

*Environmental Improvements
without Environmental
Policies*

*Argentine Agriculture and Manufacturing
Exports in the 1990s*

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Introduction

Given both its economic and environmental characteristics, Argentina in the 1990s represents an exceptional case to study the interaction between environment, trade liberalization and economic growth. In fact, while Argentina has serious environmental problems though no real environmental policy, the opening of its economy was accompanied by high growth rates and a substantial increase of trade flows during much of the decade.

In a context of ample international financing, structural reforms—among them particularly the liberalization of trade and the massive privatization policy—and the Convertibility Plan started in 1991 played a major role in the elimination of inflation and the resumption of economic growth. In that sense, the GNP grew at an average annual rate of more than 6 % while the GNP per capita at purchasing power parity grew from US\$ 5.120 in 1991 to US\$ 9.950 in 1997¹. Trade liberalization and increased economic activity led to boom in the level of imports, which rose from US\$ 4.000 in 1990 million to US\$ 30.300 million in 1997. Imports represented 10 % of GNP this past year. Exports, which had stagnated at some US\$ 12.000 million until 1993, grew significantly to reach the level of US\$ 26.400 million in 1997. However, the share of exports remains low, representing a mere 9% of the GNP in 1997.

Although the Convertibility Plan and the structural reforms have been successful in terms of economic growth, Argentina is far from having taken the path of equitable and sustainable development. Many social conflicts persist and, in some cases, they have been exacerbated. Although poverty levels are lower than in the previous decade, the percentage of households below the poverty line has tended to grow. Unemployment has also increased significantly, reaching more than 17 % level at the end of 1996 and descending to a still high level 12.4 % in 1998. There are also serious shortcomings within the educational, health, judiciary and security areas. As a result, and in response to the growing social discontent, these issues tend to gain greater weight in the public debate, while the theme of the environment has received very little attention. The environmental problems are to a large extent related to a marked process of urbanization and expansion of the agricultural frontiers during this entire century. The slow progress in the design and implementation of specific policies, and the low level of environmental awareness among the population have meant that environmental problems are basically aggravated or improved as a result of non-environmental policies.

Under these circumstances, the key question is whether the significant acceleration of the Argentine economic growth and the trade liberalization in the 1990s have brought with them environmental improvements, as argued by the advocates of trade liberalization, or whether, as maintained by environmentalists, they have occurred at the expense of the environment.

¹ Recent Ministry of Economics estimates indicate, however, that in 1997 per capita GNP in current prices was US\$ 8200, rather than the previous estimate of US\$ 9066.

To answer this question in the Argentine case it is essential to distinguish what trade liberalization meant for the manufacturing sector and what it meant for agriculture. In the former, trade liberalization allowed the entry of goods, which competed with those, produced by a local industry developed under import substitution policies, and meant access to equipment and other inputs at international prices. For agriculture – which unlike industry had traditionally been internationally competitive – liberalization meant also the elimination of export levies.

Before shedding light on these basic issues with reference to Argentine exports of both manufactures and agricultural products in the nineties, it will be important to briefly summarize the central arguments of the debate.

Trade liberalization, growth and the environment: conflicting arguments².

The argument of the environmentalists is based on a *win-lose* scenario, in which trade liberalization, by stimulating economic growth, increases production levels (*scale effect*), which, in turn, could lead to higher pollution levels and might encourage the accelerated exploitation of natural resources.

Also, as long as market prices take into account neither the environmental costs nor the scarcity of resources, trade liberalization can, so their argument goes, lead to an inefficient resource allocation – a process which might directly affect the environment, since an under-evaluation of these resources – whether renewable or non-renewable – could result in their over-exploitation, or in an excessive use of polluting substances. Trade liberalization would thus lead to an environmentally “dirtier” specialized production pattern, in the event that it involved an expansion of the most polluting or most natural-resource intensive activities. This *composition effect*, when added to the *scale effect*, results in a poorer environmental situation and a loss of social welfare.

From an opposite perspective, the advocates of trade liberalization maintain that this process could take place without major harm to the environment, and might even be beneficial for it in a *win-win* type scenario. One of the arguments in defense of the positive effects of liberalized trade is that as an engine of economic growth, international trade leads to higher per capita incomes, which in turn involve higher levels of environmental protection. This presupposes that there is a direct correlation between poverty and environmental degradation (as reflected in an environmental Kuznets curve), in which increased per capita income levels are associated – *inter alia* – with an expansion of the services sector, the generation of the economic resources needed for the implementation of environmental policies, and the opportunity to add to the social appreciation of the environment.

² The arguments advanced on either side presuppose that there is a direct relationship between trade liberalization and economic growth, based in turn on a number of questionable assumptions, from a theoretical viewpoint, and the effect of which depends in reality upon a variety of factors such as the country’s previous history, the way trade liberalization was carried out, exchange rate policies and other variables, and which is consequently far less automatic than what is assumed by orthodox theory.

Although as regards the internalization of environmental costs and externalities the existence of numerous market failures is widely acknowledged, the orthodox argument maintains that by eliminating distortions in the relative prices, the process of trade liberalization could result in a more efficient resource allocation, which in turn would limit the possible environmental harm of an expanded production. In that sense, the composition effect would operate in such a way as to cause the inefficient activities to disappear as a result of increased competition in an open economy, while the other activities would improve their production efficiency, so that the ones that grew most would be the least-polluting ones, in a cleaner pattern of specialization.

Also, trade liberalization could facilitate the international diffusion of environment-friendly production practices and technologies. By ensuring easier access to state-of-the-art – and generally less pollutant - technologies this would have an additional positive repercussion on the pattern of specialization, reducing the negative environmental effects of the growth of production.

Export of manufactures

When the environmental pattern of Argentine manufactured exports is analyzed, trade liberalization does not – contrary to the orthodox arguments -- seem to have generated a “cleaner” exports pattern.

Argentina has a manufactured export pattern in which high and medium-polluting sectors predominate³. In 1990 these sectors accounted for 72 % of the total manufactured exports. Despite the deep trade liberalization and the changes, which occurred in the Argentine economy in this decade, the relative weight of these sectors has remained practically the same: in 1997, they represented 69 % of the manufactured exports. Regarding the manufactured exports to OECD countries, the relative weight of the high and medium-polluting sectors increased from 68 to 76 % for the same period, basically due to the absolute and relative expansion of the medium-polluting sectors.

Within this prevalence of high and medium-polluting sectors in Argentine exports, some important changes occurred in the three main groups used to classify the manufactured exports. Among the high-polluting sectors, the dynamism of the petroleum-refining branch was not enough to compensate for the relatively poor export performance of the other two main activities in this group: chemical and iron-and-steel industries.

The expansion of the exports of oils and fats (agro-food products) accounts almost entirely for the higher relative weight of the medium-polluting sector in the Argentine export pattern. This is also the case for the expansion of the automotive industry in the export performance of the low-polluting sector.

³ Regrettably there exist no data specific to Argentina; we have thus used the World Bank methodology – itself based on the EPA Toxic Release Inventory and the US Manufacturers’ Census -- to define indicators for the evaluation of the potential environmental impact of Argentine manufactured exports with reference to their toxicity for humans.

However, even though Argentina continues with a pattern of exports in which high and medium-polluting branches predominate, this pattern seems today less vulnerable than at the beginning of the decade to international environmental requirements.

In that connection, the most significant feature of the present export profile of Argentina is the growing relevance of the MERCOSUR and the loss of weight of the industrialized countries as destinations of Argentine exports. Also, while manufactures carry a major weight in the exports to the MERCOSUR, especially automobiles and automobile parts, more than 80 % of the exports to the OECD area are natural resource-intensive products, especially agro-food products (which represent 36 % of these exports).

In any event, the loss of relative weight of Argentine exports to industrialized countries reduces, without eliminating, the pressure of environmental regulations and norms of these countries on local producers, the more so as, with regard to the access of Argentine manufactures to these markets, the dividing line between processes (PPMs) and products is far from clear. Although trade liberalization has thus not by itself affected the environmental pattern of Argentine exports, the increased competition resulting from it with respect to tradable products, together with easier access to more environment-friendly machinery and equipment, appears to have induced Argentine export firms to improve their environmental management. Generally, these improvements have been part of a cost-reducing strategy, and focused in a more integral utilization of resource inputs and residues, as well as – though to a lesser degree – on the treatment of pollutants. Nevertheless these improvements remain far from the best international standards, both for the large firms and especially the small and medium-sized ones – so that in absolute terms the level of polluting emissions has probably not been reduced.

Under these circumstances, while the trade liberalization process has been far from generating a *win-win* situation in the manufacturing sector, it can also not be said that the environmental quality had deteriorated and led to a *win-lose* situation, especially if one takes into account the improvements in the environmental management of the major firms with a high export profile.

Nevertheless, the fact remains that although per capita income levels grew substantially, there appears to have been no corresponding improvement in environmental protection. The lack of public interest in environmental themes is reflected in a dearth of specific policies and a low level of enforcement of existing environmental regulations – conditions precedent for any *win-win* situation to occur in the manufacturing sector.

In other words: a cleaner export pattern, with reduced emissions from the potentially most polluting sectors, and the appearance of export goods produced by more environment-friendly processes, is still a long way from what might be expected from a trade liberalization process such as that which has taken place in Argentina. This will depend more upon the advances that might be made with regard to environmental regulation in the MERCOSUR and on the preference which industrial as well as the ultimate consumers will give to environment-friendly products on the one hand and ,on

the other hand, on the definition of environmental indicators appropriate for the local production processes and environmental conditions, as well as progress in the design and implementation at local level of adequate environmental and technological policies. In that sense, top priority will have to be given in the manufacturing sector, especially where small and medium size firms are concerned, to the generation, adaptation and dissemination of clean technologies.

Agricultural exports

During the 1990s, the primary agricultural production of the Pampas region underwent a phenomenal growth, which took it from 26 million tons for the 1988/99 harvest to 63 million in 1997/8. This growth is reflected also in the exports, which more than doubled for all-important classes. This change was based on an expansion of almost 30 % of the acreage for the principal crops (wheat, corn, soya and sunflower), mainly at the expense of the cattle growing area⁴. During the same period, the consumption of fertilizers increased from 300.000 to 1.5 million tons; expenditures in agrochemical products augmented from US\$ 300 million in 1992 to US\$ 900 million in 1997 and the incorporation of agricultural machinery in all relevant categories have duplicated..

In a situation in which the gap between the actual and the potential productivity was high, the end of export levies on agricultural products and meat, and the setting of preferential tariffs for the importation of capital goods and inputs, together with access to and integration of clean technologies and state-of-the-art equipment meant that – even though international commodity prices remained depressed -- there was a significant improvement both in relative prices and in the expectations of the economic agents in the sector. This was immediately reflected in a substantial increase of per hectare output, and the recovery of competitiveness. Later on, the rise of international prices in the middle of the decade contributed to accelerating and consolidating this process – a movement that so far does not seem to have slowed down despite the drop of international prices for the last harvests.

In this situation, and from an environmental perspective, one must ask oneself what have been the consequences for the natural resource base on which depend the production functions with regard to their own sustainability.

In fact, this process can be qualified as “hard”, in the sense that it is based on a significantly more intensive utilization of inputs, which could also be considered as negative from an environmental viewpoint. Although this was clearly the case for the Pampas agriculture after 1990, it can also be countered by an in-depth analysis of the substantive features of that process. In such an analysis, several features must be taken into account.

⁴ It must be stressed that our analysis focused primarily on wheat and oilseed crops, and on the agricultural production of the Pampas area; as such, its findings cannot be extrapolated to other crops or other regional economies. Similarly, our research has concentrated on production processes and on the impact of the particular strategies on the environment and natural resources directly involved in these productive processes, to the exclusion of other indicators of sustainability – principally in the social and institutional sectors.

One such feature had to do with the use of fertilizers and other agrochemicals. No doubt their increase has been important, but it is equally certain that, compared for instance with what is happening in the US or the European Union, the use of fertilizer in the Pampas agriculture remains well below those practiced there⁵, and also lower than the pollution alert levels set by science. At the same time, if one projects this situation into future scenarios, everything indicates that, as regards the main Pampas crops like wheat or corn, some 50 % of the cultivated area is already being fertilized, and that even if this practice were to continue expanding, the situation would remain within the limits of the tolerable.

As to the use of herbicides – amounting to almost two thirds of the agrochemicals consumption – it follows a similar pattern, in that the major increase (from 1.1. million liters in 1990, to 59.2 million in 1998) was due to the use of glyphosates – a total herbicide with a systemic effect, incorporated and metabolized by the plant without leaving any residues in the soil, and can thus be considered as environment-friendly compared to other products such as atrazine, which have a considerable residual- and consequently polluting effect.

Simultaneously, “direct-sowing” techniques have grown significantly since 1990, induced by market signals, for both cereals and oleaginous crops, thus becoming a positive externality. These new mechanical techniques are part of a “package” which also includes the use of “total” herbicides (starting with glyphosate) which are environmentally neutral thanks to the high level of specificity of their action, and their lack of residual effects.

Direct sowing is strategically important for soil reconstitution by maintaining a high content of organic matter, and its effect on the sustainability of predominant cultivation systems. In fact, the expansion of this practice started in response to the marked deterioration of the soils in the region, and the negative effect this had on their productivity. On the other hand, direct sowing is important also because it reduces the greenhouse gases produced by other methods of plowing, and in that, according to recent experimental data, it also has a significant impact as an alternative for the carbon fixation (or by mitigating the greenhouse effect as a counterpart of the emission of greenhouse gases) – all facts which contribute a positive potential to Argentina’s negotiating position both in the context of the Kyoto Protocol , and in the hypothesis that environmental issues will become part of future trade negotiations.

The area under direct sowing grew from some 300.000 hectares in 1990/91 to 5.5 million hectares in 1997/8⁶, representing a capacity to fixate some 100 million metric tons of carbon equivalent.

⁵ In 1996, the per hectare use of fertilizer amounted to 61 kg., whereas in the United States the figure is 114 kg., and in the EU 209.

⁶ For the 1998/9 harvest this area grew to 7.2 million hectares.

Finally, the transgenic materials (GMOs) have been adopted by producers in the Pampas at a very high rate since 1997. Unless science proves otherwise, this has to be considered as a positive externality induced by market signals: according to research by the National Advisory Commission on Agro-Biotechnology, the ecological impact of the use of these new varieties is in effect no different from that of the production of traditional varieties. At the same time, one must credit them with an important cluster of positive effects. Among these the most important concerns the lower quantity of agrochemicals, and the nature of the herbicides, which, for transgenic soya, are of rapid degradation and have thus a negligible impact on local resources, water and soils, and no residual effect on the food chain.

The only part of this process which may cause some concern is a potential expansion of complementary irrigation with underground water, since there is little specific information to make guarantee— by appropriate, scientifically based norms and regulations — the sustainability of present wells` actual operation. It has become evident in the course of the past few years, however, that this practice — which involves heavy investments — has not spread as rapidly as had originally been forecast, so that the negative externality associated with an over-exploitation of underground water in the Pampas region remains only a latent threat.

Unlike what occurred in the manufactures sector, trade liberalization had a virtuous effect on the agricultural sector in the Pampas, leading to *win-win* type situations in which more intensive production and the growth of agricultural exports led concomitantly to environmental benefits derived from the adoption of conservationist practices and techniques such as direct sowing (preventing and, in some cases, reversing soil erosion) and the use of GMOs associated also with a reduced use of herbicides with residual and thus environmentally negative effects.

Although the last few years were marked by an abrupt drop of the international agro- and meat prices, which in turn was reflected in a sensible deterioration of social indicators in the sector, the expansion of the Pampas agriculture and the adoption of technologies like direct sowing have not slowed down. In that sense, the situation represents an excellent counter-example to the often-alleged vicious circle poverty-environmental degradation. The Pampas agriculture of recent years has taken a path opposite to that suggested by conventional wisdom: environmental improvement parallel with the impoverishment of broad sectors of the social and institutional fabric upon which agriculture is based.

No doubt the time span to which our observations refer is too short to allow us to do more than call attention to this parallelism; our observation should nevertheless be taken into account on the assumption that what occurred in the Pampas was not a counter-example, but the first sign of a new cycle, with the consequent need to activate the search for specific action and policies, and their implementation at state level, so as to maintain the virtuous characteristics which have so far marked the process.

Looking ahead

With a view to the future, the relevant question is by necessity linked to the probability that the path may continue along this virtuous cycle. Moving ahead means a reflection on the sequence of certain facts, an on the very nature of the processes concerned.

At the beginning of the cycle, Argentina had an important productivity gap to take advantage of as a source for growth in the sector. The economic and institutional reforms introduced at the beginning of the decade constituted both the incentive and the carrier for the process of technological change to take the direction it did. Direct sowing, together with the use of glyphosate and, in recent years, the introduction of transgenic soya, represented externally developed innovations, independent of the local context, but available when local conditions were appropriated for their diffusion. From that perspective, the technological foundation of this cycle is to a large extent attributed to the homogeneity of the agro-ecological parameters of the agriculture of the Pampas and those of the North American grain belt and the resulting ease with which it proved possible to take advantage of the spillovers of R&D investments made abroad. The moment agriculture became more profitable with the end of export levies and the availability of up-to-date equipment in the wake of trade liberalization, direct sowing was available as an alternative. Favorable international prices in the middle of the decade helped consolidate the introduction and dissemination of these new techniques, and set the basis for a subsequent feedback into the cycle and the prompt adoption of the new varieties of soya by the end of the decade. This virtuous cycle – with regard to environmental impact – is to a large extent attributable to the convergence, at this point, of a cluster of favorable circumstances; it would thus be an error – and even dangerous – to project it into new scenarios which Argentine agriculture may have to confront in future.

Quite probably, history would in fact have been different if the technological knowledge to move ahead with the development of new productive, reduced tillage strategies had not been available, and if it had been necessary to work with the typical R&D time horizons.

Taking all this into account, it is evidently difficult to justify – from the perspective of public policies – the continuation of a passive attitude towards the evolution of these processes. On the one hand, the possibility of moving ahead on the basis of available knowledge is reduced to the extent that the gaps are being closed, and local R&D becomes a priority. On the other hand, the intensification of production pushes the use of resources to the edge of what is sustainable, as a result of which there appears a growing need for precise information on their characteristics and potential – and in time also on the institutional arrangements to orient them toward most sustainable alternatives. Given this scenario, the time may have come to think of state led actions to allow the process of agricultural development in the Pampas to maintain its impetus along the same virtuous path it has followed during this decade, without clashing with the spirit of current macro-economic policies.

In that connection, the national policy agenda has to ensure more substantial R&D investment, clear norms and regulations with regard to quality assurances for food products, the expansion of virtuous production practices like direct sowing -- with regard to which there is a wide scope for its further dissemination -- and to encourage the zoning of agro-production and forestry, discouraging at the same time polluting practices (as would be the case for the intensification of cattle growing).

On the international scene, Argentina is, *a priori*, in an auspicious position for envisaging, with respect to the agricultural sector, an integration of an environmental dimension in its trade policy. This is due to the fact that, with some very limited exceptions, the actual situation of the Argentina's agricultural sector with regard to environmental issues – and consequently also the country's baseline in any negotiation process – is relatively favorable compared to that of other countries with major interests at stake in the negotiations.

For an exporting country like Argentina, one of the most relevant aspects in international negotiations on the relationship between trade and agriculture refers to the restrictions based on inherent – or physically incorporated – to products whose consumption or deposition is science-proved to be dangerous for human health and the environment. Since industrialized countries are more likely than others to adopt environmental regulations with regard to transgenic components of food products, and considering that the adoption of this technology in recent years has had a spectacular acceptance among agricultural producers, the application of this kind of regulatory measures could have a very significant impact on Argentine exports to these markets. It would not only imply a major change in access costs and – depending upon consumer preferences – have repercussions on the price of products based on transgenic raw materials, but it would also affect the technical and environmental aspects of the production process in the agricultural and cattle sector.

In that context, the negotiation on genetically modified organisms (GMO) appears to be quite complex. Although Argentina has maintained a permanent bio-security system, with controls and procedures to guarantee the adequate management of any possible environmental and public health risks with regard to this kind of technology, in terms of markets the Argentine position depends to a large extent on decisions related to consumption, which as such often take beyond the scope of trade negotiations.

The challenge for negotiators in this area is to guarantee the legitimate protection of public health without opening the door to covert protectionism. The guarantee that food products are “healthy” and the protection of local production against pests and diseases, which might be introduced by trade, are aspects, which can be considered as “public goods”. Here, the only option is to make sure that the principle whereby restrictions in specific cases must be grounded on “scientific proof” , in order to prevent that legitimate interests (or obligations) to preserve the integrity of a public good be used as pretexts to negate the very aims and benefits of trade liberalization.

As regards production, the international debate focuses on two basic aspects: those related to global impacts such as pollution associated with scale effects, or concerning the forest cover, and those of a local nature, with production processes that affect the local natural resource base. In a long term perspective, both aspects can of course be seen as being of global interest in the sense that -- if one considers that to guarantee that the supply of food products will be adequate to meet future demand constitutes by itself a global good -- the use made by the principal actors in an agricultural negotiation of their particular resources can indeed have implications that go beyond the national frontiers.

In either perspective, subsidy policies clearly have a negative impact. On the one hand, the lower international prices resulting from the application of such policies represent a disincentive to production, and to the adoption of environment-friendly technologies in countries that enjoy comparative advantages for agro-production. On the other hand, direct subsidies lead to an over-intensification of that which would be efficient under conditions of open competition with more efficient producers, thus accelerating soil deterioration – a situation in which producers, not being held to pay for the contamination of the (common) resources they use, have no incentive for the adoption of non-contaminating technologies in order to preserve these resources.

In such a context, the expansion of agricultural production at global level would take place in an inefficient pattern both with regard to its global emissions, and with regard to the impact on its natural resource base. In order to avoid this, it is essential that the increase of production be accompanied by increased efficiency in the use of agricultural resource base – and this will occur only if the countries with comparative advantages for agro-production have a greater access to the markets. The actual subsidy policies in the European Union work against these possibilities, in that they constitute a disincentive for the investments needed to adopt environment-friendly technologies, and inducing to the contrary an unsustainable intensification of agriculture in the Union.

Seen from the perspective of the international agenda, Argentina should – beyond continuing its fight for the elimination of agricultural subsidies – capitalize in the respective forums on the virtuous character of the growth of agriculture in the Pampas region during the current decade, and emphasize that the kind of contamination that occurs (herbicides; fertilizer) does so on a technological track in which “soft”, non contaminating technologies are prevalent.