 1970s, except for 1986 when severe drought

US EXPORTS OF SOUTHERN COMMODITIES
All Destinations, 1970-1991

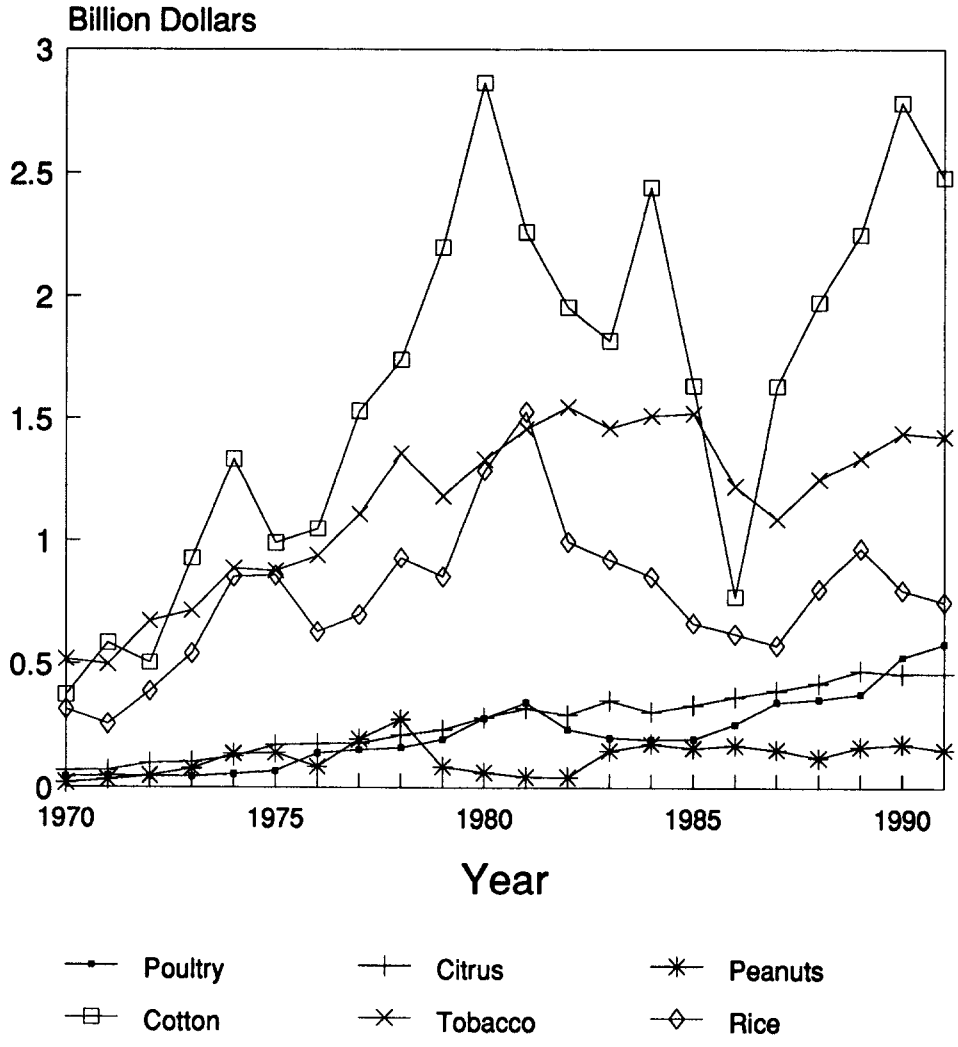

Figure 1

and the U.S. Payment-In-Kind (PIK) program dropped cotton's export value to under $800 million. Tobacco has dominated as the second leading Southern export commodity since the mid-1970s, except in 1981 when rice exports were unusually high. Tobacco's export value averaged nearly $1.4 billion during the 1980s, while rice exports have dropped off to an average value of $800 million since 1982. Poultry (chicken) exports have risen substantially since 1985 and expect to overtake citrus and possibly rice in the longer haul in terms of overall export value. Both poultry and oranges are now in the half-billion dollars per year export value range, with peanuts at about one-third of this level.

In Figure 2, total U.S. exports of these six commodities to LDC destinations from 1970 to 1991 are plotted. In general, cotton again had the greatest export value, with a peak in 1980 and major dips in 1983 and 1986. Rice dominated tobacco as the second leading Southern export commodity to LDC destinations, although the combined rice and

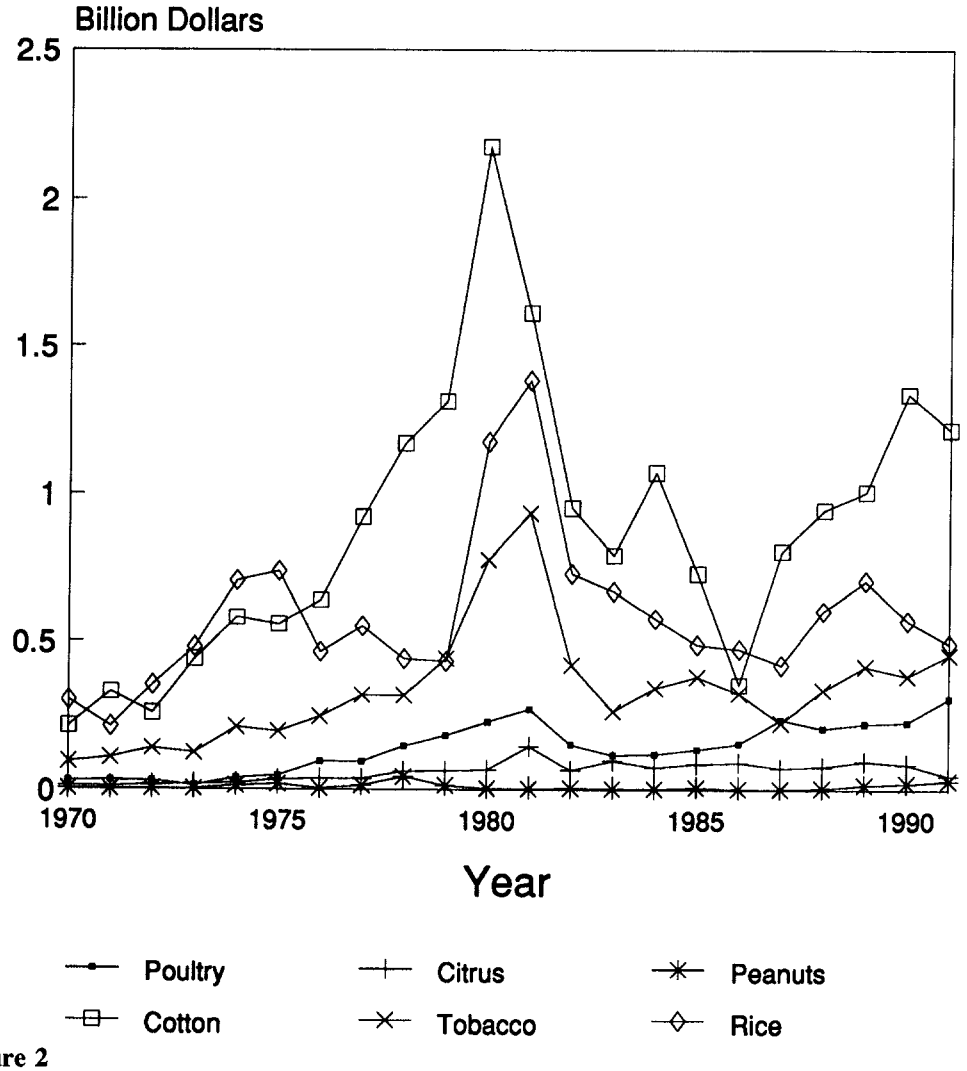

Figure 2

tobacco export value in recent years has fallen short of cotton's. Poultry rises to the number four spot when only LDC destinations are considered, followed by citrus. Peanuts are a relatively unimportant export commodity in terms of LDC markets. U.S. exports to LDCs expanded rapidly in the 1970s, peaking in the early 1980s, but has since been erratic. The drop in export values in the early and mid-1980s is likely due to the impacts of the U.S. exchange rate appreciation and tough worldwide economic conditions at that time. Further volatility may be the result of government policies which affect import and export volumes (McCalla and Josling; Tweeten (1992)).

In the next sections, cotton, rice, tobacco and poultry are analyzed in terms of their export markets, comparing U.S. exports to the world and U.S. exports to LDCs, with the difference going to developed and centrally planned economies (CPEs). The intent is to see just how important LDCs are as markets for these Southern commodities.

Cotton

Total U.S. exports of cotton to the world and to LDCs by volume between 1956 and 1991 are plotted in Figure 3. The chart shows in dramatic fashion that, since the late 1960s, as LDC imports of cotton go, so goes the total volume of U.S. cotton exports. LDCs played a minor role as a cotton export market in the late 1950s and early 1960s. However, as total U.S. exports of cotton declined

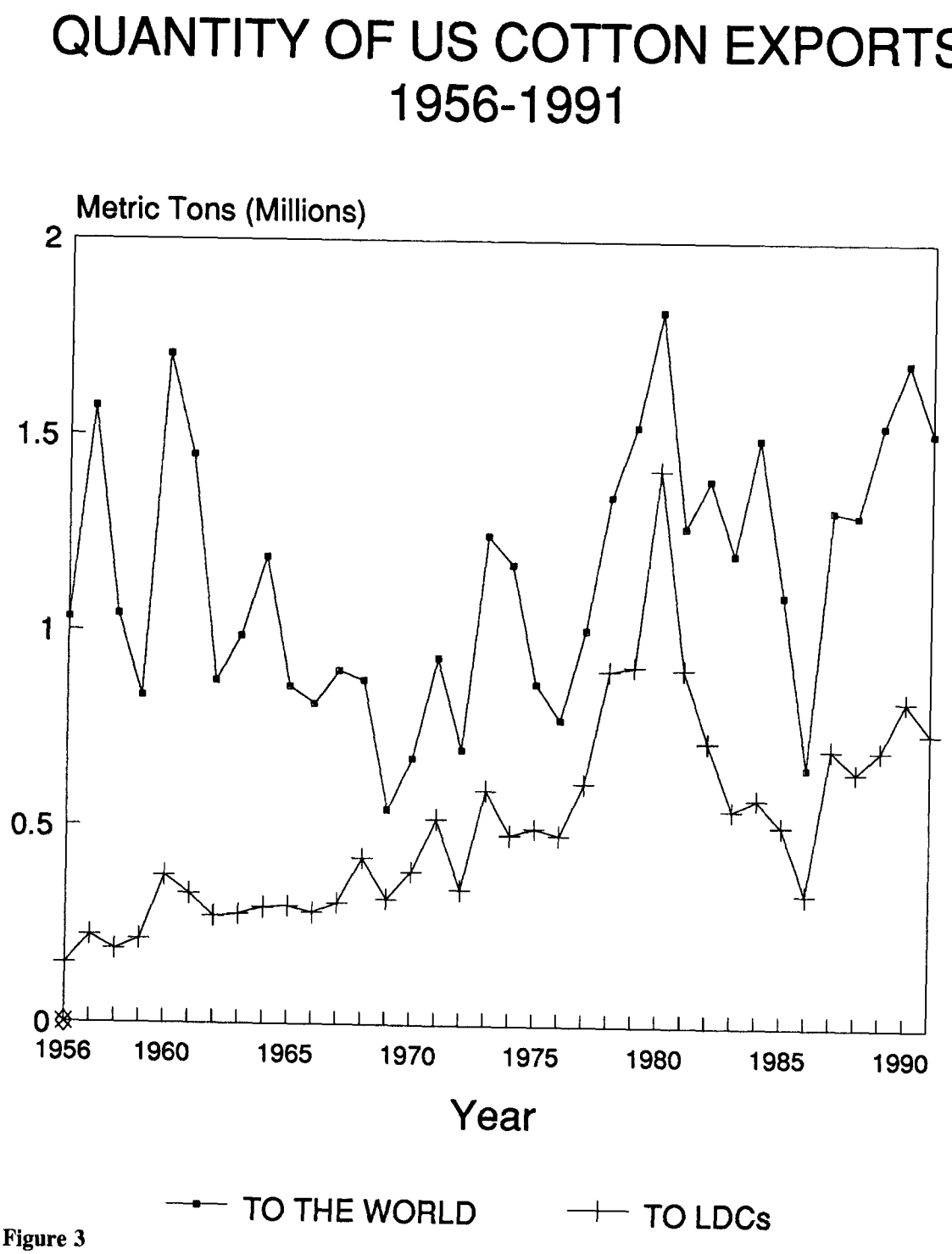

Figure 3

in the mid- to late-1960s, LDCs became a critical market, claiming ever-increasing market shares. Since 1982, U.S. cotton exports have been somewhat erratic, with a large drop in 1986. Throughout this volatile time, LDCs have been very important as a market for U.S. cotton exports, with exports to LDCs virtually equaling U.S. exports to DMEs and CPEs, even surpassing exports to these destinations in 1982, 1987, and 1989. Specific LDC markets that have been major importers of U.S. cotton in recent years include South Korea, Taiwan, Indonesia and Egypt. Prior to the Gulf War, Iraq was also a large LDC importer of U.S. cotton. In the late 1980s, South Korea claimed 40 to 50 percent of total U.S. exports to LDCs. By 1991, Taiwan took over this market share leadership position, with Taiwan, South Korea and Indonesia now accounting for three-fourths of U.S. cotton exports to LDCs.

Rice

Total U.S. exports of rice to the world and to LDCs by volume between 1970 and 1991 are shown in Figure 4. LDCs have played a dominant role as an export market throughout this entire time period. U.S. rice exports peaked in the early 1980s, with LDCs commanding a surprising 90 percent of this amount in 1980 and 1981. In recent years LDCs have comprised 65 to 75 percent of total U.S. exports. Except for 1986 and 1989, U.S. rice exports both total and LDC-destined, have fallen every year since the peak in 1981. Even as U.S. rice exports have been dwindling, so too LDC market shares have been erratic. Since 1980 no fewer than fourteen LDCs have claimed at least a five percent market share of total LDC imports of U.S. rice in one year and near-zero imports in another: Mexico, Brazil, Peru, Iraq, Iran, Turkey, Nigeria, Senegal, Ivory Coast, South Korea, Bangladesh, the Philippines, Indonesia, and Haiti. South Korea's (LDC) market share was 44 percent in 1981, Iraq's was 27 percent in 1987, Brazil's was 23 percent in 1986, and Nigeria's was 17 percent in 1982. Among LDCs, only Saudi Arabia and Liberia have held relatively steady market shares of U.S. imports over this time period.

Tobacco

Figure 5 shows the steady decline in total U.S. tobacco exports together with the up-and-down nature of U.S. tobacco exports to LDCs. Total U.S. tobacco exports to the world and to LDCs between 1970 and 1991 are plotted. LDCs have played an important but not dominant role as an export market. Overall, U.S. tobacco exports to the world have declined, rising slightly in the late 1980s and early 1990s. Most of this increase has gone to LDC export markets, with DME markets remaining fairly constant. Total LDC imports of U.S. tobacco have risen slightly since 1983, with only two years of declining LDC imports since then. These changes raise moral and ethical health questions which are well beyond the scope of this paper.

With respect to key LDC importing countries, a much more stable foreign demand exists for U.S. tobacco than for U.S. rice. Taiwan, Hong Kong, Thailand, and to a lesser extent, Egypt and the Philippines were major importers of U.S. tobacco in the late 1980s and early 1990s. Taiwan, Hong Kong and Thailand have each maintained at least a ten percent market share in each of the past four years. These three have accounted for 50 to 60 percent of LDC imports of U.S. tobacco in the past three years. Although Egypt was a large importer of U.S. tobacco in the late 1980s, more recently, its market share of U.S. tobacco imports has virtually disappeared.

Poultry

Global and LDC volume imports of U.S. poultry between 1958 and 1991 are shown in Figure 6. Although LDCs have played a major role as an import market throughout this entire time period, in recent years their market share has diminished somewhat. From the late 1960s through 1989, U.S. exports to LDCs consistently surpassed U.S. exports to all other markets. Thus, LDCs have been (and are) a very important market for U.S. poultry, a market that, as seen from the figure, has increased dramatically since 1975. The major LDC importer of U.S. poultry is Hong Kong, with a one-fifth to one-third market share of LDC imports since 1986. Other key importing countries include Mexico, Singapore, Jamaica, but their combined 20 to 30 percent LDC market share is far behind Hong Kong's. Prior to 1989, Egypt was also an important LDC importer.

LDCs as Export Competitors for Southern Crops

It is clear from the preceding analysis that Southern producers are heavily dependent on LDCs as markets for the output of the crops which the Southern Region produces heavily. The LDCs, however, form a two-edged sword, in that they also provide the major export competition afforded Southern farmers in these major crops. In this sec-

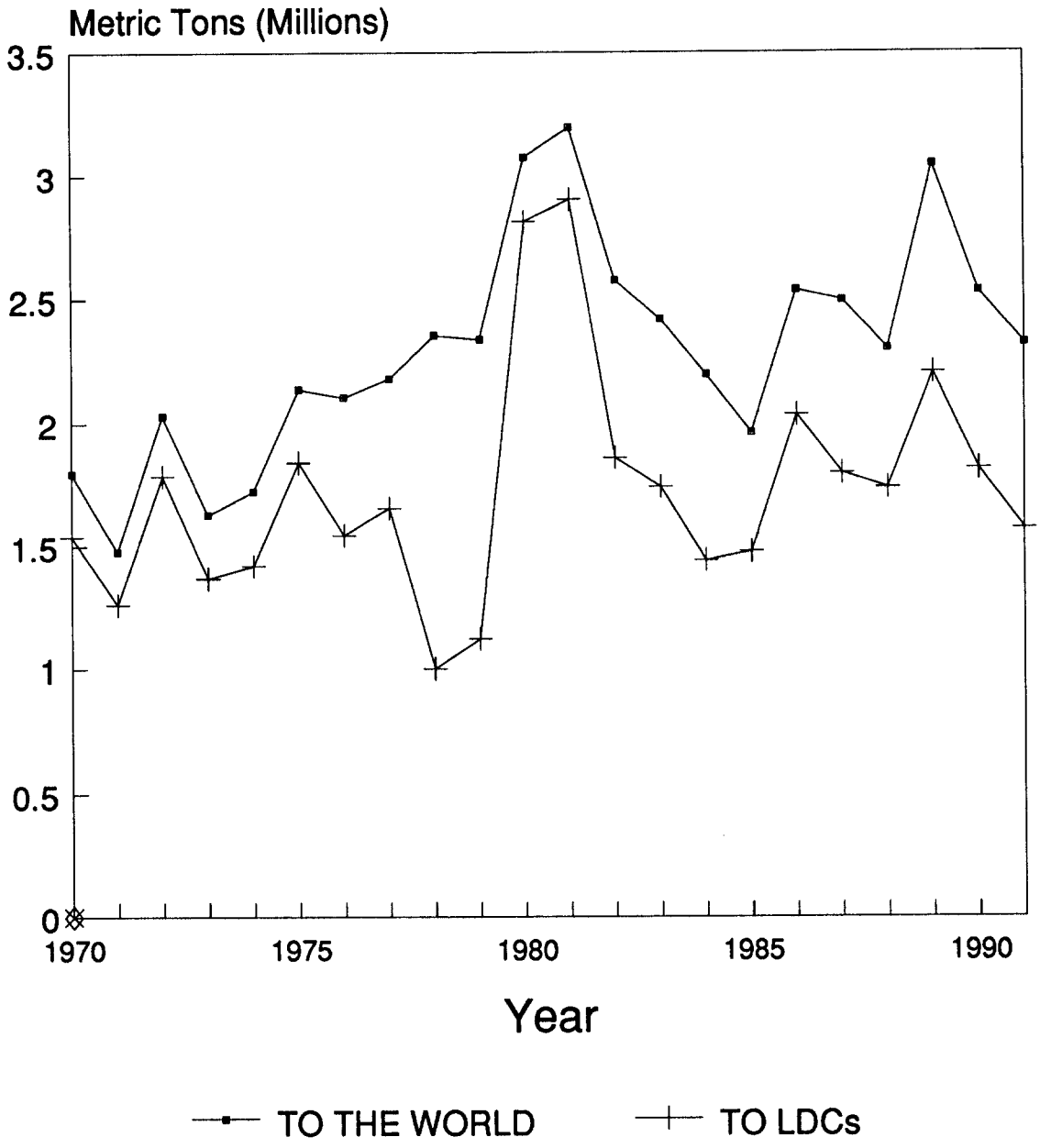
QUANTITY OF US RICE EXPORTS
1970-1991
Metric Tons (Millions)
3.5
3
2.5
2
1.5
1
0.5
0
1970
1975
1980
1985
1990
Year
TO THE WORLD
TO LDCs

Figure 4

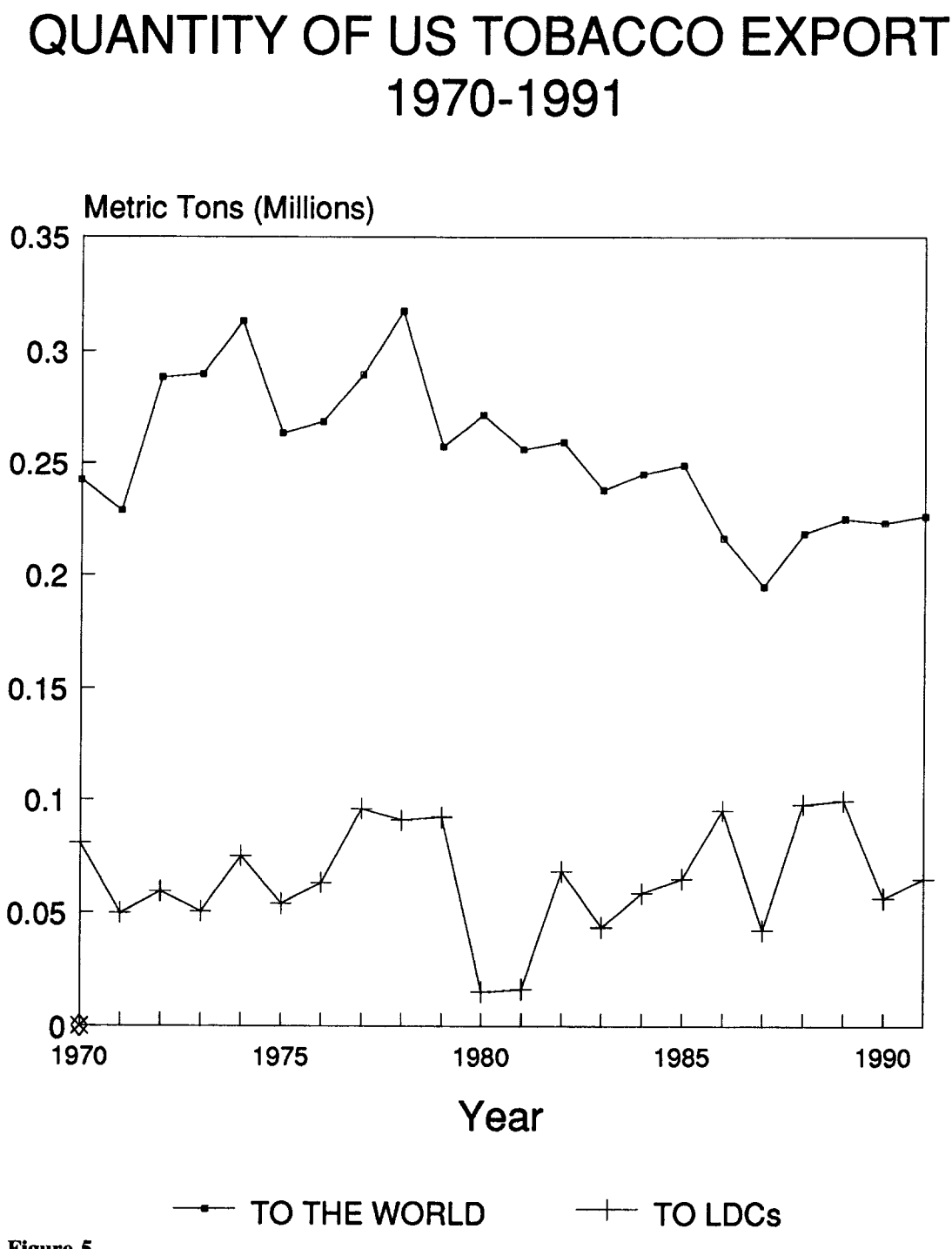

Figure 5

tion, the role of LDCs as export competitors in Southern commodities is examined.

Cotton

Total world production of cotton was at a near-record 19 million metric tons (MMT) in 1990, after averaging 17.2 MMT during the previous four years. Nearly one-quarter of the 1990 harvest (4.5 MMT) was produced by China, with the United States the second largest producer at 3.4 MMT. India, Pakistan, Brazil, and Turkey were the next largest producers. Together all LDCs plus China

QUANTITY OF US POULTRY EXPORTS 1958-1991

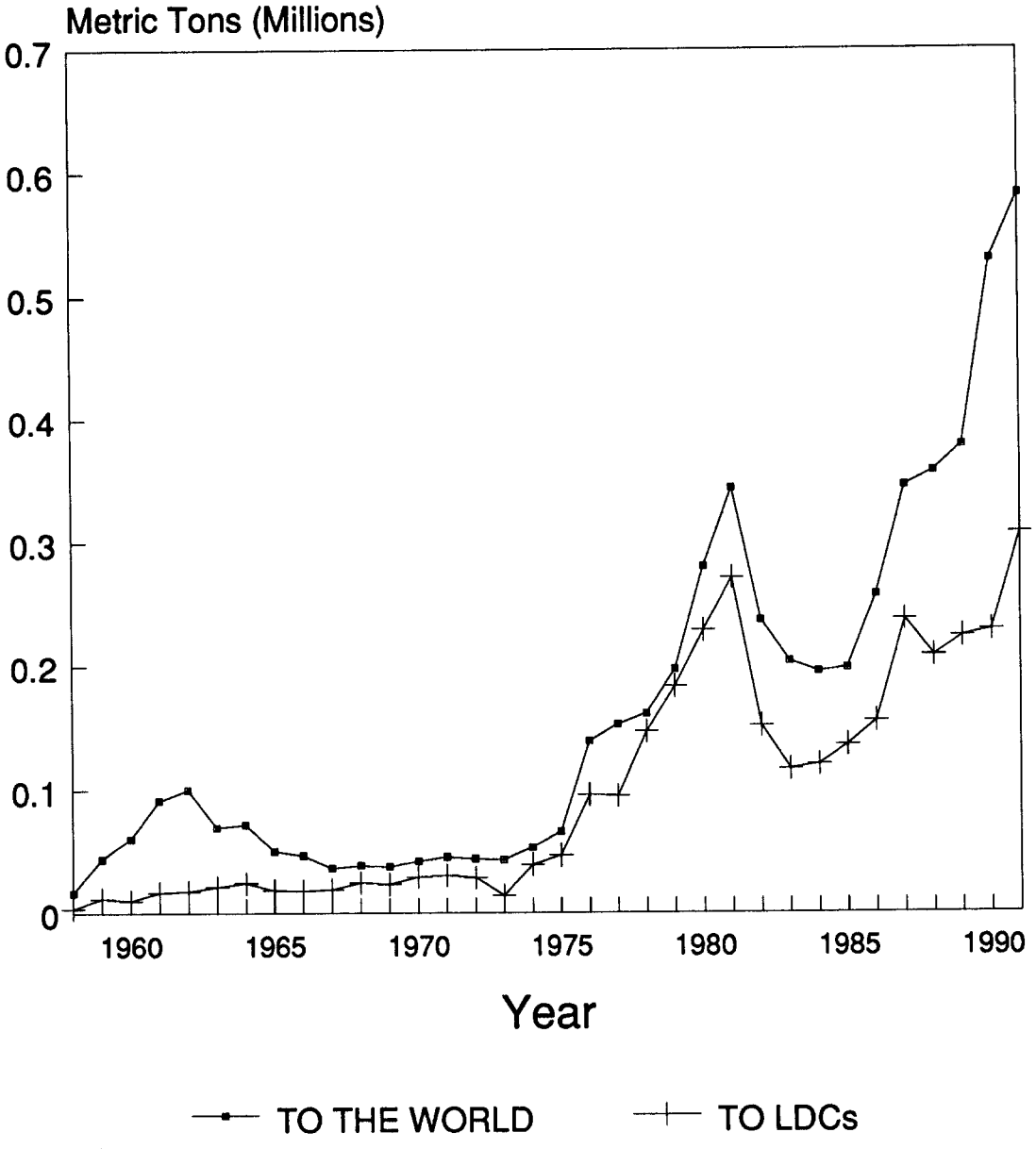

Figure 6

accounted for nearly two-thirds of the world's production of cotton between 1986 and 1990, with the United States producing one-sixth of the total. Thus, the remainder of the DMEs together with the current and former Centrally Planned Economies accounted for only about one-sixth of the world's production. LDCs clearly provide production competition for Southern cotton producers.

The United States is the world's leading cotton exporting nation, with approximately a 30 percent

market share during the 1980s (see Figure 7). The next largest cotton exporting countries are Pakistan, China and Australia. World trade in cotton averaged 5.3 MMT between 1986 and 1990, approximately 30 percent of global production during this period. World trade had averaged approximately 27 percent of production during the early 1980s. Much of the increase in global cotton trade during the decade of the 1980s was due to China's entry into world cotton markets in the early 1980s (Figure 7). Between 1985 and 1987 China attained 12 percent of total world trade in cotton, dropping to 3–6 percent during the remainder of the decade. Figure 7 shows dramatically how LDCs competed directly with U.S. producers for export markets during the 1980s. Only in the final year of the decade did LDC and U.S. export market shares move in the same direction. The remainder of the years had LDCs gaining market share at U.S. expense, and vice versa. LDCs as a whole (including China) constituted just under 50 percent of total world exports in the 1980s. As with the production

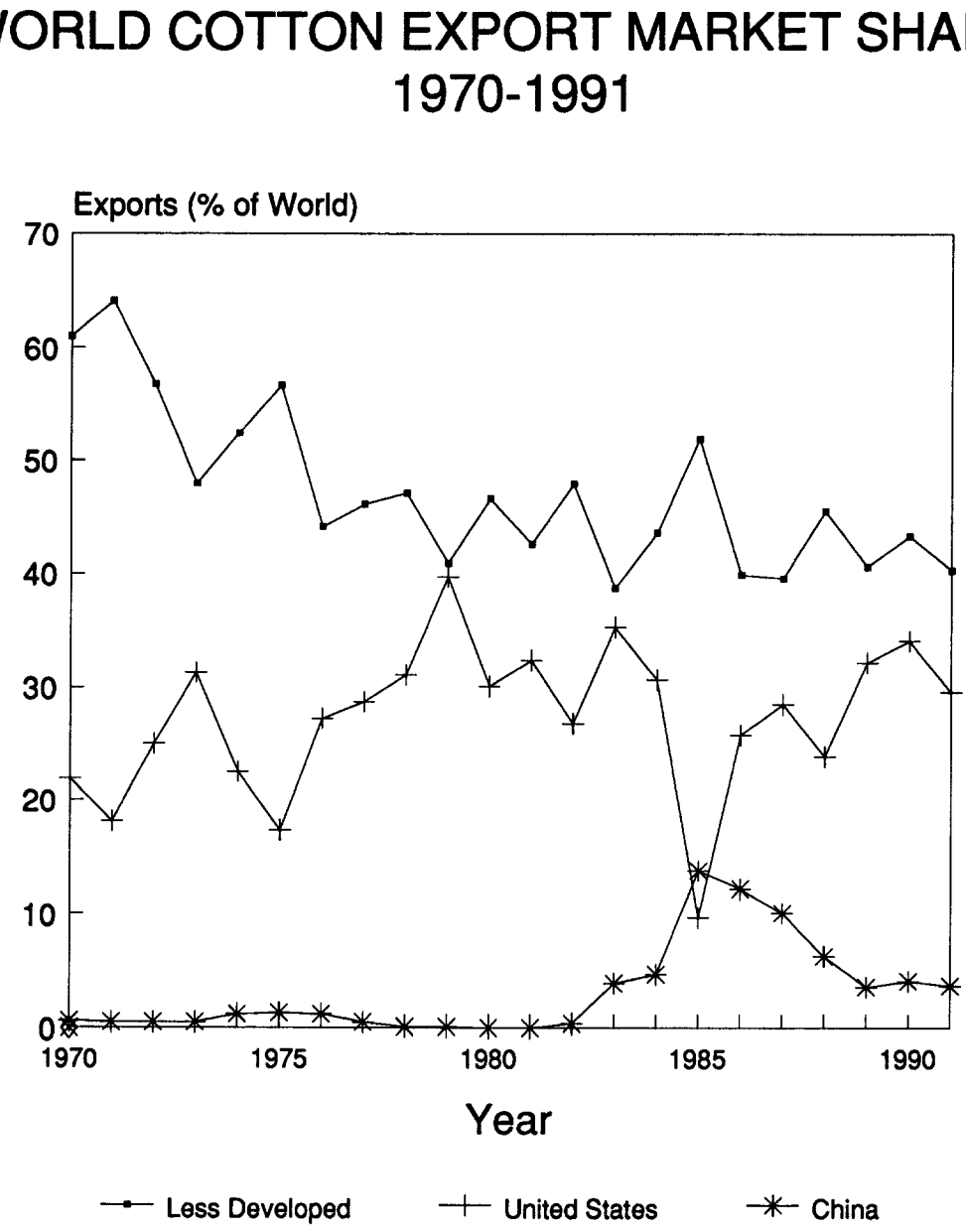

Figure 7

figures above, the remaining DMEs and current and former CPEs (excluding China) maintained only a relatively small 20 percent market share of annual cotton exports.

Rice

We saw above that LDCs were very important to Southern producers because of their role as major importers of U.S. rice. However, it is also true that LDCs afford Southern producers the bulk of the export competition in world rice markets. In fact, nearly all of the major competitors to U.S. rice exports are LDCs. Total annual world rice production during the late 1980s was between 320 and 360 MMT. Together China and India regularly produce over one-half of this total. However, because they typically consume more than 99 percent of their own production, their role as export competitors for U.S. rice producers is diminished. This pattern is not uncommon in other countries, resulting in rice being one of the most "thinly traded" of the major commodities. Typically less than five percent of total world production gets funneled into export markets.

Thailand has been the world's leading rice exporter for the past decade, typically supplying one-third or more of total global rice exports (see Figure 8). Thailand's exports during the late 1980s were 50 to 100 percent greater than those of the United States, the world's second leading exporter. Vietnam and Pakistan are next in line. Their combined export volumes during 1988–90 almost equaled total U.S. rice exports. Vietnam became a major rice export competitor in the late 1980s, cutting substantially into Thailand's market share. China, India, Burma and Uruguay were also top-10 exporters during each of the years between 1986 and 1990. Italy and Australia are the only DMEs, other than the United States, to also claim this honor. As a whole, LDCs accounted for 50 to 60 percent of total world trade during this period.

Tobacco

In tobacco, as in cotton and rice, many of the major export competitors to U.S. tobacco producers are LDCs. Global tobacco production averaged 6.3 MMT between 1988 and 1991. China is far and away the world's leading supplier, producing over 40 percent of that total during this time period. Because the Chinese consume a large proportion of their production they are less important as export competitors. Their production in recent years, however, has so far outstripped their consumption, that they have accumulated nearly one-third of the world's tobacco stocks. Although the United States is the world's second largest producer, they typically produce only 25 percent of the amount supplied by the Chinese. Other leading producers include India, Brazil, Turkey and the Republics of the former Soviet Union.

Global trade averaged nearly 1.5 MMT between 1988 and 1991. As a region, the European Community (EC) is the leading source of tobacco exports, typically owning a 20 to 25 percent market share (see Figure 9). Italy and Greece are the leading EC-12 exporters, together accounting for two-thirds of EC exports. The United States has been the world's leading exporting nation in recent years, with about a one-sixth market share. As shown in Figure 9, the trend line for U.S. tobacco exports is in decline while that for EC exports is on the rise. LDCs as a group accounted for more than 50 percent of global tobacco exports during the 1980s. The leading LDC exporters are Brazil, Turkey, India, and a number of sub-Saharan African nations, particularly Zimbabwe and Malawi. In recent years, exports from sub-Saharan Africa have surpassed U.S. exports.

Although LDCs offer U.S. tobacco producers substantial competition for export markets, it is also true that a great deal of complementarity exists among tobacco exports by region. For example, Turkey is the major supplier of U.S. tobacco imports, typically accounting for one-third to one-half of total U.S. imports. Turkish tobacco, however, is blended with domestic flue-cured and burley tobacco. U.S. cigarette manufacturers also impart large quantities of unmanufactured tobacco from Brazil, Greece, and Malawi for blending with domestic production.

Poultry

As was the case with rice, LDCs dominate as markets for Southern poultry exports. However, LDCs are much less important as either production or export competitors for Southern producers. The United States is the world leader in poultry production, with just under 30 percent of total world production during the 1980s. The former Soviet Union, China, Brazil, Japan and France are the next five largest producing nations, although their combined production during the last half of the 1980s was only about ten percent greater than that of the United States. Surprisingly, the Centrally Planned Economies as a whole produced approximately 80 percent as much poultry as the United States. The LDCs (with China included) produced just under the U.S. total.

World poultry exports are small compared to

WORLD RICE EXPORT MARKET SHARES 1970-1991

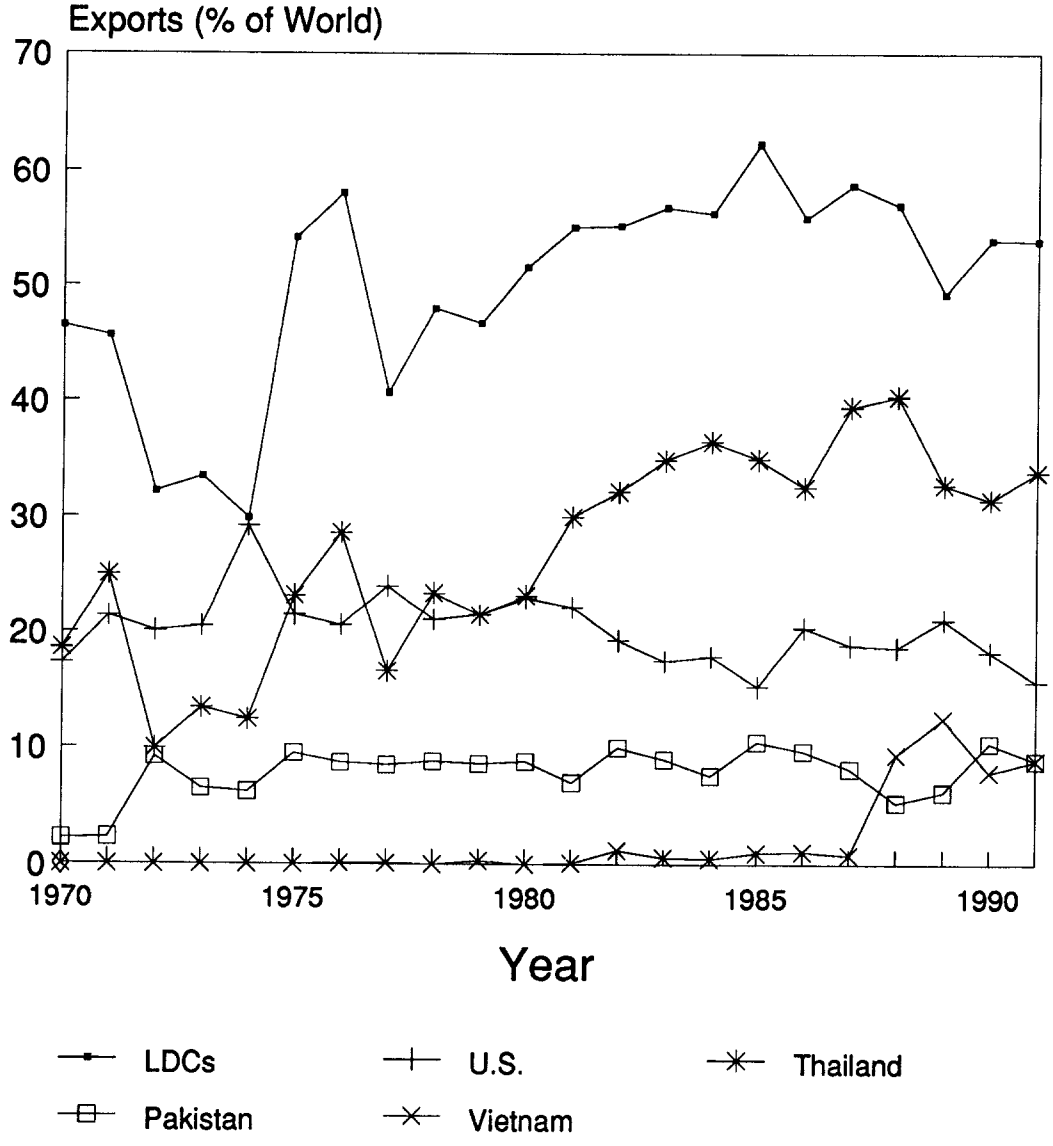

Figure 8

total production. Typically only about seven percent of global production gets traded internationally. In contrast to the other commodities, LDCs do not afford Southern producers their greatest export competition. The European Community dominates poultry exports, with approximately 44 percent of the market in the late 1980s (see Figure 10). France and the Netherlands are the dominant EC producers. France and the United States compete for the title of world's leading poultry exporter, each with 18 percent market shares between 1986 and 1990, with the Netherlands at 80 percent of French exports. Exports from the LDCs-plus-China grouping exceeded the United States by

WORLD TOBACCO EXPORT MARKET SHARES 1970-1991, (Unmanufactured Tobacco)

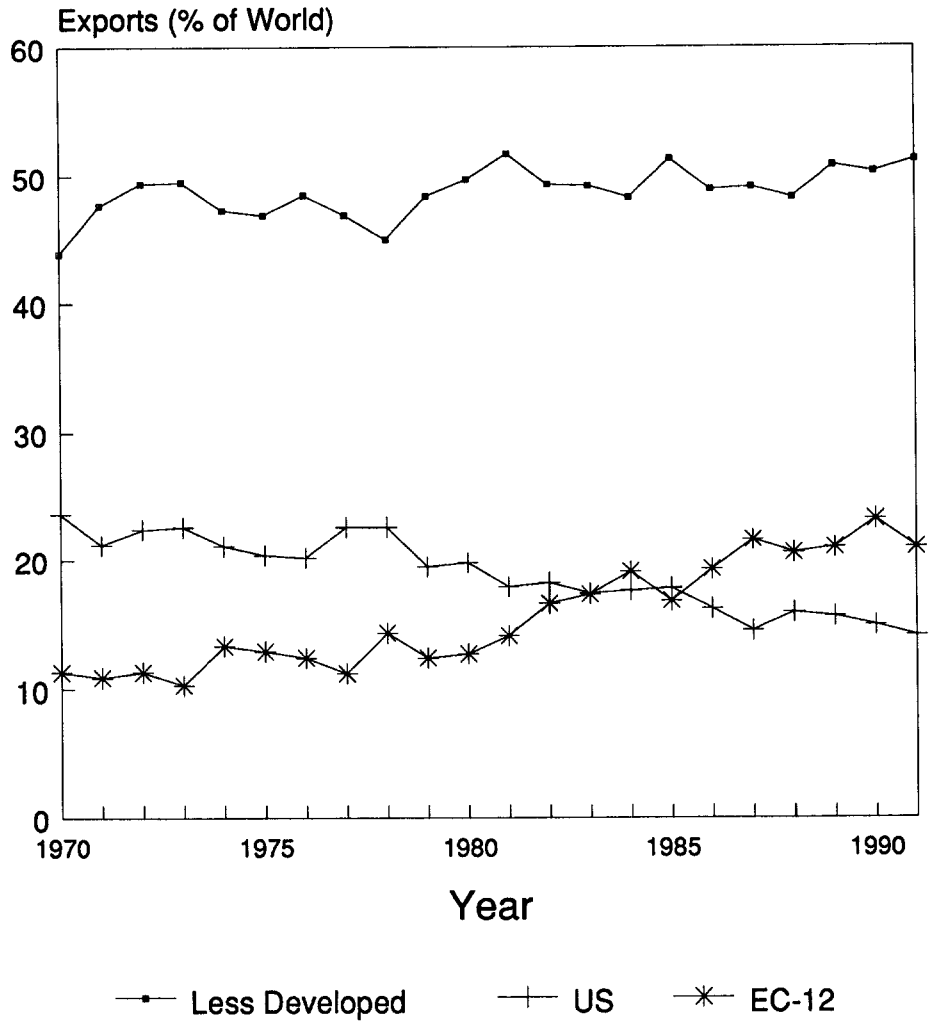

Figure 9

approximately ten percent during this time period. Brazil and Thailand are the leading LDC exporters.

Discussion and Conclusions

To the extent that LDCs are major importers of Southern agricultural commodities, their economic activity levels affect their imports and, in turn, Southern export levels. To the extent that these countries are major exporters of Southern commodities, they compete with the South for world markets. A crude ranking of these commodities with respect to the role LDCs play in Southern agricultural exports is presented in Table 1. The first set of numbers in the table portrays the role of LDCs as customers for Southern commodities. The first row in this set reflects the percent of total U.S. exports of these commodities destined for LDC markets, with the second row reflecting the ranking of LDC importance in commodity sales. The second set of numbers looks at the LDCs-plus-China grouping as Southern competitors. The first row lists the LDCs-plus-China market share of world exports for each commodity, with the com-

WORLD POULTRY EXPORT MARKET SHARES 1970-1991

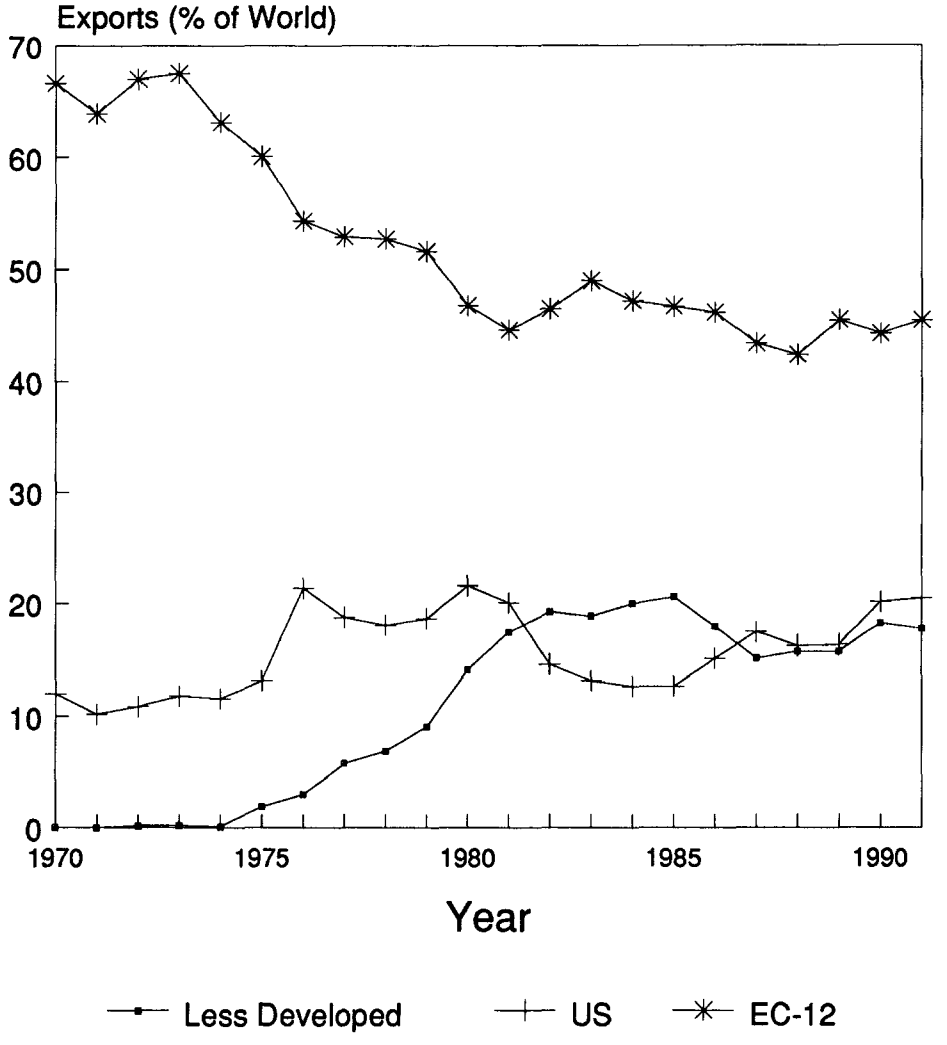

Figure 10

petition ranking in the second row. Finally, a "friendly index" is obtained by dividing the customer share by the competitor shares, with an overall "friendly rank" listed in the final row.

What we see from these numbers is that LDCs are probably highly regarded by Southern poultry producers (friendly index of 2.49), but are very frustrating to Southern peanut exporters (friendly index of 0.09). LDCs afford Southern poultry producers little competition and stand in the second rank of commodities as far as LDC customer market share is concerned. On the other hand, LDCs fare as poor customers for Southern peanuts and provide enormous competition for Southern exporters in world markets. Slightly more than half of the peanut export competition comes from China. However, even with China excluded the LDC market share of exports (32.2 percent) generates a friendly index of only 0.18, still in the last rank of commodities. Citrus (oranges plus grapefruit) and tobacco also fare poorly, largely due to low market shares on the customer side. Even though the LDCs-plus-China grouping competes heavily for exports in international rice markets,

Table 1. Rankings of Southern Commodities by LDC Customer/Competitor Factors Using 1981–1990 Market Share Data

	Cotton	Rice	Tobacco	Poultry	Citrus	Peanuts
	(Percent or Ranking)					
AS CUSTOMERS, US Exports to LDCs	41.6%	75.9	29.1	56.8	24.3	5.8
Rank	3	1	4	2	5	6
AS COMPETITORS, LDCs + China share	49.4%	62.7	54.0	22.8	63.5	66.3**
Rank	5	3	4	6	2	1
"FRIENDLY INDEX" (ratio, customer share to competitor share)	0.84	1.21	0.54	2.49	0.38	0.09
"FRIENDLY" RANK	3	2	4	1	5	6

**Using 1984–1990 data.

the strong LDC customer base results in a favorable friendly index in rice. The reverse is true for cotton, where the competition market share dominates the customer share.

Although poultry and rice occupy the first two rankings of the friendly index in Table 1, there is reason for optimism among poultry producers and for concern among rice producers as they consider future LDC activity in their respective markets. Population and income growth in LDCs typically give rise to increased demand for most goods over time. According to Stevens and Jabara, a population growth rate of two to three percent combined with a per capita income growth rate of one to three percent and a 0.7 income elasticity of demand for food results in an overall growth in food demand of 2.7 to 5.1 percent (pp. 46–49). Since very few countries can sustain crop yield increases in this range, the expectation is that many LDCs will increase their food imports over time. In DMEs, on the other hand, lower population growth rates and income elasticities mean that production growth often outstrips demand growth, resulting in surplus conditions even in countries that are historically net importers.

The scenario sketched above is not an unlikely outcome for LDC poultry imports. Unnevehr estimated income elasticities of demand for poultry of 0.86 for middle income countries and 0.59 for low income countries. Thus, total demand growth rates on the order of four to five percent are not inconceivable. Poultry production growth rates in this range are very rare, however, especially in LDCs, where poultry production is much less advanced. Thus, LDC income growth, especially in the middle income countries, would be expected to lead to increases in LDC poultry imports. The situation if quite different for rice, however. Ito, Peterson and Grant have shown rice to be an inferior good in many Asian countries. Of 14 countries in their analysis, seven had negative income elasticities of demand for rice in the later years of their analysis (between 1973 and 1985). In each of the other seven countries the income elasticities were less than 0.2 in the more recent years (1979–1985). Thus, while population growth would tend to drive total rice consumption forward, income growth either adds little to the demand or in fact decreases total demand. Hence it is not inconceivable that LDCs would be able to provide for their own consumption needs without relying on foreign markets.

With the LDCs-plus-China grouping responsible for 49 percent or more of the 1981–90 export market in five of the six Southern commodities under study, we can begin to understand the frustration on the part of Southern producers over the role LDCs play in Southern commodity exports. LDCs provide a dominant market share as customers in only two of these commodities, and are less than a third of the U.S. export market in three of the six. For many Southern producers and exporters, a LDC market orientation is simply not in their best interests. The argument that foreign aid for LDCs leads to income growth which leads to increased LDC imports of U.S. commodities (Houck; Kellogg, et al.) likely falls on deaf ears in the Southern region. Their more reasoned response has been the 1986 Bumpers' Amendment, which prohibited the use of U.S. bilateral assistance to LDCs for programs, projects or activities intended to enhance LDC export or production levels of agricultural commodities that were in direct competition with U.S. agricultural exports. Thus far, soybean and peanut producer groups have found the Bumpers' Amendment to their liking and have restricted the use of USAID funds in Brazil (primarily in soybean research) and in Senegal where peanuts are a major crop.

Legislation like the Bumpers' Amendment is

protectionist in nature and not in the long run interests of U.S. or Southern agricultural producers. A better alternative is to devote more market expansion activities toward LDCs in hopes of building U.S. markets in these countries. This response has both economic theory and social welfare arguments in its favor, and promises better returns for all concerned.

References

International Trade Task Force. Proceedings of Southern Agriculture, International Trade and You. Mississippi State: Southern Rural Development Center, October 1988.

International Trade Task Force. *Proceedings of the Competitive Position of Southern Agriculture in a World Economy.* Mississippi State: Southern Rural Development Center, May 1987.

Harris, Harold M., Jr., and Geoffrey A. Benson. "Southern Agriculture in a World Economy." Leaflet No. 1 in *Southern Agriculture in a World Economy,* edited by C. Parr Rosson, III, Harold M. Harris, Jr., and Geoffrey A. Benson. Mississippi State: Southern Rural Development Center, June 1988.

Henneberry, Shida R., Karen Ackerman, and Tommy Eshelman. "U.S. Overseas Market Promotion: An Overview of Non-Price Programs and Expenditures." *Agribusiness: An International Journal,* 8,1(1992):57–78.

Houck, James P. "Foreign Agricultural Assistance: Ally or Adversary." Staff Paper No. P86-50, Department of Agricultural and Applied Economics, University of Minnesota, November 1986.

Ito, Shoichi, E., Wesley F. Peterson and Warren R. Grant. "Rice in Asia: Is It Becoming an Inferior Good?" *American Journal of Agricultural Economics,* 71,1(1989):32–42.

Kellogg, Earl D., Richard Kold and Philip Garcia. "The Effects of Agricultural Growth on Agricultural Imports in Developing Countries." *American Journal of Agricultural Economics,* 68(December 1986):1347–1352.

Marchant, Mary. "Southern Commodity Exports to Developing Countries and Less Developed Countries Export Competition." *Developing Countries and International Trade: Expanded Markets or Increased Competition for Southern Agriculture.* Symposium Organizers: Fred J. Ruppel and Parr Rosson, III (Texas A&M University). Selected symposium presentation, annual meeting of the Southern Association of Agricultural Scientists, Fort Worth, TX, Feb. 2–6, 1991.

McCalla, A.F., and T.E. Josling. *Agricultural Policies and World Markets.* New York: Macmillan Publishing Co., 1985.

Rosson, C. Parr, III and Gary F. Vocke. "Third World Development and Southern Agricultural Trade: Creating Competitors or Building Export Markets?" Leaflet No. 6 in *Southern Agriculture in a World Economy,* edited by C. Parr Rosson, III, Harold M. Harris, Jr., and Geoffrey A. Benson. Mississippi State: Southern Rural Development Center, June 1988.

Rosson, C. Parr, III, Gary F. Vocke and Keith W. Scearce. "Global Competition and Southern Agriculture." Leaflet No. 2 in *Southern Agriculture in a World Economy,* edited by C. Parr Rosson, III, Harold M. Harris, Jr., and Geoffrey A. Benson. Mississippi State: Southern Rural Development Center, June 1988.

Stevens, Robert D. and Cathy L. Jabara. *Agricultural Development Principles.* Baltimore: The John Hopkins University Press, 1988.

Sumner, Daniel A. "The Competitive Position of Southern Commodities: Some Trends and Underlying Forces." *Southern Journal of Agricultural Economics.* 18,1(July 1986):49–59.

Tweeten, Luther. "Impact of Domestic Policy on Comparative Advantage of Agriculture in the South." *Southern Journal of Agricultural Economics.* 18,1(July 1986):67–74.

Tweeten, Luther. *Agricultural Trade: Principles and Policies.* Boulder, CO: Westview Press, 1992.

United Nations Food and Agriculture Organization. *Trade Yearbook.* Rome, Italy: various issues.

U.S. Dept. of Commerce, Bureau of the Census. *Agricultural Atlas of the United States. 1987 Census of Agriculture.* Vol. 2 Subject Series. Washington, D.C.: AC87-S-1, June 1990.

U.S. Dept. of Agriculture, Economic Research Service. *Foreign Agricultural Trade of the United States* (FATUS). Washington, D.C.: various issues.

Unnevehr, Laurian. "Structural Change in Food Demand and National Food Self-Sufficiency Goals." In Fred J. Ruppel and Earl D. Kellogg (eds.), *National and Regional Self-Sufficiency Goals: Implications for International Agriculture.* Boulder, CO: Lynne Rienner Publishers, Inc., 1991.

Vollrath, Thomas and Linda Scott. "Developing Countries as a Source of US Export Growth." *Developing Economies Agriculture and Trade Report.* Washington, D.C.: US Department of Agriculture, Economic Research Service, RS-91-5, June 1991.

Webb, Alan and Karl Gudmunds, "PS&D VIEW '91 Users Manual and Database." U.S. Department of Agriculture, Economic Research Service, November 1991.