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SOUTH AMERICAN WHEAT MARKETS AND MERCOSUR

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ABSTRACT

This paper analyzes the wheat market in South America, with a focus on MERCOSUR. It argues that wheat markets in South America have undergone significant changes over the last decade, driven by the world macroeconomic and agricultural cycle of the last quarter of the century, as well as specific economic and sectoral policies in the region. Latin America's economic environment is now characterized by fiscal constraints and greater price stability, market liberalization and trade openness. In this new setting, Argentina has consolidated its position as a net exporter, due to both increased production and stagnant or even declining consumption, while Brazil and the Rest of South America, with opposite trends in production and consumption, are increasing their net imports of wheat.

These supply and demand changes, along with greater trade liberalization, are reshaping trade patterns in the region, increasing Argentina's exports to Brazil and the rest of South America. This trade environment will continue to change due to the phasing in of WTO disciplines, and the possible expansion of regional trade agreements. Wheat trade issues that in the past focused prominently on export subsidies and trade practices of state trading enterprises may, in the future, be more related to sanitary and phytosanitary practices or to controversies linked to wheat flour and wheat-based manufactured goods, rather than to the primary product.

Besides trade and agricultural sector policies affecting directly the primary sector, other aspects to be considered for future patterns in wheat production, consumption and trade, are the evolution of the milling, bakery, pasta and related industries in Brazil and Argentina, and different macroeconomic policies in both countries, particularly regarding exchange rate regimes.

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SOUTH AMERICAN WHEAT MARKETS AND MERCOSUR

E. Diaz-Bonilla

I. INTRODUCTION

The objective of this paper is to provide an overview of main changes in wheat markets in South America, and particularly in MERCOSUR, and to discuss some possible scenarios for wheat production and trade considering the continuation and deepening of trade integration in the Americas. As a background, the next section briefly reviews macroeconomic and trade developments in the region. The third section analyzes overall production and consumption patterns. The following section focuses on Argentina's and Brazil's policies affecting wheat production, consumption and trade, including the MERCOSUR agreement. Section VI summarizes different quantitative studies of wheat trade issues and projections. The paper closes with some comments and conclusions.

II. MACROECONOMIC AND AGRICULTURAL BACKGORUND [1/]

(a) The world macroeconomic and agricultural cycles of the last three decades

Changes in the agricultural sector and food markets of LAC countries over the last 20 years, and in fact in their economies in general, have been heavily influenced by major world macroeconomic developments, particularly by the cycle that has been labeled as the "rise and fall of inflation" (IMF, 1996). Stimulative macroeconomic policies during the 60's and 70's, led to higher rates of economic growth and eventually to higher inflation by the second half of the 70's. The macroeconomic environment changed radically during the 80's, when tight monetary policies lowered growth and inflation rates and turned real interest rates strongly positive during the whole decade. By the mid-90's inflation has been brought down to levels similar to thirty years ago, but the average annual growth rate for the world in the first half of the 1990s' stayed below the average for the 1960's (Table 1).

Changing macroeconomic conditions contributed to generate an agricultural subcycle of expansion during the 1960's and 1970's, and stagnation and retrenchement during the 1980's and beginning of the 1990's. This subcycle has been overimposed on, and interacted with, important changes in agricultural technology, mainly the emergence and spread of the Green Revolution in developing countries.

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[1] For further discussion, see Diaz-Bonilla 1991 a and 1991 b; and Reca and Diaz-Bonilla, 1997

After about three decades of this policy-induced cycle, the current world macroeconomic environment appears to be characterized by low inflation (back to the level of the 50's, before the Keynesian stimulus and real shocks of the 60's and 70's), fiscal constraints and expanded trade and capital flows, while the previous imbalances in world agricultural markets have diminished somewhat.

These world macroeconomic and agricultural cycles have had a major impact on the economies of LAC countries and on the behavior of the agricultural sector in the region.

(b) Macroeconomic and agricultural conditions in LAC countries

During the 60's and 70's, LAC countries benefitted form the overall buoyancy of the world economy and the agricultural sector as a whole, after an initial decline during the 70's, showed a distinct acceleration in production (Table 2). High world prices fueled the expansion of exportable and import-substitution agricultural products, while strong domestic demand helped non-traded goods and the expansion of the industry provided demand for agricultural raw materials. Although the economy as a whole grew faster than the agricultural sector during this period (Table 2), sectoral growth was significant nonetheless and higher than the rates achieved in the next decade. Supportive world markets and domestic income growth appear to have been enough to generate comparatively high growth rates in the agricultural sector of LAC, notwithstanding the fact that the latter was affected by a policy strategy biased toward the industrial sector and urban areas (see also Diaz-Bonilla E. 1990).

The radical change in world macroeconomic conditions after the second oil crisis at the end of the 1970's, found LAC countries very vulnerable because of policies that had left the region with a comparatively small export base, very dependent on primary commodities, and a greatly expanded external debt. The need to absorb the triple shock of declining terms of trade and export volumes and skyrocketing interest rates, which hit the region at the beginning of the 80's, led to a painful process of economic restructuring in LAC countries (see references in Diaz-Bonilla E. 1991a).

The region suffered another trade shock in 1986, when commodity prices collapsed worldwide, erasing in part the gains of the adjustment efforts of the first half of the decade. Governments in the region persevered with the process of fiscal consolidation and monetary stabilization, at the same time that domestic markets and international trade were progressively liberalized. Helped since 1989 by the implementation of the Brady Plan, external indicators improved for several LAC countries, although prices of LAC's export commodities continued to be soft.

During this period of adjustment the performance of the agricultural sector in the region reflected the convergence of conflicting influences. On one hand, devaluations of the exchange rates and the progressive advance of trade liberalization removed at least part of the existent policy bias against agriculture and the real exchange rate (defined as the price of tradeables over non tradeables) increased in many countries, favoring agricultural exports and import-substitution agricultural productions. On the other hand, however, the positive impact of the remotion of the policy bias against agriculture was, to some extent, offset by several factors such as (i) the decline in world prices, (ii) the slowing down of domestic demand, (iii) problems of the industrial sector (which reduced demand for agricultural raw materials), (iv) lack of infrastructure and credit, because of the fiscal and monetary adjustment (v) higher prices of imported inputs and machinery, due to the devaluations, and, (vi) in the case of the segment of import-substitution crops that received net support from the government in some LAC countries (in spite of the overall policy bias against agriculture), the termination of such programs under the pressure of fiscal constraints and lower world prices (Diaz-Bonilla E. 1990).

All in all, during the harsh decade of the 80's, agriculture performed better than the rest of the economy, growing above the average for the economy and far more than the industrial sector (Table 2). Still, the growth rate of the agricultural sector in the 80's was clearly below the levels achieved during the previous decades. Agricultural production per capita, which was growing during the 60's and 70's, stagnated or declined in the 80's.

Following the deceleration of the world growth at the beginning of the 90's, macroeconomic conditions changed once again, when the Federal Reserve embarked in an expansionary monetary policy to try to get the US economy out of the 1990-1991 recession. This, coupled with an improved policy environment in LAC led to an important surge in capital flows to the region since 1991, only briefly interrupted after the 1994 Mexican devaluation. Capital flows to the region lifted again the external constraints under which the region had been operating during the 80's and led to the resumption of growth in many LAC countries.

The process of trade liberalization that had begun in the 1980's, accelerated during the 1990's as a result of different causes. Regional trade integration progressed through the creation of new trade agreements (such as NAFTA and MERCOSUR), the revitalization of older ones (such as the Central America Common Market, the Andean Pact and the CARICOM) and the proliferation of smaller trade pacts (such as G-3, and the active presence of Chile in the signing of bilateral agreements). Moreover, several countries in Latin America liberalized their trade regimes in the last decade either because

they joined the GATT (among others, Mexico in 1986 and Venezuela in 1990), or because they unilaterally pursued policies of greater openness (like Chile earlier in the 1980s, and Colombia, during the nineties, although in the latter case there has been some reversal of policies). Finally, the culmination of the Uruguay Round led to the phased implementation of the negotiated agreements.

For the agricultural sector of LAC the decade of the 90's started slow due to low growth at the world and regional levels and the continuous softness in agricultural world prices. But by mid-nineties, LAC's agricultural production seems to have picked up again (see Table 2), as well as exports and imports of agricultural goods. Since the second half of 1997, however, the Asian crisis appears to have slowed down the rate of growth in Latinamerica at the aggregate and sectoral levels.

The pattern of agricultural production, consumption and trade in LAC over the last 25 years, and the developments in the wheat markets in the region, have been greatly influenced by world economic and agricultural developments, and by the overall macroeconomic conditions in the region. This background has to be kept in mind for the discussion in the next section of developments in wheat markets in South America.

III. CHANGES IN WHEAT MARKETS

(a) Overall view

South America (SAM) as a whole, has been traditionally a net importer of wheat. On average, during the nineties, SAM produced about 16 million tons of wheat while it consumed more than 19 million, with net imports of over 3 million tons during that period (Table 3). This aggregate, however, as it is well known, includes two polar situations: Argentina, a net exporter of wheat with an average of about 6.5 millions during the nineties, and the rest of the countries in the region which are basically net importers with an average of about 9.9 million tons of wheat imports per year for the same period (Table 5).

Argentina during the last decade represented about 68% of total production in the region and some 99% of total exports (Table 5). Brazil, produced about 16% of total wheat and the balance was divided among the rest of the countries in South America, where Chile, Paraguay and Uruguay are the main producers. Brazil with almost 8 million tons of consumption accounts for more than 40% of total use in SAM and Argentina follows with 4.4 million (or about 23%). Other countries with important levels of consumption are Chile (almost 2 million tons), Peru (1.2 million), and Colombia and Venezuela with about 1 million tons of consumption each. Brazil is also the main importer with

an average of more than 5 million tons during the nineties. The next two main importers are Peru (an average of 1.1 million tons) and Venezuela (1 million tons), followed by Colombia and Chile (Table 5). Except for Uruguay and Paraguay (which import about 15% of their consumption) and Chile (which imports about 30%), the rest of the countries in the region import more than 2/3 of their consumption, with several countries showing import ratios of 90% of consumption or more.

(b) South America in a world context

SAM has reduced slightly its participation in world production and consumption of wheat from 3.8% in consumption and around 3.4% in production during the sixties to about 3.5% (consumption) and 2.9% (production) during the nineties. Exports as a ratio of world exports, which declined sharply during the seventies, rebounded strongly and by the nineties the average ratio was above the sixties (5.9% against 5.65%) (see Table 4). This increase has been influenced by the high participation ratio in world exports as a result of the large 1996 Argentine harvest, which pushed that ratio close to the highest point, achieved in the mid-sixties, of 11.7%.

The ratio of regional to world imports, which was increasing steadily during the sixties and seventies, dropped during the difficult decade of the eighties (where the debt crisis in the region determined the financeable level of imports) but recovered significantly with the resumption of growth in the region and the availability of external financing (Table 4).

(c) Production patterns

Over the last 30 years, the main characteristics of wheat production in the region have been:

a) The increase in Argentina's production, although with great volatility (Chart 1).

b) Two Brazilian campaigns to increase wheat production, one during the sixties and first half of the seventies (when production jumped from less than 500.000 tons/year to about 2 million tons/year), and the second during the mid-eighties (when production increased to about 5.5 million tons). The second one sustained production well over trend for about 5 campaigns (from 1985-1989), through different incentives (Chart 1). Producer Subsidy Equivalents in Brazil calculated by the USDA/ERS for 1982-1987 amounted to 51% of the market price during that period (see USDA/ERS, 1994). Those incentives were significantly reduced since 1990 and production reverted to the 2-3 million tons

achieved during the first production push.

c) Chile that had stagnant or declining production during the sixties and seventies, increased noticeably its production during the eighties, achieving self-sufficiency briefly in 1986. As a result, aggregate production for the Rest of SAM peaked at about 2.6 million tons during 1985-1989, but declined to an average of some 2.4 million tons/year since then. From that high level, however, production began to decline again. Among the other two important producing countries, the rapid increase in production in Paraguay contrasts with the static production in Uruguay.

Growing wheat production in Argentina is the result of both increases in area and yield, which are both trending upwards, but with some volatility. The area planted with wheat oscillated between 3.5 million hectares to about 7 million hectares at the beginning of the eighties. While for most of the rest of the eighties and nineties cultivated area in Argentina has stayed within the range of 4.5-5.5 million hectares, by 1996 it had climbed back to about 7 million hectares, although it has declined since to less than 6 million hectares. Yields have been increasing at a rate of 1.6%/year over the last 3 decades, and now they stand at about 2.0-2.3 tons/ha. Argentina's yields during the sixties did not exceed 60% of USA levels. Over time, the gap between wheat yields in both countries have been getting smaller, and during the last campaigns Argentina's levels stood at about 90% of USA's average (Chart 5). Yields have been also increasing in Brazil and the Rest of South America, but the area has trended downward, in Brazil since the end of the incentives of the second half of the 1980's and in the Rest of South America, since the sixtiest (see Charts 3 and 4).

Table 7 shows an index of variability (standard deviation/mean) for Argentina, US, Brazil and the Rest of South America. Volatility in yields and area in the Rest of South America and, particularly, in Brazil are above Argentina's indicators, which, in turn, are higher than USA's ones.

(d) Consumption trends

The most noticeable patterns on the demand side are:

a) the rapid increase in total consumption in Brazil during the sixties and seventies, followed by a decline during part of the eighties (linked to the difficult economic conditions in LAC during that decade) and the resumption of growth in the nineties, although at lower rates (Chart 2);

b) the stagnation and even decline in Argentina's total consumption of

wheat since the mid-1970's (Chart 2);

c) the continuous upward trend in total consumption in the Rest of South America, that appears to have accelerated in the 1990's (Chart 2); and

d) a constant decline in consumption per capita since the mid-sixties in Argentina and the Rest of South America, and, in the case of Brazil, since the late seventies (Table 8).

Currently, Argentina consumes about 125 kg/person/year compared to about 50 kg/person/year in Brazil and almost 58 kg/person/year in the Rest of SAM.

Consumption, obviously, shows smaller variability than production or exports (see Table 9), and Brazil displays larger volatility than Argentina or the Rest of South America.

(e) Importance of trade

As a result of the production/consumption equation, domestic wheat markets in the region appeared to have become more "globalized" during the last decades. In Argentina, the ratio of exports to production in Argentina has maintained an upward trend, moving from about 0.4 in the sixties and seventies to almost 0.6 in the nineties (except for an exceptional year in the first half of the sixties, where the rate stood at about 0.9). Brazil, during the first production push reduced the ratio of imports to consumption from close to 1 to about 0.5, but then began to increase again to more than 0.6 until the second push dropped the ratio to below 0.2; with the abandonment of the self-sufficiency program, ratios climbed back to about 0.7 during the nineties. The Rest of South America shows a continuos increase in the import/consumption ratio from below 0.5 to over 0.7, except during part of the eighties where the support given to production in Chile coincided with balance of payments difficulties in several countries as a result of the debt crisis, which reduced growth and imports.

In summary, over the last years Argentina (with growing production and stagnant consumption) has consolidated its position as a net exporter, while Brazil and the Rest of South America (with opposite trends for total production and consumption) are increasing their net imports of wheat. These changes, in turn, are reshaping trade patterns in the region, as it is shown immediately.

IV WHEAT TRADE IN SOUTH AMERICA

Wheat trade patterns in the region have changed significantly in the last ten years, with a growing presence of Argentina as supplier of Brazil and the rest of South America. Tables 10 and 11 show the size of the shift. While in 1985 Argentina's exports to Brazil represented less than 10% of total Argentina's exports, that percentage kept on growing to about 1/4 during the end of that decade, reached 50% at the beginning of the nineties and jumped to about 60-70% during 1993-1996 (the decline in 1997 is a function of the large 1996/97 harvest, that was aggressively sold in different markets) (Table 10).

Looking at Brazil's imports, while in 1985 Argentina and Canada individually, and the USA and the EU together, had about 1/3 each of the market, Argentina's participation jumped to more than 90% during the drought years at the end of the decade, and then stayed at about 60-70% of Brazilian imports, on average, since then. Canadian participation from 1990 to 1996 averaged about 1/4 of total Brazilian imports, with the EU and USA supplying the rest. USA participation had been increasing, reaching almost 15% in 1996/1997 without the utilization of EEP (Table 11), but it was excluded from the Brazilian market since September 1996 because of phytosanitary issues [2/].

In general for Argentina, Table 10 shows the same shift toward a greater importance of South America as a market for exports of cereals. Besides Brazil, other important markets for Argentina are Peru, Chile and Colombia. These three markets represented on average about 9% of Argentina's total annual exports of wheat during 1993-1997. In value terms, exports of cereals to South America almost quadrupled from about 300 US$ millions in 1986 to almost 1200 US$ millions by mid-1990s (although part of this increase reflects price variations).

This change in trade flows for wheat is part of a larger trend toward more intra-regional trade, total and for agricultural products for different countries in the region [3/]. The trend is clearly noticeable in the case of Argentina's agricultural exports: considering both primary agricultural and agroindustrial

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[2] Brazilian SPS authorities based their decision on the presence of the fungus TCK in US wheat, a ruling that has been considered excessively strict by the US government andexporters. At the moment of this writing, the issue was still being discussed between both countries.

[3] Lee (1995) shows that intraregional exports of agricultural products in the Americas (including USA and Canada) moved from 26% of total agricultural exports of the Continent in 1981-1983, to 36% in 1991-1993. This pattern holds true for the majority of countries in the American Continent during that period, except for Brazil and the Caribbean (see Lee, 1995).

products, the participation of the region moved from about 1/5 of exports at the beginning of the 80's to more than 30% by the mid-1990's. Overall, however, after the collapse of the former Soviet Union, the European Union has been the main destination of Argentina's agricultural exports (with about 35-38% of total exports of primary plus manufactures of agricultural origin during the first half of the nineties).

Clearly, on the trade creation side, the most important reason explaining this reorientation of trade flows has been the process of economic integration with Brazil, as part of the creation of MERCOSUR. This country has become Argentina's main trading partner (26% of total trade in 1997, followed by the European Union with 22% and the USA with 14%). Also, as mentioned before, several countries in Latin America liberalized their trade regimes, old regional trade agreements have been revitalized and new ones have been created, all of which fueled the expansion of intra-regional trade.

Besides the pull of expanded regional trade, those changes in wheat trade flows, have been also influenced by the reduction of market opportunities elsewhere for Argentina. First, there was the impact of the deep economic problems experienced by the former USSR in the second half of the eighties and, later, its disappearance as a political entity in 1991. As recently as the first half of the 1980's the former Soviet Union still accounted for over 20% of Argentina's total exports (and more than 1/3 of agricultural sales), while by mid-1990's the successor Republics of the former Soviet Union, represented less than 1% of total exports. Another development leading to diminished exports for Argentina has been the export subsidy war in agricultural products between the European Union and the United States since the mid-eighties, specially in cereals and oilseeds, which depressed Argentine FOB prices (see below) and/or eliminated export opportunities elsewhere. Together, these new market realities have contributed to the shift in wheat trade flows in South America.

The next sections concentrate on MERCOSUR and basically on Argentina and Brazil, considering that trends in wheat production, consumption and trade in South America are determined, to a large extent, by what happens in those two countries.

V ARGENTINA, BRAZIL AND MERCOSUR

(a) Macroeconomic and agricultural policies

The policy environment for the agricultural sector changed significantly during the nineties both in Argentina and Brazil.

In Argentina the main policy changes were the following:

- The Convertibility Law (CL) was approved in 1991. It fixed the exchange rate 1 = 1 with the dollar and it has remained since then at that parity. Also, the CL did not allow financing of the Government by the Central Bank and the monetary base had to be covered 100% by international reserves (although a small percentage of Government bonds denominated in foreign currencies was allowed). Indexation in contracts was prohibited. In fact, the CL transformed the Central Bank in a currency board, working under the dollar equivalent of a gold-standard for the monetary base [4]. This variable would expand or contract depending on whether dollars (or foreign currencies in general) are being bought or sold by the Central Bank depending on the sign of the current and capital accounts. After fixing the exchange rate, a consumption boom ensued, and due to changes in domestic and international conditions, the economy received an important inflow of capitals [5]. In addition, the Central Bank reduced somewhat banking reserve requirements, which contributed to the expansion of broader monetary aggregates. The convergence of a consumption boom, inflows of capital and expansionary monetary and fiscal policies led to an important appreciation of the RER that has begun to correct itself through the deflation of the 1995-1996 recession (Table 12) (see Diaz-Bonilla, 1996).

-The National Grain Board was eliminated in November 1991, and all marketing activities were transferred to the private sector, as part of a broader effort to deregulate and liberalize the economy. Government-owned inland and terminal elevators were privatized.

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[4] The Central bank can still modify bank reserves ratios, which weakens the link between reserves and broader monetary aggregates.

[5] The expansion in consumption is a well-documented stylized fact of exchange-rate-based stabilization programs that has been explained by slowly adjusting nominal prices (as in Rodriguez 1982) or by credibility problems (as in Calvo, 1986, Calvo and Végh, 1991). In addition, lower interest rates in the USA led to capital outflows, part of which were directed to Latin America, lifting credit constraints and giving further impulse to the consumption boom (on capital flows see Schadler, et al 1993). The policy recommendations to avoid unsustainable consumption expansions associated both to exchange-rate-based stabilization programs and large capital inflows have usually been a tightening of monetary and fiscal policies. Contrary to that recommendation, monetary, financial and fiscal policies in Argentina were expansionary, which added further impetus to the consumption boom (see Diaz-Bonilla, 1996). The boom-bust nature of the exchange-rate-based stabilization programs is also a documented fact: while they usually begin with a consumption boom, they normally end up with a recession. Therefore for countries suffering from high inflation it is a matter of "recession now or recession later" (see for instance, Kiguel and Liviatan, 1992 and Hoffmaister and Végh, 1996).

-Exports taxes were eliminated for almost all agricultural products (with the exception of some oilseeds and hides), and import tariffs for fertilizers, agrochemicals and agricultural machinery and equipment were reduced, in line with the broader policy of trade liberalization.

-Special programs of agricultural credit were eliminated and the Central Bank, because the Convertibility Law could not use, as in the past, rediscounts to offer credit in favorable terms to selected sectors or products. The Banco Nacion (a public financial institution and the largest bank in Argentina) continued to be the main provider of credit for the agricultural sector, although on a commercial basis.

-Ports were privatized starting in 1990, and investments in storage capacity and loading facilities in the four main ports increased from a little more than 1.135 million tons in 1980 to about 3.9 million tons by mid-nineties. The combined loading rate is 40.000 tons per hour. Total storage in the country moved from about 30 million tons in mid-eighties to about 46 million tons currently. River waterways have been improved, railways were privatized and their productivity improved, while the truck fleet has been modernized and enlarged. As a result of these changes Argentina can handle larger volumes of production, and at lower costs, than in the recent past (see SAPyA, 1996).

-Trade negotiations with Brazil, which began in 1986, took a further impetus through the creation of MERCOSUR, beginning in 1991 (see below).

These policies put in motion a complex process characterized by increases in the scale of the operations, greater adoption of technology, innovations in financing and marketing techniques, all of which when prices began to improve toward mid-1990s, led to increases in investments, cultivated areas and production.

Macroeconomic stability allowed medium-term planning while the reduction in export taxes for products and import tariffs for inputs along with trade expansion in MERCOSUR, compensated in part for the softness of world markets in the first part of the nineties. Reduced transportation costs, also helped to improve the cost equation. At the same time, however, the decline in the ratio between the price of tradeables and nontradables generated an "income squeeze" for family farms: with soft world prices and a fixed exchange rate (and notwithstanding the reduction in production costs mentioned before), the income obtained from an average family farm appears to have been severely eroded by the increase in cost of living. Table 13 shows the ratio of a price index of agricultural products and the price index of services, and the same ratio for agricultural and industrial goods. The enormous deterioration of the ratio of

agricultural and service prices provides an indication of the decline in buying power of agricultural incomes. The ratio of industrial and agricultural prices, although above the 1983 base, does not show an imbalance comparable to the one existing between agriculture and services. In fact, and as another manifestation of the decline in the RER, the prices of both agricultural and industrial goods (mainly tradeables) have deteriorated with respect to services (mainly non-tradeables) (Table 13).

Producers reacted to the new environment improving technology, expanding investments and increasing scale. Technological changes have led to greater use of fertilizers, which in the case of wheat has increased from 25% of the area in 1991 to about 64% in 1996 (SAPyA, 1996a). Table 14 shows the important increases in the use of different inputs, machinery and equipment, in general (not only for wheat). As indicated, macroeconomic stability, reduced prices of inputs (see Table 15 for fertilizers) and the impact of MERCOSUR, contributed to the adoption of technology.

The increase in scale seems to have had the traditional form of selling and consolidation of small farms that were squeezed out of production (although there does not seem to be hard data on this yet), but also the non-traditional form of expansion of new forms of production, such as "planting pools".

The "pools" are groups of producers or, perhaps more frequently, investors, that pull together land and resources to be managed in a more unified way, for a single campaign. In this way, they diversify production, geographical regions and, therefore, risks. In its most "Ricardian" form, a group of investors put together an investment fund (tipically in the 0.5-2 million dollars range) for the planting pool, rent land in different areas and manage the production process through a professional team of agricultural engineers and contractors. At the end of the campaign the grain and oilseeds are sold, expenses are paid out (including the administration fees of the professional team) and profits distributed among investors. The cycle usually repeats itself the next campaign.

The fate of the smaller producers depends on whether they have been able to adopt better technology and/or to participate in the economies of scale of the planting pools, directly as part of the group of producers, or more indirectly, by renting land, operating as contractors of machinery and equipment and/or working as paid labor. The possible social cost of Argentina's technological jump (in terms of higher unemployment because of displaced family farms and labor-saving investments) requires further analysis.

These organizational and technological changes, coupled with better world prices, led to the record harvest of 1996/1997, although production has

declined since then, once prices came down.

In the case of Brazil, the main policy changes in the nineties have been the following:

-The Brazilian government began the deregulation of the flour milling industry in September 1990, when the wheat office of the Banco de Brazil ended its control as the only importer of wheat and main buyer of the domestic product, and the prohibition to import wheat flour was eliminated. Deregulation and opening up of the wheat flour market led to concentration at the milling and bakery levels, and to increased imports of that product, basically from Argentina [6/].

-Different agricultural support programs were scaled down noticeably, beginning in 1990. The Real Plan of mid-1994 accelerated the process toward greater market liberalization and less government intervention in the agricultural sector. Still, the Government administers instruments of support such as production credit (although subsidies, mainly in the form of negative interest rates, have been reduced or eliminated), a system of crop insurance and support prices, and, in the last campaign some subsidies were extended to millers to buy low-quality wheat. But the level of production support programs was estimated at less than 7 billion dollars in the last campaigns against about 38 billion in 1979/1980, reflecting the reduced level of government involvement and declining support prices (they have been cut by about 40-50% in nominal terms from a high of 260 US$ in mid-1980s to about 110-140 US$ in 1996-1997, depending on the type and quality of wheat). The reduced level of support received by producers of grains, coupled with the reduction in inflation brought about by the Real Plan (see below), revealed the extent of the problem of indebted farmers who, previously, were basically subsidized through the erosion of the real value of debt by inflation (see FAS, Ag. Attache Report).

-At the macroeconomic level, the Real Plan implemented in mid-1994 has resulted in an important decrease in inflation from about 2500% in 1993 to almost 4% in 1997 (Table 12). The stabilization program utilized the exchange rate as an anchor, and, as it has been documented in other instances, this led to a consumption boom, and a deterioration of the trade balance. A trade

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[6] Wheat flour production in Argentina has been traditionally sold to the internal market. There was a small surplus exported, mainly towards Bolivia, that by mid-1980 absorbed about 65% of total exports of wheat flour. Over the last years, the percentage of exported wheat flour over total production began to increase (from 2% in 1989 to about 9% in 1996, reaching about 300.000-400.000 MT) and the destination has been mainly Brazil with more than 50% of the exports, followed by Bolivia. This increase in exports to Brazil is creating some tensions with the Brazilian milling industry.

deficit emerged in 1995, the first since the oil crisis of the mid seventies (Table 12). This macroeconomic context stimulated consumption and imports in general, including wheat, at least up to the end of 1997 (see below). At the same time, there seems to exist a growing trend toward greater utilization of wheat, linked to the expansion of pasta consumption and fast-food operations (see FAS, Agricultural Attache Reports, 1996).

-More recently, the government tightened its monetary policy, which has kept interest rates high, and has contributed to some deceleration of consumption and increases in the fiscal deficit (Table 12). Also, as a result of the 1997 Asian crisis the government announced a program of fiscal adjustment, that was followed more recently in 1998 by further tightening of public accounts. Both high interest rates and the lack of public funds have affected the level of support that the government can offer to the agricultural sector. At a more general level, the monetary and fiscal policy mix has slowed economic growth, with broader repercusions on consumption, production and trade.

All in all, these policies have returned wheat production to the levels previous to the big production push of the mid-1980's. In the future, the current policy framework seems to indicate that macroeconomic and trade policies, such as the fate of the Real Plan and the full implementation of MERCOSUR, rather than sectoral policies, will be the main drivers of wheat production, consumption and trade patterns in Brazil.

(b) Trade policies and MERCOSUR

As it has been mentioned, trade between Argentina and Brazil increased with the progressive economic integration between both countries, beginning with the 1986 and 1988 agreements, later superseded by the Buenos Aires Charter of July 1990 and the creation of MERCOSUR. This agreement was signed on March 1991 when the Presidents of Paraguay and Uruguay joined the Presidents of Brazil and Argentina to form a common market by January 1, 1995. Under this agreement, the four countries agreed to (a) free trade (0% tariffs) among themselves by December 31, 1994; (b) elimination of non-trade barriers; (c) establishment of a Common External Tariff (CET) by 31 December 1994; (d) redefinition of the Rule of Origin; and (e) implementation of a mechanism for settlement of disputes.

MERCOSUR countries also agreed to work towards the coordination of macroeconomic and sectoral policies of MERCOSUR, and to achieve free circulation of goods, services, financial and human resources between MERCOSUR participants.

The Treaty of Asunción established the creation of Working Groups to coordinate macroeconomic and sectoral policies. Working Group 8 corresponds to agricultural policy and has held several meetings since the treaty was signed. The main issues analyzed by the WG8 included analysis of asymmetries in domestic agricultural policies (price, marketing, financing, insurance and tax policies), harmonization of sanitary and phytosanitary measures, technological policies and programs, external competitiveness, small farmers and sustainability, and the existence of other trade barriers. In parallel, a series of seminars and meetings were held by the private sector since 1991 (see SAPyA, 1995 b).

Since the meeting at Ouro Preto (December 1994) the Custom Union was established, with a common external tariff (CET) and free trade (FT) among the members (0% tariff), although in an imperfect form because of exceptions to both the CET and the FT area. The exceptions, however, were less than 15% of total trade in 1995, and most of them (but not all) had a specific schedule for their elimination over time (SAPyA, 1995 b).

Trade, production and consumption within MERCOSUR are influenced by the complex interaction of the different components of this structure of import and export taxes and rebates: the CET and the exceptions; the 0% internal import tax and its exceptions; and the use of export rebates and restitutions and the exceptions.

In addition, there are also other factors that will affect the patterns of production and trade, such as (i) the degree of synchronization in the economic business cycles of Argentina and Brazil; and (ii) the presence of asymmetries in macroeconomic policies (particularly exchange rates) and in sectoral policies (specially agricultural policies). Also, for wheat trade in MERCOSUR it matters the behavior of other exporting countries to the Brazilian market, regarding the use of export subsidies and the pricing of state trading companies.

(c) Wheat agreements in MERCOSUR

With regards to the specific agreements on wheat, in 1987 the government of Argentina and Brazil agreed on a minimum quota of 1.2 million tons per year of Argentine wheat. In 1990, a new agreement committed Brazil to buy a minimum of 2 million tons of wheat per year, which was later extended, and a quota of wheat flour of 320,000 tons per year was included. With the implementation of MERCOSUR since 1991, tariffs faced by Argentina's exports have been reduced according to a predetermined schedule (they are 0% since December 1994), and quotas have been phased out. The

CET for wheat and wheat flour are, respectively, 10% and 12% (but they have been increased at the end of 1997 to 13% and 15%, as part of a joint program with other MERCOSUR members to counter the impact of the Asian crisis).

On the other hand, Argentina from 1995 onwards has had to progressively reduce, until its elimination, the utilization of indirect tax rebates (other than VAT) to exporters within MERCOSUR. Brazil charges a Merchant Marine Tax of 25% to ocean freight costs, but MERCOSUR countries have the alternative of land transportation. In January 1997 the Brazilian government exceptuated the North and North East regions from this tax, which has improved the competitiveness of wheat exports from USA and Canada.

VI QUANTITATIVE ESTIMATIONS OF MACROECONOMIC AND TRADE ISSUES

(a) Exports subsidies and other trade practices in regional wheat markets

Since the creation of MERCOSUR, the use of export subsidies and the operation of state trading enterprises from countries outside the trade agreement, in the Brazilian market have been recurrent issues.

Different LAC countries were, in the past, the destination of subsidized exports of wheat and other products. Table 16 shows the operations of USA's EEP for wheat in Latin America and the Caribbean. From fiscal year 1987 to 1995, the United States exported around 5,100,000 tons of subsidized wheat, with Mexico as the main destination (about 1.9 million tons) followed by Colombia (almost 1.2 million tons) and Brazil (about 0.9 million tons). However, since 1996 there have not been operations of wheat exports through EEP subsidies. The participation of the EU in the Brazilian market has been relatively small (see Table 11). The criticisms about Canadian unfair trade practices have focused on the possibility of dumping activities by the Canadian Wheat Board (CWB), and, in the past, on whether transportation subsidies have been utilized for some Canadian regions.

In Diaz-Bonilla (1994) the possible impact of export subsidies is analyzed looking at the ratio of the FOB price of argentine wheat to US wheat price (FOB Gulf; 2 Hard Red Winter). That ratio should have been more or less constant, correcting for transport costs, quality differentials and relative world and local supply and demand conditions [7]. It was found, however, that export subsidies

[7] In fact, except for some exceptional years, the Argentina/US price ratio stood at around 0.95 during the sixties and seventies. At the beginning of the eighties jumped above 1 as a result of Soviet demand for argentine wheat while the grain embargo was in

(defined as the net exports of wheat by the European Community plus the volume of executed operations under the Export Enhancement Program) have had a statistically significant negative impact on such price ratio [8]/. It was estimated that the FOB price for Argentine wheat would have been about 5% higher during the first half of the eighties had not been for the expansion of subsidized European exports. Since 1986, the interaction of the EEP (created by the 1985 Farm Bill) and of mounting European surpluses of wheat that were sold into the world markets, affected Argentina even further: without those subsidies the FOB price Buenos Aires would have been almost 21% larger than the baseline. For the whole period 1980-1992, total income losses of producers were calculated at a little more than 2100 million dollars, of which almost 60% have been associated to the larger amount of European subsidized exports and the rest (about 810 millions), to EEP operations in wheat. The greater accumulated impact of the European subsidized exports is due to the fact that the European Community began earlier in the decade. However, since the EEP began to operate, annual losses appeared to be explained almost equally by American and European subsidies.

Looking only at MERCOSUR, the main issue is that Argentina, except for some exceptional campaign, does not produce enough to supply both its internal demand plus Brazil's import needs. Therefore, this last country has to buy from other sources, as well as from Argentina. In this context, the pricing of Brazil's wheat imports from sources other than Argentina became an issue within MERCOSUR. From Argentina's point of view, wheat imports from other sources that are priced low because of subsidies or other trade practices, depress what would have been the price structure in the region in the absence of those practices, negate the preferences granted in MERCOSUR and are in

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effect. Then it fell below 0.9 in 1984-1985 and it dropped further under 0.8 during 1985-1987. Afterwards, the ratio recovered somewhat because of the impact of the 1988-89 drought. It dropped again below 0.8, once the effect of the drought disappeared and exports subsidies from the US targeted Brazil (that by then was becoming the main buyer of Argentine wheat). If instead of the annual price average, the December-February price is utilized (being those months the period of larger sales and exports from Argentina) the decline of the price ratio was even more significant. After 1991, with the implementation of MERCOSUR and the decline in subsidized exports to Brazil, the ratio began to climb back up, and in 1996 (a year without wheat subsidies at the world level by US or the EU), it went over one for the first time since the Soviet grain embargo.

[8] The estimated equation also includes a variable trying to capture the relative supply and demand conditions that may affect the price differential, and dummy variables for the Soviet grain embargo and the drought in the second half of the eighties (all of them are significant). The equation seems satisfactory in terms of R-square and stability and determination of the coefficients, and the residuals pass other tests (normality, homoskedasticity, non serial correlation).

violation of the agreements reached, particularly Article 4 of that Treaty [9]/. For the Brazilian milling industry, the concern has been to have access to the cheapest source of raw material available.

Since this discussion first erupted in 1991 with an important sale of subsidized wheat from the US, the Government of Argentina tried to defend the Brazilian export market through a two-pronged approach: representations in front of the Brazilian government requesting measures to counter subsidized exports and dumping (as indicated in Art. 4 of the Treaty of Asunción) and petitions to Canada, the United States and the European Union to refrain from utilizing those practices to sell to the Brazilian market.

Eventually, subsidized exports from the US were countervailed by the Brazilian government, although the CVDs were eventually eliminated. Also the Argentine government proposed the idea of declaring the American Continent as a subsidy- and dumping-free zone, expanding to agricultural products the full disciplines of GATT/WTO. This proposal is being considered within the process initiated with the Presidential Summit of the Americas in December 1994.

During the second half of 1995 and 1996, the tight situation of wheat stocks caused the temporary suspension of export subsidies by the EU and US, and therefore the issue of subsidized exports to the Brazilian market has been dormant since then. The resumption of EU wheat subsidies may bring the issue back to the table, as well as the possibility of US wheat sales with the special lines of credit (GSM) administered by the USDA.

(b) Modeling the impact of trade and macroeconomic policies

The implementation of different types of trade and macroeconomic policies and the various combinations in which they can be applied, require the use of more complex models to analyze their possible impacts. In what follows a brief summary of some results from four trade models focusing on MERCOSUR and agriculture is presented. Two are multi-market models (Diaz-Bonilla, 1994 and 1995), based on the SWOPSIM framework developed at the USDA [10]/ . Those models differ from the basic SWOPSIM approach in that they

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[9] The issue of unfair commercial practices is covered in Article 4 of the Treaty of Asunción (which created MERCOSUR). That article indicates that "in their relations with third countries the Member Countries will ensure equitable trade conditions." Then it adds that "to this effect they will use their local legislation to inhibit imports whose prices are influenced by subsidies, dumping or any other unfair trade practice".

[10] A detailed discussion of the structure and construction of multi-market models can be found in Braverman and Hammer (1986) and Quizon and Binswanger (1986). Also

include bilateral trade flows modeled through the Armington specification.

The first of those multi-market models (MM), includes 7 countries/regions (Canada, USA, Mexico, Brazil, Argentina, Rest of Latin America, Rest of the World) and 4 groups of products (food grains, feed grains, oilseeds and oilseed products and livestock). The other MM model includes 3 countries/regions (Brazil, Argentina and Rest of the World) and 18 products (beef, pork, poultry, fluid milk, dairy products, wheat, corn, coarse grains, rice, soybeans, soybean meals, soybean oils, other oilseeds, other oilseed meals, other oilseed oil, cotton, sugar and tobacco).

Those models are based on supply and demand equations for the different individual products or groups of products in the respective countries/regions. World prices move to clear world markets for the products considered and domestic prices (consumer and producer prices) clear the domestic markets of those products. There are no macroeconomic aggregates for the economy as a whole, and the behavior of the rest of the economy, in this type of models, is exogenous.

The third model (Burfisher, Robinson and Thierfelder (1996); BRT from now onward) is a linked set of CGE trade models for four countries (Brazil, Argentina, US and Mexico) plus the Rest of the World [11]. The models incorporate the whole economy (divided into 11 sectors, 4 of which are agricultural), factor markets, and the basic macroeconomic aggregates for each country, including the government accounts, the balance of trade and the savings/investment balance. The ROW is represented by export-demand and import-supply for the tradeable goods of the countries specifically considered

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De Janvry and Sadoulet (1996) have a very useful discussion of this type of model, along with other modelling frameworks. For a full description of the SWOPSIM framework see Rominger, Sullivan and Dixit (1991).

[11] The classical work on CGE models is Dervis, de Melo and Robinson (1982). A complete review of this category of models can be found in Robinson (1989). In Lewis, Robinson and Wang (1995) there is a more detailed description of the specific model utilized in the simulations. The main differences between multimarket and CGE models are that while the former usually have a greater disaggregation of the agricultural sector (with supply and demand functions defined in terms of quantity and price variables), they model only links between the markets considered but do not include interactions with the rest of the economy. They are a step beyond partial equilibrium analysis of individual products and markets, but are short from a general equilibrium representation of the whole economy. CGE models, on the other hand, represent a general equilibrium view of the real economy, although they normally do not consider the monetary and financial aspects needed to have a full CGE-macroeconometric model.

in the model.

The model data base consists of social accounting matrices (SAMs) for each country, and a matrix of bilateral trade flows. SAMs start from multisectoral input-output data, which are expanded to provide information on the circular flow of income from producers, to factors to "institutions", which include households, enterprises, government, a capital account, and trade accounts for each partner country, and for the ROW. For each production sector, the model specifies output-supply and input-demand equations. Output is produced according to CES production function of the primary factors, with intermediate inputs demanded in fixed proportions. Sectoral output is a CET (constant elasticity of transformation) aggregation of total supply to all export markets and supply to the domestic market.

The single aggregate household in each economy has a Cobb-Douglas expenditure function, from which demand for specific goods is obtained. Composite demand is for a CES aggregation of sectoral imports and domestic goods supplied to the domestic market. BRT utilize the Almost Ideal Demand System to model import demands.

The parameter estimates for the sectoral production functions, consumer expenditure functions, import aggregation functions and export transformation functions were drawn from a variety of econometric and less formal sources. The model is calibrated to the baseline year (1993) so it replicates the data for that period.

In common with the walrasian traditionl embedded in CGE models, the model only determines relative prices and the absolute level must be set exogenously. Simulations are run with full employment and constant aggregate factor supplies. Capital and land are sectorally mobile. There are four types of labor and they are mobile across sectors within labor categories. Government expenditures are fixed exogenously, but government revenues, and therefore, public sector deficits, are endogenous. Aggregate investment in each country is assumed to be a fixed percentage of the GDP and aggregate savings are assumed to adjust to equate savings and investments. The model does not include money or other assets. The currency of the rest of the world defines the international numeraire.

The fourth model (Diaz-Bonilla and Robinson (1997); DBR from now onward) is a CGE-like structure of a multicountry world model, where the supply and demand functions are estimated based on flexible forms of profit and cost functions, utilizing cointegrating techniques. This is a step beyond the usual empirical implementation of CGE models based on calibration of the values

of elasticities and coefficients.

The model includes five countries or separate regions (Argentina, Brazil, the European Union, Japan and the US) and the Rest of the World. Except the ROW, which is modeled by simple export and import functions, the economies of the other five countries or regions are disaggregated into an exportable, an importable and a non-tradeable good. The economies produce two goods: a domestic good (DS) which is only sold domestically and an export good (EX) which is sold to other countries. They are produced as a combination of value added (generated by two factors of production, capital and labor) and intermediate inputs. In a generalized Armington specification, the domestically produced goods can be differentiated from the exportable goods (on the production side), and there is some degree of substitutability in production between the domestic and the exportable goods.

For consumption, investment, government, and intermediate uses, the country utilizes a composite good (Q) of domestically produced (DS) and imported goods (IM). Domestically produced goods can be differentiated from imported goods (on the demand side), and there is some degree of substitutability in their utilization by domestic agents between both goods.

There are only three types of agents in the economy: Households, Firms, and the Government. Each country sells exports and buys imports from the other countries at world prices and lends to (or borrows from) world capital markets at the world rate of interest. There are two assets in the economy: physical capital and an external financial asset/liability. Both consumption and investment decisions are based on an intertemporal optimizing framework, which, given the form assumed for the utility and production functions, can be separated into a two-stage budgeting problem, differentiating an intertemporal and an intratemporal problem for the economic agents [12]. In the simulations, however, only the intratemporal component is implemented.

Money is introduced through a "cash-in-advance" constraint, as in Dornbusch, Fischer and Samuelson (1977). The macro aggregates include the government accounts, the balance of payment and the overall savings/investment balance. The model is solved only for the temporary equilibrium (see Grandmont, 1977 and 1988), with predetermined levels of capital, labor and non-monetary assets/liabilities.

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[12] Frenkel and Razin (1996), among others, utilize the two-stage decision process in a theoretical model of intertemporally optimizing agents. Jorgenson and Wilcoxen (1993) and Go (1996) constructed CGE models with the intertemporal and intratemporal separation. The optimization frameworks for Firms and Households in the type of model utilized in this paper are discussed in greater detail in Diaz-Bonilla (1996).

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The simulations determine the intratemporal impact of changes in relative prices with respect to the baseline year, keeping the level of employment, the stock of physical capital, and financial flows all fixed at baseline values. The equilibrating mechanism is the behavior of the real exchange rate (defined as the price of tradables over non-tradables).

The main results from those models can be summarized as follows:

- For the agricultural sector in MERCOSUR, and particularly for Argentina, the implementation of the Uruguay Round agreement is more important than MERCOSUR or a Free Trade Area of the Americas (Diaz-Bonilla, 1993).

- In the simulations, the MERCOSUR agreement leads to the expansion of the agricultural sector in Argentina, but it produces a small contraction in that sector in Brazil. The opposite result occurs in the industrial sector, except for the food manufacturing activities in Argentina, which show some gains (BRT).

-Unsurprisingly, Argentina's wheat production and exports to Brazil increase with MERCOSUR (Diaz-Bonilla, 1994).

-MERCOSUR appears to be trade creating (BRT and DBR), but the issue of trade creation and trade diversion may have some additional wrinkles. For instance, in DBR, the direct MERCOSUR effect is trade creating, as the net result of an increase in trade between MERCOSUR members that turns out to be larger than the reduction in trade with non members. But there is also a very small increase in trade among the EU, Japan, the US and the rest of the world themselves, without including MERCOSUR countries. Besides the two dimensions usually considered in the trade creation/trade diversion calculations (i.e. trade between members of a trade agreement only and trade between members and non members of a trade agreement), this analysis highlights a third dimension of trade (trade only between non-members of a trade agreement) which is not usually considered, and which requires a general equilibrium approach to be estimated .

Also in Diaz-Bonilla, 1994 (which analyzes also scenarios for the interaction of the UR agreement, NAFTA and MERCOSUR) it is found that although Argentina suffers some trade diversion in agricultural products in Mexico because of NAFTA, it ends exporting a larger value of agricultural products under the NAFTA scenario, because the implementation of this

agreement leads to small increases in world prices and total Argentine exports [13].

- Other policies such as devaluation of the exchange rate (BRT) or changes in the money supply (DBR), may have larger impacts on production, consumption and trade, than the specific trade policies, and they may change the final impact of such trade policies. For instance, in DBR the implementation of MERCOSUR alone, leads, obviously, to increases in bilateral trade. However the effect seems bigger in the case of Argentina's imports from Brazil (which jump about 12.7% in real terms) than Argentina's exports to Brazil (which increase by almost 4.2%). This result only indicates the magnitude of the price effect within the temporary equilibrium considered, given fixed endowments of factors of production and the fixed cash-in-advance constrain.

As an illustration of the impact of other macroeconomic policies on trade, the same trade policy settings as in the first MERCOSUR scenario were run with an increase in Brazil's money supply, keeping the rest of the money supplies fixed. Obviously, with a change in only one of the money supplies, the model did not dichotomize, and Brazil's monetary policy influenced real variables. In particular, under this simulation Argentina's exports to Brazil increase about 13% (instead of 4.8%), and Brazil's exports move up 10% (instead of 12.6%). These results (and the different outcomes obtained in BRT for different devaluation scenarios in the US and Brazil) underscore the importance of other macroeconomic policies on trade flows.

A conclusion of these studies is that macroeconomic changes tend to dominate the effect of trade policies. In consequence, the evaluation of the different trade and macroeconomic issues posed by the integration in MERCOSUR and the Continent, would require a more general framework that includes CGE and macroeconomic components, and that is implemented through econometric techniques rather than calibration [14].

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[13] The mechanism seems to be as follows: the elimination of protection for the products considered in Mexico, reduces domestic producer and consumer prices, leading to less production and more consumption internally. This in turn generates more demand for imports, which is supplied mainly by the US. Although in the simulation Argentina suffers some trade diversion in the Mexican market, supply and demand conditions are such that world prices for the products considered increase slightly and Argentina ends up exporting to other destinations left undersupplied by the redirection of US exports towards Mexico at higher prices. It must be emphasized that the overall impact is very small.

[14] The estimation of the full multicountry CGE-macroeconomic model is an on-going project, following the approach utilized in Diaz-Bonilla (1996) and Diaz-Bonilla and Robinson (1997).

VII CLOSING COMMENTS

Wheat markets in South America have undergone significant changes over the last decade, driven by the world macroeconomic and agricultural cycle of the last quarter of the century, as well as specific economic and sectoral policies in the region.

Latin America's economic environment is now characterized by fiscal constraints and greater price stability, market liberalization and trade openness. In this new setting, Argentina has consolidated its position as a net exporter, due to both increased production and stagnant or even declining domestic consumption, while Brazil and the Rest of South America, with opposite trends in production and consumption, are increasing their net imports of wheat. MERCOSUR in general, and Brazil particularly, has become an important and growing market for Argentina's agricultural products, which has helped to limit the impact of weaker demand from other traditional buyers.

These supply and demand changes, along with greater trade liberalization, are reshaping trade patterns in the region, increasing Argentina's exports to Brazil and the rest of South America. This trade environment will continue to change due to the phasing in of WTO disciplines, and the possible expansion of regional trade agreements. Wheat trade issues that in the past focused prominently on export subsidies and trade practices of state trading enterprises may, in the future, be more related to sanitary and phytosanitary practices (for instance the problem with the TCK fungus in Brazil and Chile's ban on imports from the United States between March 1996 and October 1997 after the discovery of "Karnal bunt" in some growing areas in the U.S. Southwest) or to controversies linked to wheat flour and wheat-based manufactured goods, rather than to the primary product.

Simple projections of production and consumption in Argentina, Brazil and the Rest of SAM, suggest that by the year 2000 the region as a whole will still be net importers of about 1-2 million tons. These figures, however, would indicate a declining trend in net imports from the 1990-1996 average of about 3.4 million tons.

At the microeconomic level, the evolution of the milling industry and the bakery, pasta and related industries in Brazil and Argentina (which will depend on other aspects of economic policy and business strategies rather than the more circumscribed agricultural sectoral policies), will probably have important consequences for trade and production patterns in wheat and wheat products in the region. An issue in this context is whether Argentina will specialize in supplying the raw material while the Brazilian industry processes it, or, whether

Argentina's agroindustry will be able to manufacture the raw material itself and export products with greater value added to Brazil and other world markets. Here, an indicator would be how the issue of increasing exports of wheat flour from Argentina to Brazil develops, both at the level of business strategies as well as public policies.

Also the continuation of the process of trade expansion within MERCOSUR, and indeed in the whole Continent, would require a careful consideration of the macroeconomic asymmetries, including the type of exchange rate regimes [15]/. The analysis of complex macroeconomic and trade scenarios would also demand a more developed modeling framework, combining CGE and macroeconomic features, and implemented empirically through econometric techniques rather than calibration.

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[15] See Diaz Bonilla et al (1993) for a discussion of the macroeconomic asymmetries in MERCOSUR.

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TABLE 1 WORLD MACROECONOMIC INDICATORS

	1961-65	1966-70	1971-75	1976/80	1981-85	1986-90	1991-95	1996-97
Growth GDP	4.9	4.6	3.5	3.7	2.3	3.3	3.0	4.1
Growth Trade (Volume)	---------- 8.5 ----------		---------- 5.7 ----------		---------- 4.5 -------		6.3	8.0
Inflation (CPI) a/	2.5	4.1	8.6	9.4	6.5	3.8	3.3	2.3
Interest Rates b/	4.0	5.9	6.95	8.9	12.2	8.1	7.4	6.1
Real Interest Rate c/	1.5	1.7	-1.5	-0.5	5.35	4.1	4.0	3.7

Source: IMF: IFS several issues; World Economic Outlook, several issues

a/ Industrial Countries
b/ Industrial Countries; nominal long term rates
c/ (((1 + interest rate in 1/100th)/(1 + inflation rate in 1/100th))-1)*100

TABLE 2. LATIN AMERICA AND THE CARIBBEAN: ECONOMIC INDICATORS AND POPULATION

A. GDP GROWTH (annual %)

	1970-1980	1980-1990	1990-1997
Total	5.90	1.00	3.70
Industry	5.70	0.40	3.50 1/
Agriculture 2/	3.50	2.00	2.90 1/

B. INFLATION (annual %) 3/

45.2	186.4	141.7 4/

C. POPULATION GROWTH (annual %)

2.4	2.1	1.7

Source: Inter-American Development Bank

Notes:
1/ 1990-1996
2/ Including Forestry and Fishery
3/ CPI
4/ It should be noticed that since 1995 inflation has declined significantly, dropping to an average for the region of 12.3% in 1997.

From: Reca and Diaz-Bonilla, 1997

TABLE 3. WHEAT PRODUCTION, CONSUMPTION AND TRADE IN SOUTH AMERICA
(000 Metric Tons)

	Production	Consumption	Imports	Exports	Net Trade
1960/64	9034.2	9077.0	3635.6	3103.8	-531.8
1965/69	9014.8	11194.8	4665.0	3015.0	-1050.0
1970/74	9565.0	12936.2	5107.2	1871.4	-3235.8
1975/79	12471.6	15684.8	7220.6	3960.2	-3260.4
1980/84	15171.6	16479.0	8273.0	6989.2	-1283.8
1985/89	17076.8	18049.0	5365.6	4597.2	-768.4
1990/94	15383.6	18964.6	9837.0	5975.0	-3862.0
1995/98	17687.3	20570.3	10832.3	8019.5	-2812.8
1990/98	16407.4	19678.2	10279.3	6883.7	-3397.6

SOURCE: ERS Data

TABLE 4. SOUTH AMERICAN PRODUCTION, CONSUMPTION AND TRADE AS PERCENTAGE OF WORLD VARIABLES

	Production	Consumption	Exports	Imports
1960s	3.40%	3.81%	5.65%	8.20%
1970s	2.95%	3.87%	3.92%	8.71%
1980s	2.76%	3.57%	4.13%	7.99%
1990s	2.85%	3.46%	5.91%	9.13%
1960-90	3.14%	3.68%	5.11%	8.00%

Source: ERS data.

TABLE 5. PRODUCTION, CONSUMPTION AND TRADE BY MAIN COUNTRIES (000 Metric Tons; Average during the 1990's)

	Production	Prod/Total	Cons.	Cons/Tot.	Exports	Exp/Tot.	Imports	Imp/Tot	Imp/Con	Exp/Prod
Argentina	10897.1	0.69	4386.0	0.23	6495.4	0.99	0.0	0.00	0.00	0.51
Brazil	2592.7	0.16	7879.9	0.41	0.0	0.00	5362.0	0.54	0.68	0.00
Rest of SA	2420.6	0.15	6827.3	0.36	77.9	0.01	4525.4	0.45	0.66	0.01
-Bolivia	101.4	0.01	492.3	0.03	0.0	0.00	392.3	0.03	0.79	0.00
-Chile	1364.6	0.08	1941.6	0.10	0.0	0.00	579.4	0.05	0.29	0.00
-Colombia	95.6	0.00	931.9	0.05	0.0	0.00	839.1	0.08	0.90	0.00
-Ecuador	21.0	0.00	364.9	0.02	48.6	0.01	395.9	0.03	1.08	0.01
-Paraguay	348.6	0.02	345.1	0.02	17.9	nil	44.9	0.00	0.13	0.05
-Peru	112.4	0.01	1219.0	0.06	0.0	0.00	1113.4	0.11	0.91	0.00
-Uruguay	377.0	0.02	433.9	0.02	11.4	nil	68.3	0.01	0.16	0.03
-Venezuela	0.0	0.00	1098.6	0.06	0.0	0.00	1092.1	0.11	0.99	0.00
TOTAL	15910.4	1.00	19093.2	1.00	6573.3	1.00	9887.4	1.00	0.52	0.41

NOTE: There area some minor statistical differences because of changes in stocks and rounding.
Source: ERS data.

TABLE 6. PRODUCTION, CONSUMPTION AND TRADE BY MAIN COUNTRY AND PERIOD (000 Tons)

	Argentina			Brazil			Rest of SAM			
	Product.	Cons.	Exports	Product.	Cons.	Imports	Product.	Cons.	Imports	Exports
1960/64	7117.0	3616.6	3070.8	236.4	2355.4	2147.6	1680.8	3105.0	1488.0	33.0
1965/69	6481.2	4138.2	2966.8	545.2	2845.6	2345.6	1988.4	4211.0	2319.4	48.2
1970/74	6006.0	4286.4	1831.4	1870.4	4088.6	2194.8	1688.6	4561.2	2912.4	40.0
1975/79	8294.0	4416.8	3934.4	2528.0	6253.0	3762.6	1649.6	5015.0	3458.0	25.8
1980/84	11406.0	4479.8	6921.6	2174.4	6406.0	4235.6	1591.2	5593.2	4037.4	67.6
1985/89	8956.0	4535.8	4506.8	5470.0	7420.0	854.0	2650.8	6093.2	3511.6	90.4
1990/94	10316.0	4398.4	5903.6	2681.8	7791.8	5346.8	2418.8	6764.2	4479.8	89.0
1995/96	12350.0	4355.0	7975.0	2370.0	8100.0	5400.0	2425.0	7167.5	4822.5	50.0
Growth Ratio										
1965-9/1960-4	0.910	1.144	0.966	2.306	1.208	1.092	1.183	1.356	1.558	1.460
1970-4/1965-9	0.926	1.035	0.617	3.431	1.437	0.936	0.849	1.083	1.256	0.830
1975-9/1970-4	1.381	1.030	2.148	1.352	1.529	1.714	0.977	1.099	1.187	0.645
1980-4/1975-9	1.375	1.014	1.759	0.860	1.024	1.126	0.965	1.115	1.168	0.620
1985-9/1980-4	0.785	1.012	0.651	2.516	1.158	0.438	1.666	1.089	0.870	1.337
1990-4/1985-9	1.152	0.970	1.310	0.490	1.050	2.884	0.912	1.110	1.276	0.984
1995-6/1990-4	1.197	0.990	1.351	0.884	1.040	1.010	1.003	1.060	1.076	0.562

Note: Ratio of the average production in any 5-year period divided by the previous period.
Source: ERS data.

TABLE 7. VARIABILITY IN AREA AND YIELDS

	Argentina		USA		Brazil		Rest of S. America	
	Area	Yield	Area	Yield	Area	Yield	Area	Yield
sd/mean	0.18	0.21	0.16	0.15	0.58	0.37	0.18	0.30

TABLE 8. CONSUMPTION PER CAPITA

	Argentina	Brazil	Rest of S.America
1960/64	169.78	30.57	53.97
1965/69	180.26	31.94	63.94
1970/74	172.97	40.55	60.95
1975/79	164.76	55.10	59.43
1980/84	154.42	50.58	58.97
1985/89	145.28	52.84	57.77
1990/94	131.89	50.65	57.94
1995/96	125.16	49.65	57.52

Source: ERS data.

TABLE 9. VARIABILITY OF PRODUCTION CONSUMPTION AND TRADE

	ARGENTINA			BRAZIL			Rest of S.AMERICA				S.AMERICA (TOTAL)			
	Prod.	Cons.	Exp.	Prod.	Cons.	Imp.	Prod.	Cons.	Imp.	Exp.	Prod.	Cons.	Imp.	Exp.
sd/mean	0.3177	0.0954	0.5654	0.7417	0.3911	0.4393	0.2410	0.2457	0.3267	1.0417	0.3023	0.2409	0.3580	0.5620

Table 10.
Argentine Exports by Destination (000 MT)

	1985	%	1990	%	1993	%	1994	%	1995	%	1996	%	1997	%
BOLIVIA	89.1	0.9	1.5	0.0	65.0	1.2	53.3	1.0		0.0	19.7	0.3		0.0
BRAZIL	847	8.8	1810.3	31.0	3475.5	61.9	3761.0	71.3	4379.6	64.4	3861.3	66.2	3965.2	45.7
CHILE	14.9	0.2	0	0.0	126.5	2.3	259.5	4.9	167.7	2.5	38.9	0.7	21.9	0.3
CHINA	877.3	9.1	749.8	12.8	32.6	0.6		0.0	231.6	3.4	11.3	0.2	31.5	0.4
COLOMBIA	na	0.0	na	0.0	92.0	1.6	23.4	0.4	77.8	1.1	63.2	1.1	30.6	0.4
INDONESIA	187.6	2.0	308.2	5.3	292.5	5.2	514.7	9.8	439.6	6.5	129.4	2.2	266.2	3.1
IRAN	548.2	5.7	1469.8	25.1	95.7	1.7		0.0	214.0	3.1		0.0	504.0	5.8
PARAGUAY	0	0.0	0	0.0	40.9	0.7	7.2	0.1	62.4	0.9	65.5	1.1	4.7	0.1
PERU	662.2	6.9	307.1	5.3	495.5	8.8	472.0	9.0	443.1	6.5	96.1	1.6	333.7	3.8
USSR/RUSSIA	4612.7	48.0	466	8.0		0.0		0.0		0.0		0.0	2.1.6	0.0
TURQUIA	na	0.0	na	0.0	405.2	7.2		0.0	55.8	0.8	232.6	4.0	642.9	7.4
VENEZUELA	0	0.0	0	0.0	28.6	0.5	30.4	0.6	43.4	0.6		0.0	79.4	0.9
OTHER	1764.7	18.4	734.7	12.6	463.2	8.3	150.8	2.9	683.6	10.1	1314.7	22.5	2798.4	32.2
TOTAL	**9603.7**	**100.0**	**5847.4**	**100.0**	**5613.2**	**100.0**	**5272.4**	**100.0**	**6798.8**	**100.0**	**5832.7**	**100.0**	**8678.6**	**100.0**

Source: SAGPyA

Table 11.
Brazilian Import by Country of Origin (000 MT)

	ARGENTINA		CANADA		C.E.E		U.S.A.		TOTAL
	volume	%	volume	%	volume	%	volume	%	
1985/86	873,0	34,6	829,0	32,9	51,0	2,0	767,0	30,4	2520,0
1986/87	973,0	34,5	885,0	31,3	388,0	13,7	577,0	20,4	2823,0
1987/88	986,3	48,8	632,8	31,3	334,4	16,5	69,3	3,4	2022,8
1988/89	757,4	98,1	14,3	1,9	0,0	0,0	0,0	0,0	771,7
1989/90	1163,6	76,9	216,4	14,3	0,0	0,0	133,2	8,8	1513,2
1990/91	2175,0	100,0	0,3	0,0	0,1	0,0	0,0	0,0	2175,4
1991/92	2539,0	52.5	1595,0	33,0	0,0	0,0	700,0	14.5	4834,0
1992/93	4477,5	77,5	1147,2	19,9	1,0	0,0	150,6	2,6	5776,3
1993/94	3043,0	55,1	1937,1	35,1	400*	7.2	145,9	2,6	5526,0
1994/95	4927,0	77,2	1076,0	16,9	377,0	5,9	0,3	0,0	6380,3
1995/96	3775,0	69,6	1013,0	18,7	101,0	1,9	533,0	9,8	5422,0
1996/97	3765,2	66,7	749,0	13,3	na	na	852,0	15,1	5646,0

Source: SAGPyA DIRECCION DE MERCADOS AGRICOLAS Y AGROINDUSTRIALES
USDA/FAS

TABLE 12. MACROECONOMIC INDICATORS IN ARGENTINA AND BRAZIL

	1993	1994	1995	1996	1997
GDP (annual % growth)					
Argentina	5.3	6.7	-4.6	4.3	8.4
Brazil	4.4	5.7	3.9	3.0	3.5
TRADE BALANCE (billion US$)					
Argentina	-3.7	-5.9	0.8	0.05	-4.8
Brazil	9.5	6.2	-9.5	-12.5	-17.7
BILATERAL TRADE Arg. trade bal. with Brazil (bill US$)	-0.75	-0.67	1.29	1.59	0.9
MONEY SUPPLY (M1) (annual % change)					
Argentina	33.0	15.7	1.3	11.2	8.6
Brazil	2568	1796	28.9	43.1	27.6
INFLATION (CPI) (annual % change)					
Argentina	7.4	3.9	1.6	0.1	0.3
Brazil	2489.1	929.3	22.0	9.1	4.3
FISCAL DEFICIT (% GDP)					
Argentina	1.4	-0.2	-0.5	-1.8	-1.4
Brazil 1/	-0.7	1.1	-4.8	-4.5	-4.6
REAL EXCHANGE RATE (1990 = 100)					
Argentina	59.9	63.6	71.1	73.1	71.3
Brazil	119.8	94.9	72.0	66.1	64.5

Source: ECLAC, 1997; IMF, Direction of Trade Statistics

1/ Brazilian deficit is published adjusting for the inflationary component of the payments of interests on public debt; without that adjustment the deficit is larger, around 5-7% over the last three years.

Table 13. Relative Prices (Index base 1983=100)

	Industrial Price/Services	Agricultural Price/Serv.	Ind.Price/Ag.Price
1986	67.6	60.8	114.4
1987	62.3	63.9	97.5
1988	76.2	72.9	104.4
1989	90.7	84.2	107.6
1990	57.4	43.7	131.1
1991	36.0	28.8	125.0
1992	28.1	25.4	110.2
1993	24.9	21.6	115.1
1994	23.8	20.2	117.3
1995	24.5	21.2	115.2

Source: CEPAL data.

Table 14. Productive Inputs

	1990	1991	1992	1993	1994	1995	1996
Fertilizers (000 mt)	165.5	185.1	242.8	297.1	464.2	601.7	840.0
Tractors (units sold)	....	3400	4871	5192	6393	4615	7720
Harvesters (units sold)	1120	760	415	344	1011	662	1276
Agrochemicals (millionUS$)	....	....	....	....	522	626	720

Source: Fertilizers, FAO; Rest, SAGPyA

Table 15. Price of Fertilizers in the Wheat Production, Argentina
(Kg of grain per Kg of fertilizer)

	UREA	PHOSPHATE
1980/84	2.54	3.08
1985/90	2.36	3.41
1990	2.25	3.20
1991/92	2.89	3.44
1993/94	2.11	2.68

Source: AACREA and SAGPyA

TABLE 16. U.S. WHEAT EXPORTS TO LATIN AMERICA UNDER EEP
(000 Metric Tons)

COUNTRY	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Brazil	66				700	25	106.4			
Colombia		300	155	230	512.9					
Mexico		800.4	391.7	207.3			214.7	266.1		
Nicaragua								35.8	42.4	
Honduras								10.3	28.2	
Trinidad &Tobago					129.3	134	93.3	71.4	75.9	
Venezuela						331	134.6			
Total	66	1100.4	546.7	437.3	1342.2	490	549.0	383.6	146.5	

CHART 1: Wheat Production

(000 metric tons)

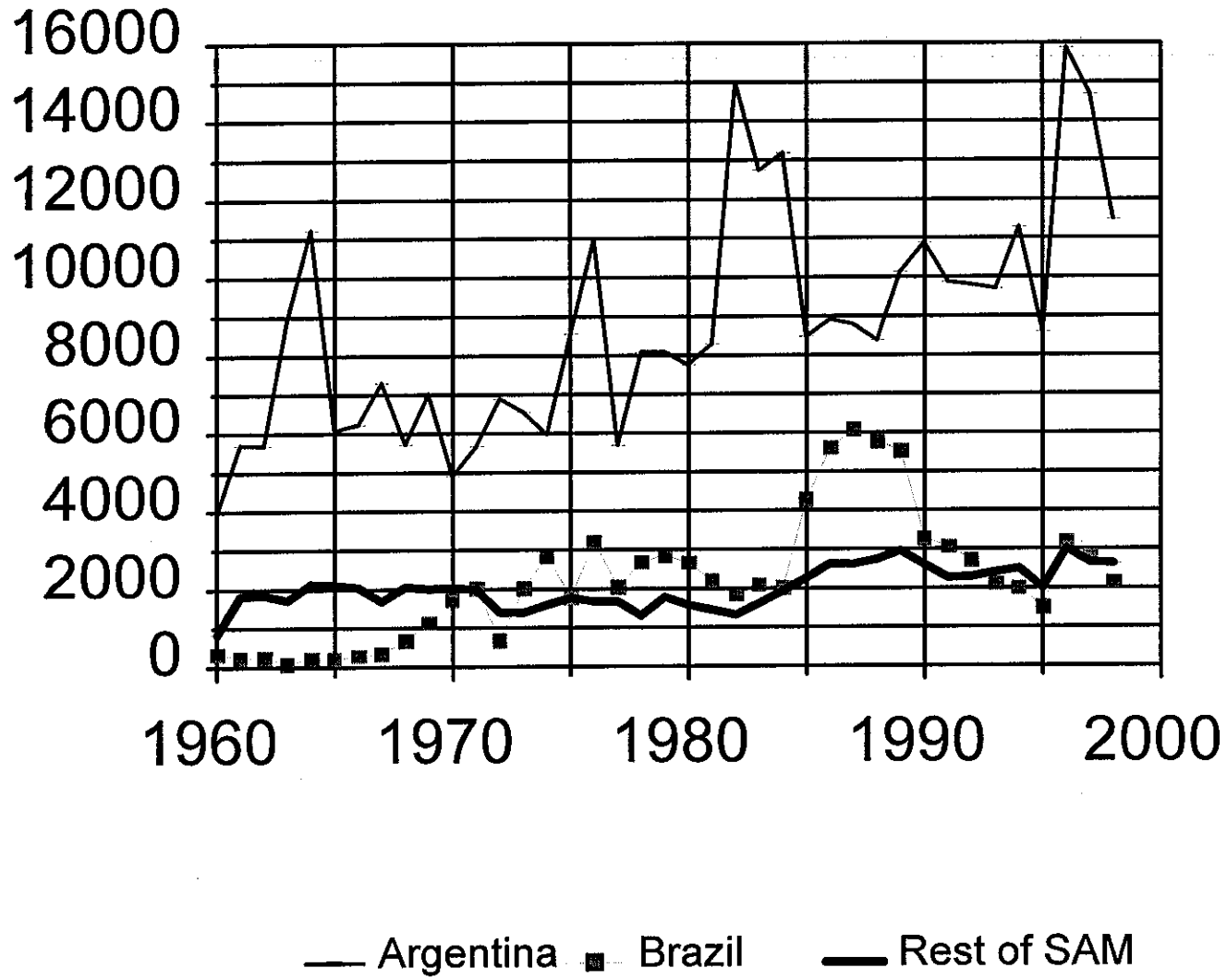

CHART 2: Wheat Consumption

(000 metric tons)

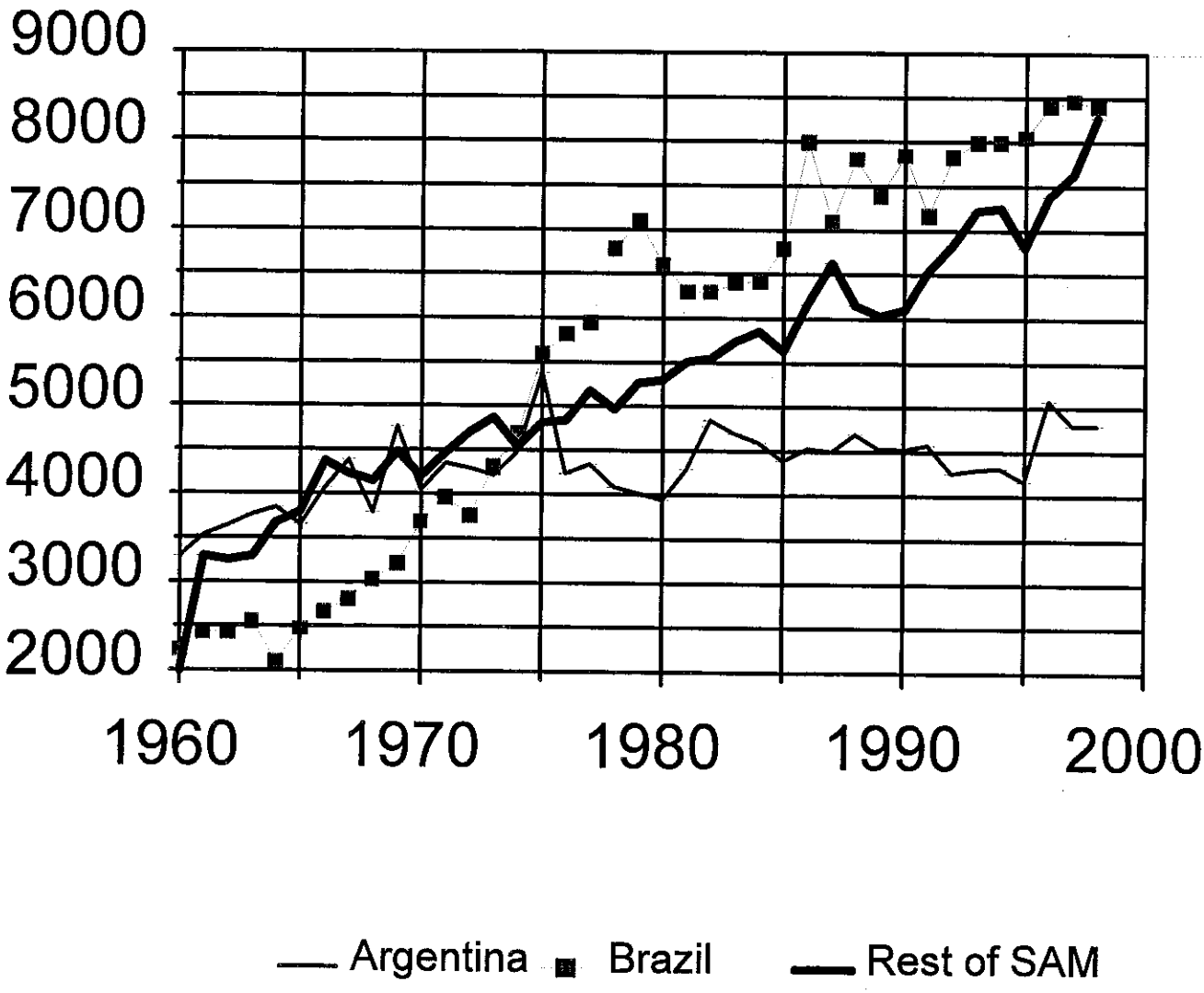

CHART 3: Wheat Yields

(metric tons)

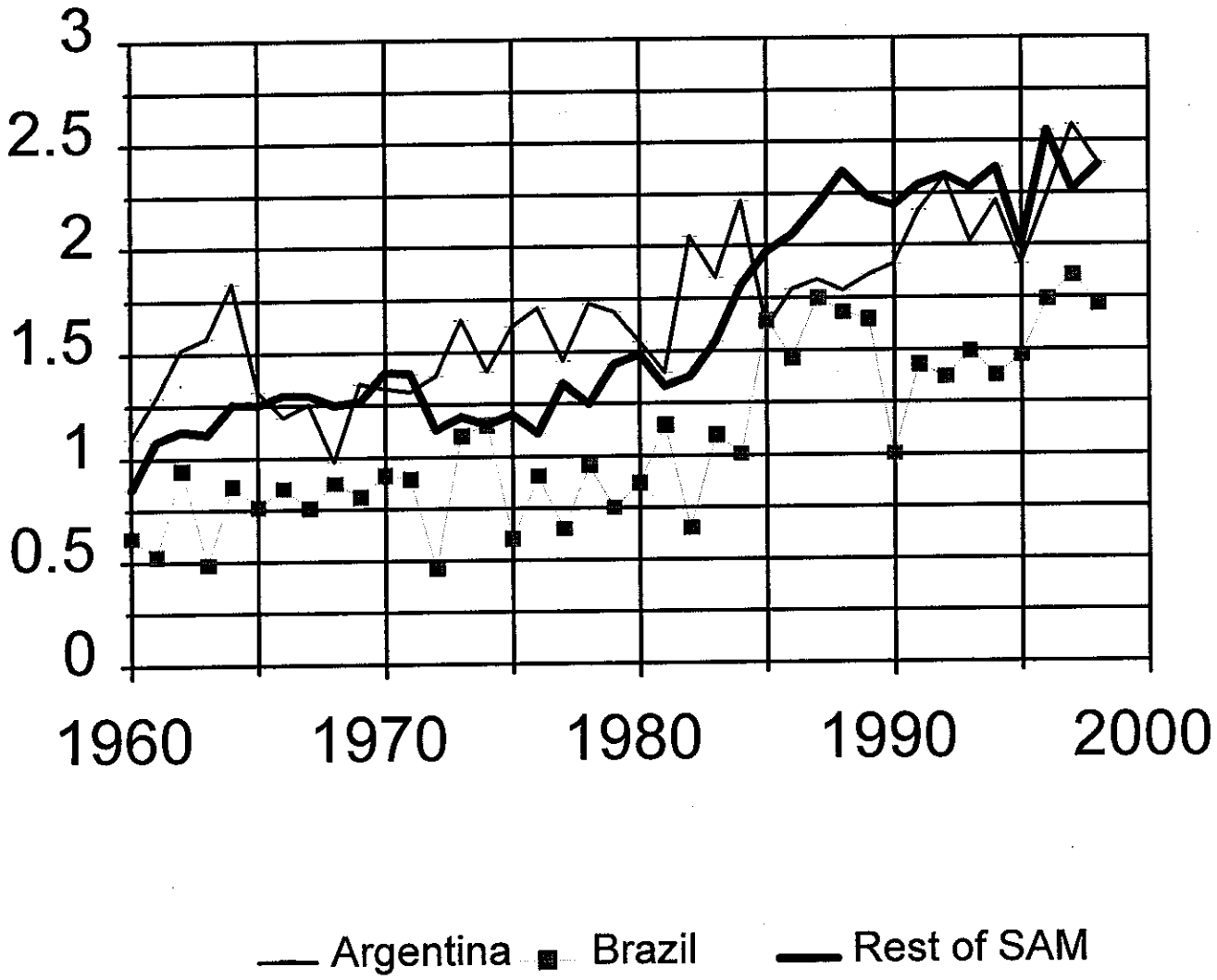

CHART 4: Wheat Area

(000 has)

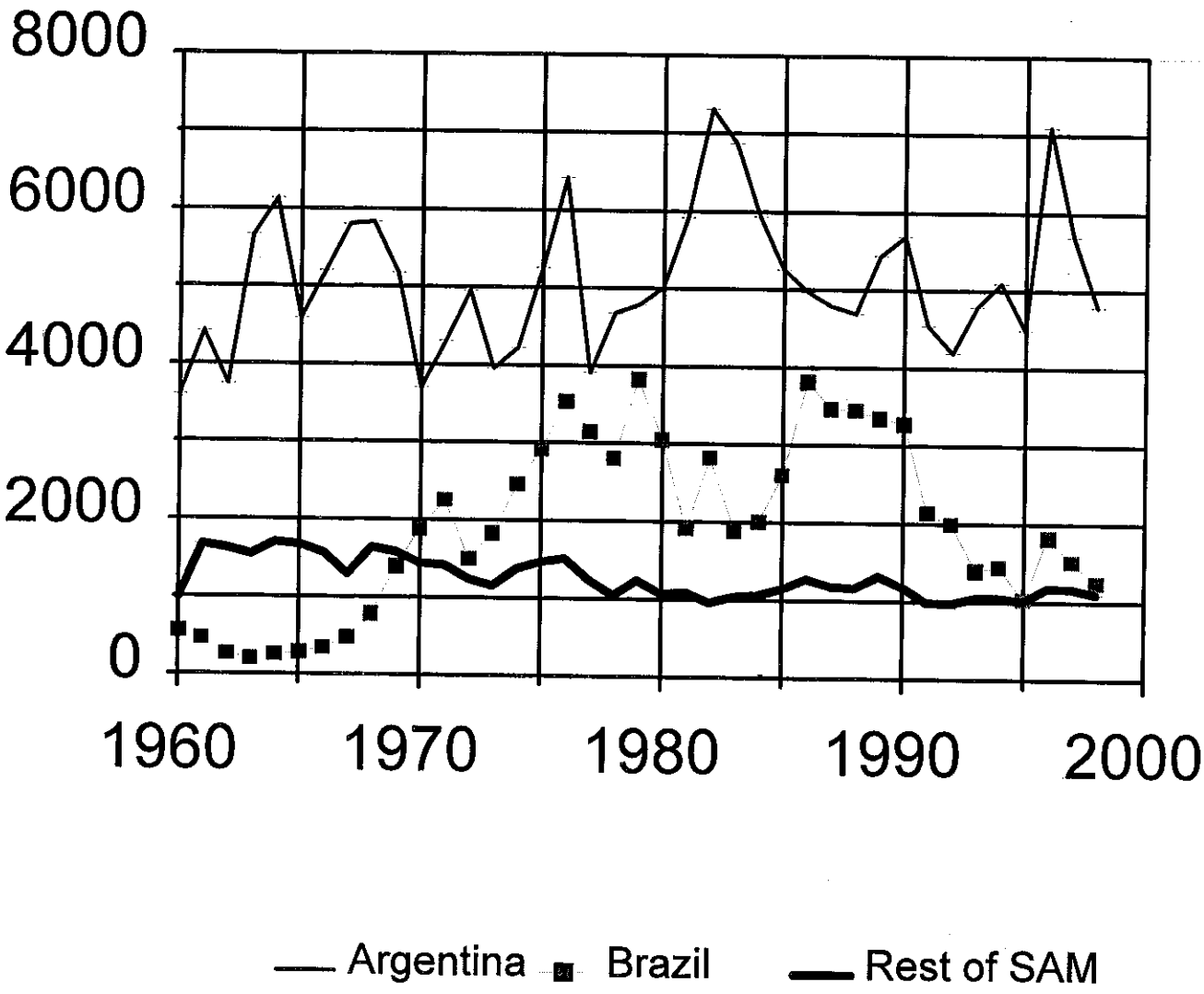

Chart 5.Yields