SERFIN

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Today, we heard three very different papers on the Mexican Grain/Livestock Subsector, but they complement each other very well. Avalos' paper gave us a general overview of the grain and animal feed subsectors in Mexico. It is worth noting how heterogeneous grain production is in Mexico, as shown by the extremely wide range of profitability levels. Depending on location, the production system utilized, yields, and other factors, there are farmers with negative rates of return on investment while others experience rates of return as high as 95 percent.

One of the key issues that should be emphasized when the Mexican agricultural sector is analyzed is that each region and each production system responds very differently to market changes, to the North American Free Trade Agreement (NAFTA), and to agricultural and macroeconomic policy changes. This fact underscores the need for studies that follow a micro or village approach such as the one presented by Yunez.

Avalos. I am not as optimistic as Avalos with respect to future grain production in Mexico. She points out that profitability increased from 1994 to 1996 for most grains under the alternative production systems. Profitability did increase, indeed, but there were two short-term factors that were present in 1996 that are no longer in place: high international prices and an undervalued exchange rate. Grain prices are considerably lower now and the exchange rate is no longer undervalued. In 1996, we estimated that the exchange rate was undervalued by 9.1 percent; whereas, by 1998, we estimated an overvaluation of 5.7 percent. Thus, profitability in grain production during 1997 and 1998 has decreased compared to that in 1996.

Farmers have approached the government to seek additional support and the government, in some cases, has responded with marketing payment programs. Agricultural policy is another area about which I am not very optimistic. With the exception of PROCAMPO payments, there are no long-term policies to help producers face unfavorable market conditions. When international prices are low, farmers have to do intensive lobbying with the government to get assistance; they hold demonstrations and, sometimes, even block highways and major urban thoroughfares. This is a very time consuming and costly process for farmers and society as a whole, but it is played out again and again. Farmers complain about the uncertainty they face every year. This will probably discourage grain production in the future.

Avalos states there are some agricultural policies that, according to the Mexican Ministry of Agriculture, have increased corn production, such as the mechanization program and the "kilo per kilo" program. I have no doubt that these are policies that have helped some producers, but they are far from being important policy tools to assure a steady increase in grain production. Also, the increase in corn production in 1996 probably resulted more from higher price expectations than from these policies.

The last point I would like to make about Avalos' paper refers to her regression analysis on corn imports with respect to animal feed production. She did not find a strong link between imports of whole maize and domestic feed production. That probably had to do with the year of 1996, a crisis year for the livestock industry and a year when the Mexican government decided to increase by more than 100 percent the duty-free corn import quota under NAFTA. Import tariffs for grains from non-NAFTA countries were also reduced. Since domestic corn production was at a record high that year, the increased imports created several marketing problems and farmers received a lower price for their product. This discretionary policy with regard to corn import quotas is a very sensitive issue and it has created extreme discontent among farmers. Again, discretionary management of import quotas may become a discouraging factor in Mexican grain production.

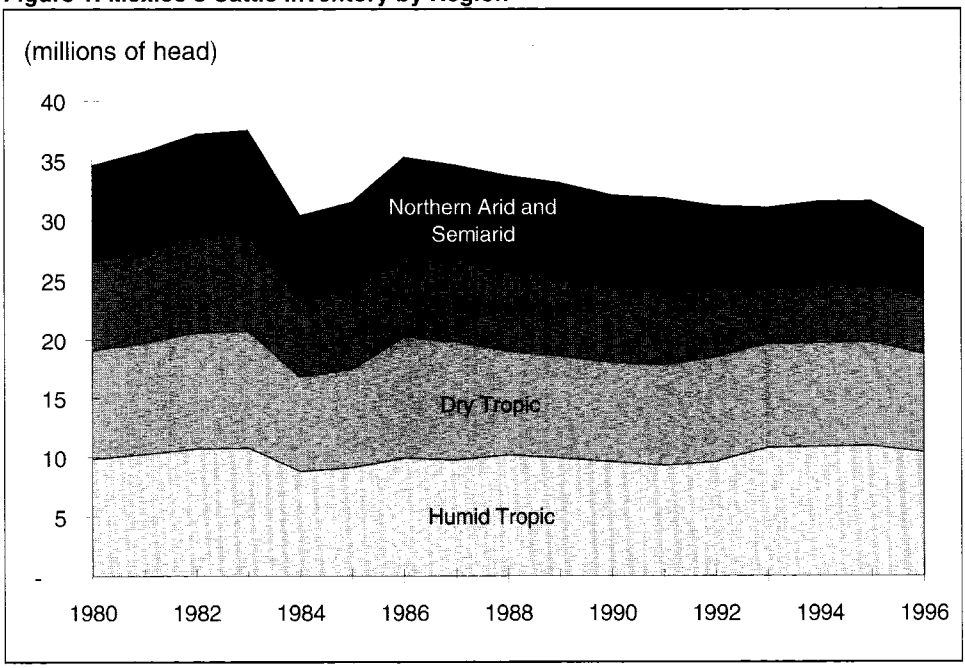
Aceves and Lopez. The Aceves and Lopez paper deals with the transition process that Mexican agriculture has undergone. It makes the important point that a completely new environment exists today for Mexican agriculture: one that is more market-oriented, with less government participation and globally integrated. It is worth noting, however, that all these changes were carried out at a very fast pace, leaving many farmers behind.

Perhaps the Mexican government has not been very successful at implementing transition strategies for farmers that help them adapt to a more open economy. The heterogeneous agricultural sector calls for differentiated policies. However, agricultural policies seem to be the same for all producers. For example, under PROCAMPO all producers receive the same payment per hectare regardless of what they produce, their location, yields, etc. They may even switch from grains to the production of vegetables or livestock and still receive this payment. To me, a direct payment to a tomato grower who is also an exporter, for example, doesn't make much sense. In contrast, even in the United States where agriculture could be regarded as more homogeneous than in Mexico, the Federal Agriculture Improvement and Reform Act of 1996 (FAIR) considers different direct payments for farmers depending on the product on which they have acreage base.

Aceves and Lopez also discuss livestock production in Mexico and the changes this subsector has recently faced. Indeed, during the past three years, the Mexican livestock sector experienced one of the worst crisis in decades. The sharp rise in international grain prices, which almost doubled production costs, was coupled with a dramatic fall in the demand for meat as a result of the 1995 Mexican economic crisis and a severe three-year drought. Although these three factors

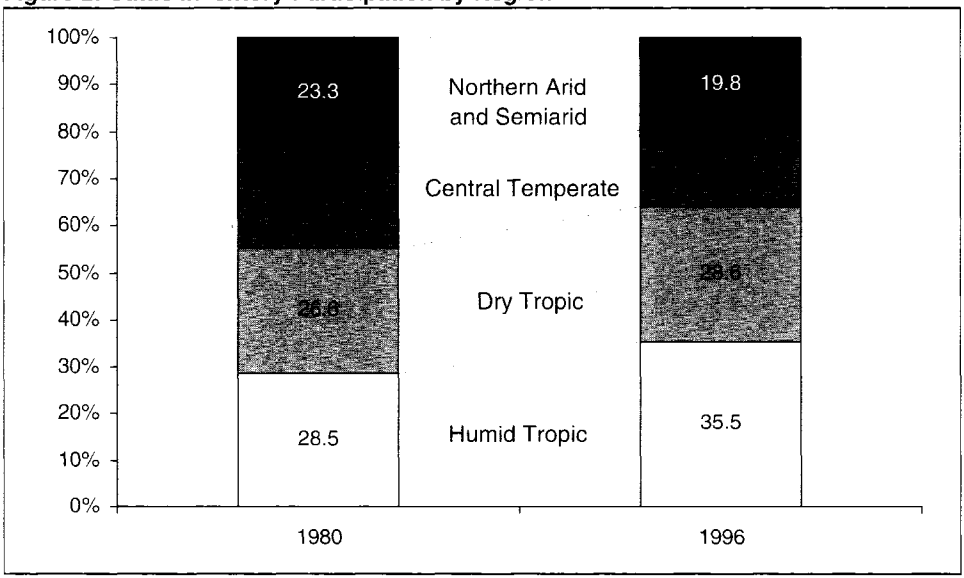
contributed to generalized losses in the sector, their impact varied depending on the region and the production system involved. Aceves and Lopez point out that cattle are produced in all 32 Mexican States, but there are 3 regions that share some specific characteristics—the arid and semiarid north, the Central Temperate Region, and both the dry and humid tropical areas of the country (Figures 1 and 2). When analyzing future livestock production in Mexico, it is essential to consider the sector's heterogeneity.

Figure 1: Mexico's Cattle Inventory by Region



Source: Secretaría de Agricultura, Ganadería y Desarrollo Rural

Figure 2: Cattle Inventory Participation by Region



Source: Secretaría de Agricultura, Ganadería y Desarrollo Rural

Cow-calf operations predominate in the Northern Arid and Semiarid Region. The main product is young cattle for export to the United States. Feedlot operations similar to those in the United States, using a high percentage of grains in the feed rations, are also found in this region. This production system is the most vulnerable to changes in the grain sector. In past years, as import tariffs for beef were eliminated and, recently, as the demand for beef fell and production costs skyrocketed, a great number of feedlots went out of business. It is clear that a concentration of production has occurred in the northern region.

The Central Temperate Region is the most important dairy production region in the country, but it has the smallest cattle inventory (16.2 percent of the total). Cow-calf operations market their product in three different markets--the extensive cattle production operations in the tropical regions; the export market (depending on price and quality considerations); and local feedlot operations that serve both the local and Mexico City markets. Feedlot operations are not as efficient as those in the north, and are also quite vulnerable to grain market changes.

Production systems in the Tropics Region are quite heterogeneous, although beef and dual-purpose (dairy-beef) operations predominate. Both regions comprise 64 percent of the total cattle inventory and supply most of the beef for the domestic market in Mexico City. Some cow-calf operations export calves to the United States. Production costs are quite low since most cattle are raised exclusively on grass. In the

Dry Tropic Region, crop residues and grains are used to sustain production in the dry season. Production systems in these regions are the least vulnerable to grain market changes.

Cattle numbers increased annually throughout the 1970s, but during the 1980s and 1990s they have steadily fallen. Three main factors lie behind this downward trend which include—a fall in per capita income, beef trade liberalization, and (in contrast to the arguments raised by Aceves and Lopez) reduced access to grains which is explained by insufficient domestic grain production, and the existence of import tariffs and permits.

The cattle inventory in 1996 (29.3 million head) was 15 percent lower than that in 1980. However, it is worth noting that each region shows a different pattern. Thus, while cattle inventory fell by 36.5 percent in the Central Temperate Region from 1980 to 1996, it grew by 5.5 percent in the Humid Tropic Region. Livestock production operations in the Tropics have been more successful at offsetting adverse effects (both macroeconomic and industry changes) while cow-calf and feedlot operations in the northern and central regions have been very adversely affected by them. Thus, while in 1980 the Northern Arid and Semiarid Region comprised 23.3 percent of the total cattle inventory, by 1986 its share dropped to 19.8 percent. The Central Temperate Region's share also decreased from 21.6 percent to 16.2 percent. In contrast, the Humid Tropic's participation in total cattle inventory jumped from 28.5 percent to 35.5 percent.

What is the future for livestock production in Mexico? Again, just as in the case of the grain subsector, it will depend on the system of production and on Mexican agricultural policy, which is not yet well defined. As for 1998, we made some profitability estimates for the three livestock regions. In the case of cow-calf operations, the return on investment in the Arid and Semiarid Region was 68.8 percent; 42 percent in the Temperate Region; and 90.4 percent in the Tropics Region. With respect to feedlot operations, the return on investment in the Arid Region was 26.4 percent; 19.1 percent in the Temperate Region and 36 percent in the Tropics Region (financial costs are not included). These figures suggest, in line with Aceves' and Lopez' findings, that livestock production is more profitable in the Tropics Region than in the other two regions. If the concentration process continues as well as a greater integration between the United States and Mexican livestock sectors, it is likely that livestock production will continue its downward trend in the Northern and Temperate Regions whereas it could experience a boom in the tropics region.

It is worth noting that, in the Tropics Region, livestock operations are still far from reaching a technological frontier. Thus, with investment and proper technology adoption, livestock production in this region may become extremely competitive.

Yunez. I found Yunez' paper extremely interesting and helpful for policy-makers. Because Mexican agriculture is very heterogeneous, this is the kind of research that I believe would need to be replicated many times. Yunez points out that one of the

reasons why research like this is rarely conducted in Mexico is because of a lack of information. The Mexican Ministry of Agriculture should consider investing more resources in the agricultural information system, so more quality research could be carried out and better policy decisions could be made.

I was surprised to read that a drop in the price of corn could have such positive impacts in rural villages. One would believe the opposite. This again shows how complex Mexican agriculture is. Also, the linkages between the village and the urban economy were worth noting—a linkage we often forget when analyzing the Mexican agricultural economy.

Yunez' findings with respect to his third experiment were extremely interesting and I believe they hold important policy implications. He found that by "allocating fiscal savings from corn price liberalization to public investments designed to raise productivity.," substantial increases in rural real income would be generated. Income gains would be greater than under the PROCAMPO policy. This finding questions the relevance of PROCAMPO, a policy that, as mentioned earlier, may not be the best suited for the heterogeneous Mexican agricultural sector. The design of differentiated policies to help farmers in the transition towards a more market-oriented and open economy is probably the main challenge facing Mexican policy-makers.

I believe agricultural integration among NAFTA members is a fact. There will be winners and losers. In Mexico, there is a great potential for becoming winners in several regions and systems of production. However, that may not be the case if proper agricultural policies are not in place.

Section 3

Transportation

The objective of this section is to identify constraints and conflicts as a basis for achieving harmonized transportation capability. Transportation is the vehicle of increased trade.