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Proceedings of the Fifth Agricultural and
Food Policy Systems Information
Workshop



**Policy Harmonization and
Adjustment in the North American
Agricultural and Food Industry**



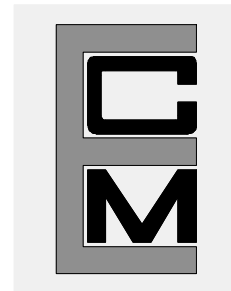
Edited by
R.M.A. Loyns
Ronald D. Knutson
Karl Meilke
Antonio Yunez-Naude

Proceedings of the Fifth Agricultural and Food Policy
Systems Information Workshop

**Policy Harmonization and
Adjustment in the North American
Agricultural and Food Industry**



UNIVERSITY
of GUELPH



Edited by

R.M.A. Loyns
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February 2000

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EXECUTIVE SUMMARY

POLICY HARMONIZATION AND ADJUSTMENT IN THE NORTH AMERICAN AGRICULTURAL AND FOOD INDUSTRY

This is the fifth publication emanating from a series of annual workshops designed to enhance communication among the three partners in the NAFTA Agreement. The workshops bring together business and interest group representatives, government officials and academics from Mexico, the United States and Canada to develop economic information related to agricultural and food markets. The primary purpose of the workshops and the publication is to contribute to lessening of trade tensions among the three countries, and thereby head off wasteful trade disputes.

Previous workshops have focused on grain and dairy disputes, and analyzed the meaning and conditions for “policy harmonization”. Each of these workshops was characterized by a macro and public policy focus because the public domain is the obvious arena in which trade tensions are played out. But the individual components of the private sector and, therefore, *private sector adjustment* are very much affected by trade agreements and policy change. In many respects, the private sector is the vehicle of change. This perspective of the agricultural/food industry and trade policy was the primary focus of the fifth workshop. Since Mexico was the site for this workshop, the program emphasized adjustment within the agricultural and food industry in Mexico.

The book contains nine original papers by selected academic and government economists working in Mexico, the United States and Canada, written specifically for the workshop. Discussant comments from private sector, interest group representatives, and senior government officials are included. There are six thematic sections to the book:

- Exchange Rates and Trade
- Foreign Investment Arrangements

- Economic Adjustment in Small Farms
- Harmonizing Transportation Systems
- Transnational Interest Group Coordination and Dialogue
- A Western Hemisphere Free Trade Agreement

Exchange Rates and Trade. Macroeconomic policies are recognized as forces of private sector adjustment, but exchange rate effects are often ignored. This section provides two papers by David Orden and Richard Barichello that trace empirically exchange rate effects in different situations, and follows with comments by Daniel Garcés of the Bank of Mexico. Orden, based on historical analysis from the United States, finds that exchanges rate movements “drive a wedge” between domestic and foreign prices, and influence price relatives between traded and non-traded goods. He also concludes that macroeconomic conditions are often decisive in determination of agricultural policies, competitiveness, and tension in trade relations. Barichello investigated internal and trade flow effects of the sudden and large devaluation of Indonesian currency in 1998. This paper, while not directly part of NAFTA considerations, provides an example and empirical measures of adjustments under rapidly devalued currency conditions.

Foreign Investment Arrangements. Handy and Bamford provide a detailed descriptive analysis of the nature and growth of foreign direct investment in the last decade, and cross reference trade flows in processed foods to affiliated businesses in NAFTA countries. They also review literature on why FDI is selected as a marketing strategy, then discuss the relationships among FDI, competitiveness and trade. Sparling and Cook extend this analysis from the starting point that “trade and investment figures tell only part of the story... [they] overlook the flow of knowledge and profits between firms and nations. These flows... are facilitated by close corporate interaction, through mergers and acquisitions but also through cooperative relationships, strategic alliances, and joint ventures”. Their paper provides detail on these relationships, and provides several case study examples. This section, supported by discussion from Ken Shwedel (Rabobank International), David Heilig (a business development consultant) and Sergio Cházaro (a business school Dean), provides theoretical treatment of alliances, descriptive analysis of their significance, and practical considerations in their implementation.

Small Farm Adjustment. The Mexican ejido sector is a large and important component of natural resource control and social welfare. It has been subjected to significant policy reform since 1990. Davis, de Janvry, Sadoulet, and Diehl analyze the impact of reforms on incomes, poverty levels, and income inequality among ejidatario households and examine whether reforms have stimulated entrepreneurship. Their analysis show mixed results. Mendoza Zazueta, a senior official in SAGAR, provides useful insights to extend the results beyond the ejido sector, and reinforces the need for agricultural and rural development policy to go beyond “crops and livestock”.

Rail and Truck Transportation. Rail and truck are the heartbeat of trade among the NAFTA partners, trade that has been growing rapidly. Considerable rationalization of railway linkages has occurred within Canada and the United States, and privatization has improved service quality and availability on Mexican rails. Prentice, Derkson and Maltz discuss these developments and indicate where rail transportation faces challenges and potential in further trade growth. Harrison points out that around 70 percent of trade within NAFTA moves by truck but there is little harmonization in standards. Progress towards harmonization of trucking standards creates trade tension among the partners. Harrison traces developments throughout the 1990s in trucking and identifies key issues yet to be resolved.

Transnational Cooperation. This session was designed to explore the potential of dialogue, information dissemination, and transnational interest group organization as a means to diffusing trade tension and creating more harmonious trading conditions. Senior government officials, and industry and interest group representatives from each country relate experiences with these approaches. Results vary widely, from reasonable progress on a payments assure program in fruits and vegetables to a complete failure in the case of the R-CALF claims on Canadian cattle exports. Dolynchuk (Cargill Canada) provides a favourable report on a world wide information program used within that company. Harris points out in his overview comments that, despite enormous strides made in promoting freer trade, there is a long way to go in achieving reasonable, broadly based trade harmony among the NAFTA partners. An agreement is only the first step in improved trading relations. Our workshops, and indeed the market, confirm this reality.

A Western Hemisphere Free Trade Agreement. Does considerable success in a trilateral agreement translate into a wider agreement within the Americas? If so, what might be the form, and who would gain; who might lose? These are considerations made by Mary Burfisher and Hartley Furtan in the final section of the book. Discussion comments are provided by business and government analysts from Canada, Mexico and Chile. Both Burfisher and Furtan build their analysis around institutional economics and considerations of transaction costs theory. Alternatives for agreements are considered and the papers contain discussion of existing agreements within the Americas. The section provides a useful review of the status of trade conditions within the Americas and implications for extending NAFTA to other nations.

The book also contains a statement of purpose for the workshops, a list of participants and their coordinates, and a short biographic description of authors and discussants.

More information:

Farm Foundation website (www.farmfoundation.org)

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- *Antonio Yunez-Naude*, El Colegio de México
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ORDERING THE PUBLICATION

This publication is available at the nominal cost of \$15.00 per copy (including shipping and handling). Multiple copy prices are negotiable; first copy for educational institutions and libraries is available without charge. Please contact the following to order.

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Many individuals and organizations contribute to our workshops and the assembling and distribution of this publication. Authors of papers and discussants provide high-quality, original work under tight time frames and without much financial reward. Financial contributions which allow us to operate come from a mix of private, agency and government sources, and many organizations make indirect contributions through covering participant time and expenses. The *Coordinating Committee* appreciates these contributions and takes this opportunity to acknowledge and extend sincere thanks for all of these contributions.

The *editors* wish to acknowledge several individuals who ensured that papers and a manual were available for the workshop, and that this proceedings publication was completed in a timely and readable fashion. Rene Ochoa and David Ernstes in the Ag and Food Policy Center at Texas A&M, Sue Foget and Charlene Saunders in AAFC, and Lenore Loyns in Winnipeg facilitate the paper flow, and Brenda Pitt in AAFC keeps us connected in conference calls. We couldn't complete this task without your involvement.

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BACKGROUND AND PURPOSE OF THE WORKSHOP

R.M.A. Loyns, Ronald D. Knutson, Karl Meilke and Antonio Yunez-Naude

With the signing of the North American Free Trade Agreement in 1993, the stage was set for increased trade north and south among Canada, the United States and Mexico. Trade flows have increased steadily over the six years since the treaty was signed. Trade data and several economic studies indicate where and how product and service flows have increased. Two of our earlier workshops have presented data and analysis of some of the effects of increased trade and some of the conditions required to reduce trade and policy tensions among the NAFTA partners.

The Workshop series originated in 1995 with the idea that economists could do something about issues of agricultural and food policy within the three signatories to the NAFTA to affect trading relationships and achieve harmony in policy development. Despite implementation of a trilateral trade agreement among these countries (NAFTA) and significant progress achieved on global agricultural trade arrangements in the Uruguay Round, trading relations are far from harmonious. Our basic objective in these Workshops is to generate current, timely and relevant *economic information* as a means to improving the relationship among our three countries, and thereby reduce the incidence and costs of policy stress and trade disputes. An important secondary objective is to *establish links* with colleagues and industry representatives in each of the three countries.

Over the almost six years that this Workshop program has run, we have established a strong network among Canadian and U.S. academic economists, government officials, and business representatives. We are in our fourth year of significant contact with our colleagues from Mexico, and those links are also forming. The workshop reported in this publication was held in Mexico in order to extend the scope of knowledge and contacts with Mexicans by Canadian and U.S. food industry participants. With the advantage of location and increased participation by our

Mexican colleagues this workshop was used *to focus on the role and position of Mexico in the NAFTA.*

From our previous Workshops we have learned a number of things about policy stress, trade disputes, and what it takes to move toward more harmonious trading relations. A trade agreement is an important first step, but it is only one step. Workshops Three and Four dealt with many of the government policy and program factors that need to be modified to accommodate business, government and public demands. That is the macroeconomic policy framework.

But there is another important area that must also adjust in response to the policy and trading environment. That is the *micro-economy of decision makers, investors, entrepreneurs and others* who fund, bear the risks, and produce, process and distribute the products which will be traded....*the private sector.* Conventional wisdom suggests that, within the private sector, as competitive conditions change in response to changed rules and terms of trade, there will be “winners” and there will be “losers”. But we have learned that the economic system which has evolved within the three countries as trade has increased creates entirely new forces and pressures, as well as new opportunities. Investment, finance, exchange rates, business organization, trading rules, and many other conventions take on new challenges within the private sector. In Mexico, the structural change and altered market signals imposed on small farmers and small entrepreneurs elsewhere in the food chain create new stresses and challenges. These conditions may be less apparent in the United States and Canada, but they are very real there as well. These are components of policy stress and potential trade disputes, which play out at the micro level of the economy, that deserve investigation. This is the conceptual base which guided analysis and discussion in Workshop Five.

It is common to refer to the process of restructuring policies and programs *by governments* in response to trade agreements as “*harmonization*”. Our third Workshop actually focused on that term and its meaning in an international context. This Workshop dealt with private sector response to a trade agreement. The process of firms responding to altered market signals is much different than governments which send the signals. As a result, the term we will use for response in the case of the private sector is *adjustment*. Presumably this term is understood, even though the dimensions of “adjustment” vary widely.

This workshop began with a discussion of *short- and long-run impacts of exchange rates* on trade volume, flows, trade relations, government policy and private sector adjustments. The relevance and impact of exchange rates on trading relations is often overlooked. The second session dealt with the issue of *alternative foreign-linked business investment arrangements* in background papers followed by specific examples from the livestock and fruit and vegetable sectors. The next session dealt directly with adjustment in other areas of the Mexican economy, including *reform of the small farm sector and developments in rail and truck transportation*. Then various forms of dispute resolution frameworks based upon the microenvironment, as opposed to formal legalistic or bureaucratic structures, were

reviewed. The purpose of this session was to analyze the role of *information* as a dispute reducing mechanism, and consider the feasibility of *transnational organizational structures*. The final session emphasized the prospects and implications of a Free Trade Area of the Americas (FTAA) for agriculture.

The Coordinating Committee believes that generation and distribution of the workshop proceedings is the primary contribution we can make to the process of achieving greater policy and trade harmony among signatories to the NAFTA. As a consequence we make a special effort to publish the proceedings as quickly as feasible. We also attempt to reach decision makers at all levels of the policy process, universities and libraries in our three countries. We invite readers to provide feed back on this process and the publication.

As we close the book on the 1999 workshop, planning for the next one has progressed to a program, presenters and location. The '00 workshop will consider what we have learned from a decade of trade agreements in North America under the title "Trade Liberalization in North America: A Report Card on Agriculture". It will be held in mid February in San Diego with participation by presenters, discussants and industry representatives from Mexico, the United States and Canada.

Section 1

Macroeconomic Forces Affecting Trade and Trade Relations

The objective of this section is to explore the impact of exchange rate changes on trade.

EXCHANGE RATE EFFECTS ON AGRICULTURAL TRADE AND TRADE RELATIONS

*David Orden*¹

INTRODUCTION

The United States abandoned the Bretton Woods agreement on relative fixity of exchange rates in 1971 to engineer a modest devaluation of the dollar. That was followed shortly thereafter by floating the dollar against other major currencies. These actions undertaken by the United States launched a new era of international capital mobility and significantly altered the rules of the game for macroeconomic interdependence among nations. Looking back, it is doubtful that the economic turmoil which followed throughout the 1970s and 1980s was anticipated. That turmoil included, for the United States, movements in the real exchange rate in excess of 40 percent sustained over periods of several years or longer. Forty percent is a significant realignment in relative prices and several years is long enough to force economic adjustments. While real exchange rate movements of this magnitude or duration could be found previously for some developing countries (often under conditions of unsustainable macroeconomic mismanagement), it was a phenomena the world's major developed economies had not experienced in the post-World War Two era.

Within agriculture, the “new macroeconomics” of the world economy had substantial implications. Nominal agricultural prices skyrocketed along with other primary commodity prices early in the 1970s, with inflationary monetary policies and dollar flexibility at least partly responsible. International capital flows expanded after two decades of slow growth – the U.S. trade deficit turned increasingly negative but agricultural exports, in particular exports through commercial channels not foreign aid, rose strongly through the 1970s.

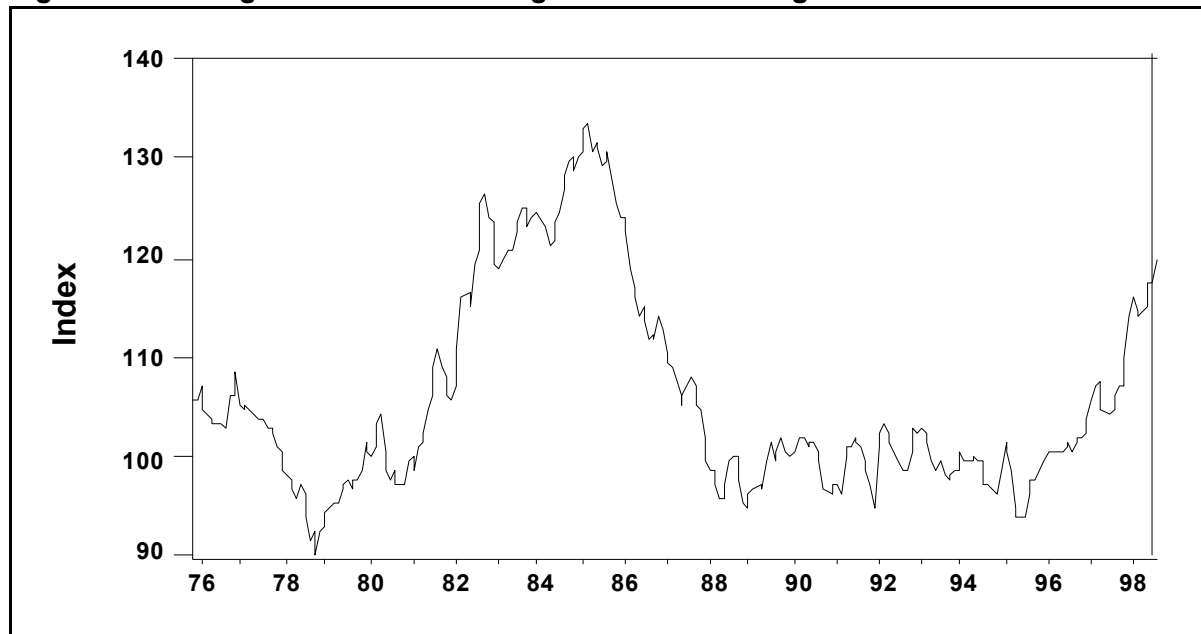
¹ The author wishes to thank Carolyn Whitton, Tim Baxter, and Andrew Kerns for providing data series, and Phillip Paarlberg and Walter Falcon for helpful comments on an earlier draft of the paper.

By the late 1970s, agricultural exports were up but prices were down and farmers were less content with the situation than export processors or USDA officials. Things got worse when the dollar began a sustained appreciation beginning in 1980. Exports fell by nearly one-third in value, and with high interest rates, land prices could not be sustained. A farm financial crisis ensued – sometimes described as the most severe since the Great Depression – and supply control interventions and farm program fiscal costs were driven to record levels. It was a gut wrenching time for farmers and policy makers alike.

How was agriculture extricated from this morass? In a period of turbulence the view came to be expressed that macroeconomic policy effects could swamp those of sectoral policy. Agricultural stability was only restored when this view prevailed in Washington DC, and when the dollar depreciated (essentially to its pre-1980 level) after 1985 then remained more stable. Farm exports began to increase again, farm income strengthened, and the portion of that income coming from government transfers declined. The attention of the farm business community and policy establishment turned to other concerns, among them the GATT negotiations and regional integration under NAFTA.

A decade later in the late 1990s, the international economy is feeling some tremors reminiscent of the shaky ground of past experience. As shown in Figure 1, from 1995 to late 1998, the U.S. dollar experienced its largest appreciation since the first half of the 1980s. The Asian financial crisis, and recent devaluation and floating of the Brazilian currency, have given pause to stakeholders at home and abroad who question whether the remarkable expansion of the U.S. economy during the 1990s can be sustained – will the United States continue to be an engine of world growth or will its economy be stalled by stagnation elsewhere? If past events are a useful guide, agriculture has a significant stake in the outcome.

This paper revisits the question of exchange rate impacts on agriculture. It begins with three thrusts: reviewing the relevant conceptual arguments, summarizing the evidence agricultural economists have marshaled from the 1970s and 1980s, and presenting several preliminary updated empirical measures of exchange rate influences. This leads to the question of macroeconomic effects on farm policy, then to brief remarks about whether recent exchange rate movements are harbingers of the kind of turmoil witnessed a decade ago and, finally to consideration of detrimental effects that a sustained appreciation of the dollar could have on farm policies worldwide, and thus on agricultural trade relations.

Figure 1: U.S. Agricultural Trade Weighted Real Exchange Rate

Source: ERS/USDA.

EXCHANGE RATES AND TRADE

The classic modern article on exchange rate impacts on agriculture in the United States was published by G. Edward Schuh (1974). Schuh made the fundamental argument that the exchange rate was an omitted variable in economic analysis of the U.S. farm sector, and he drew sweeping implications. Throughout the 1950s, the “farm problem” had been described as one of technical change that induced a shift in production toward land-augmenting intermediate and capital inputs, lowered the real prices at which agricultural products could be procured, and put severe adjustment pressure on the farm sector, particularly farm labor. Agricultural policy interventions of the time (high support prices and land retirements) were perceived to overvalue agricultural resources relative to free markets, leading to welfare costs and the paradox of a country with an advanced agriculture being dependent on export subsidization instead of its competitiveness in world markets.

Schuh argued for a new interpretation of these developments: the U.S. dollar had become overvalued in the early 1950s and overvaluation had depressed agricultural prices and exports. This had led to a socially inefficient *under-valuation* of agricultural resources; it had induced even more technical change, thus aggravating what would have been in any case a serious problem of structural adjustment; and it had resulted in a larger share of the benefits of technical change going to consumers rather than producers. In this interpretation, farm policies had served to offset negative exchange rate impacts on the farm production sector. When those farm policies started to shift in the 1960s toward letting prices fall and compensating farmers with direct cash payments instead of high price supports, prices fell toward

the disequilibrium levels associated with exchange rate overvaluation. Devaluations in the 1970s restored the dollar to a more nearly equilibrium value, and as a consequence agriculture was experiencing a macroeconomic-led boom. As Schuh put it: "If this interpretation is correct, an important share of the rise in agricultural prices in mid-1973 is a result of monetary phenomena which induced an export boom in an economy that was already responding to expansive monetary policies, and in the case of agriculture, increased the foreign demand for U.S. output at the same time that this demand was already rising from temporary bad weather conditions in other countries and a temporary decline in the Peruvian fishmeal industry" (Schuh, 1974, p. 12).

Schuh's initial exposition of the effects of an exchange rate overvaluation on markets was based on a simple partial equilibrium framework. For a small exporting country facing fixed world prices, an overvalued exchange rate lowers the world price in domestic currency proportionately; the resulting increases in domestic demand and reductions of domestic supply depend on own-price elasticities; and export quantity and value fall. In the large-country case, foreign and domestic prices diverge again by the extent of the overvaluation, with elasticities of supply and demand of both trading partners affecting the extent to which the domestic price falls or the foreign price rises. In this framework, and focusing on the long run, Schuh made rather modest claims for the sustained price effects from devaluation. In a reply to a comment on his article he argued that if a devaluation of 13 percent constituted an equilibrium, the relative price of agricultural products might rise around 10 percent "after adjustments have worked themselves out" (Schuh, 1975, p. 699).

We now utilize a much richer microeconomic framework to assess exchange rates and market equilibrium. Drawing on trade theory, the real exchange rate is viewed as the relative price of traded to nontraded goods. Real exchange rate movements accommodate changes in technology, income levels, or borrowing from abroad that require either higher or lower relative price of nontraded goods (appreciation or depreciation, respectively) to clear those markets. This is different from affecting a country's terms of trade: real exchange rate movements affect imports and exports in a symmetric way, and many individual prices change (and may need to be accounted for) when the real exchange rate is considered.

The linkage of real exchange rates to international capital flows (with these flows then driving goods and services trade more than the other way around) is also well understood, as is the interdependence this creates between countries' macroeconomic policies. There remain disagreements about the effectiveness of monetary and fiscal policies, and about how to manage domestic and international constraints, but fewer and fewer countries seem tempted to flaunt the evident linkages. Europe is now going so far as to harmonize monetary and fiscal policies enough to sustain one currency – a rather large step back toward a Bretton Woods type of arrangement, and one that probably would have been unthinkable without the relative stability in exchange markets since about 1987.

EMPIRICAL EVIDENCE ON EXCHANGE RATE IMPACTS

The earliest attempts to evaluate Schuh's argument empirically were conducted in a partial equilibrium spatial modeling framework and focused on assessing the elasticities of price transmission and of supply and demand that affected trade. The partial equilibrium assessments seemed able to attribute only a small part of the substantial relative price movements in the early 1970s to the exchange rate – results consistent with Schuh's long-run claim but not supportive of the exchange rate being as significant an omitted variable as he described, at least when it came to the inflationary farm sector boom that was occurring. Such partial equilibrium spatial modeling subsequently gave way to computable general equilibrium models – models that offered a more complete linkage of real exchange rate movements to underlying causes, accounted for market equilibrium for traded and nontraded goods, and provided somewhat more support for real exchange rate effects on agriculture.

On another level, the attempt to understand exchange rate impacts on agriculture became redirected, like macroeconomics itself, by the turbulence in the world economy. Exchange rates did not settle down to an equilibrium devaluation around 13 percent during the 1970s, and macroeconomic policies seemed to be spinning out of control compared to the relative stability of the preceding period. This brought attention to Schuh's broader claim about the importance of monetary policy for agriculture. Did loose monetary policy cause flexible prices (like those for agricultural products) to overshoot their long-run equilibrium levels, rising relative to more slowly-adjusting (sticky) prices in other sectors? Did this account for the price boom in agriculture that Schuh had identified with the exchange rate? Later, when inflation was being squeezed out of the U.S. economy and the dollar appreciated in the 1980s, did tight monetary policy cause prices to fall?

The argument that monetary policy has nonneutral effects on agricultural prices was hardly a new one. Such effects had been argued forcefully by George Warren during the 1920s. This argument was given renewed impetus by an influential model of Rudiger Dornbusch (1976) in which monetary expansions that lowered domestic interest rates had to yield exchange rate overshooting in order that subsequent appreciation maintained arbitrage equating returns on domestic and foreign assets. Several research efforts provided a basis for assessing these effects in traditional macroeconomic econometric models, among them Hughes and Penson (1985), and Rausser and his colleagues (1986). The latter authors used results from such a model to argue that monetary policy had "taxed" agriculture significantly in the 1980s.

A third approach to empirical modeling adopted the methods of time-series analysis to seek causal relationships and dynamic impacts from monetary indicators to agriculture. Christopher Sims (1980) at the University of Minnesota was pioneering the use of small dynamic models without too many *a priori* restrictions as an alternative to overidentified structures imposed either by traditional Keynesians or by the new neoclassical rational expectations school. Work on empirical modeling

of monetary effects on agriculture by Bessler (1984), Chambers (1984), and myself, among others, adopted this approach.

While it is appealing to think that monetary effects on agricultural prices and trade could be measured easily in small dynamic models were they important, it turned out to be a fairly difficult task. I could detect little effect from the money supply on real U.S. agricultural prices or export values (Orden 1986a,b). Shocks to financial market variables such as a short-term interest rate or the exchange rate had larger impacts. These shocks explained 20 percent of forecast error variance for exports and 10 percent for real agricultural prices one year ahead, and over 50 percent and 25 percent, respectively, for a three-year forecast horizon. An increase in the interest rate or appreciation of the dollar had a depressing effect on agriculture. The dynamic responses to such shocks (which were highly correlated) looked somewhat plausible for a monetary contraction. Sims (1980, 1993) has remained skeptical of this interpretation arguing that interest rate shocks more likely come from real events, but other macroeconomists have adopted the view that monetary policy shocks do show up in small dynamic models through interest rates (Lane, 1998).

Girard Bradshaw and I (1990) pursued modeling exchange rate effects on agriculture in a narrow sense. We compared the out-of-sample forecasting performance of univariate models of monthly U.S. corn, wheat and soybean export sales to forecasts from bivariate models that included the exchange rate. The idea here was to test Schuh's exchange rate hypothesis in a tightly specified model. If the exchange rate mattered, we hypothesized, it would help predict subsequent export sales. We found that our best bivariate forecasting models outperformed our best univariate models in statistically significant ways, but would not have found that result if we had limited our search among models to those specified with a common lag structure, which is a standard procedure in some dynamic time-series modeling.

Paul Fackler and I went in a different direction to develop further evidence on monetary impacts (1989). We specified a nonrecursive structurally identified model of oil prices, supply and demand for aggregate output, money supply and demand, international effects (represented through the exchange rate), and agricultural prices. Short-run responses to the money supply shock looked plausible: money and output rose first, the dollar depreciated, and the price level increased slowly. We concluded that monetary shocks raised real agricultural prices for about one year but our empirical estimates also led us to conclude that monetary policy shocks had not been the dominant source of agricultural price instability – results subsequently paralleled in studies focused on monetary effects on the exchange rate per se (Eichenbaum and Evans, 1995).

More recently Dorfman and Lastrapes (1996) have brought additional developments in time-series methods to bear on measurement of monetary impacts on agriculture. They impose the theory-derived long-run restriction of monetary neutrality to identify policy shocks, and they utilize Bayesian techniques to investigate sensitivity of their results to various aspects of model specification. Their

identifying restriction insures that the price level, sectoral prices and money rise equi-proportionately in the long run, an appealing constraint. They also find plausible short-run monetary policy impacts on interest rates, output and the price level. Again, monetary shocks raise real agricultural prices in the short run, but explain only a small fraction of crop and livestock relative price variability.

ANOTHER LOOK AT EXCHANGE RATE IMPACTS

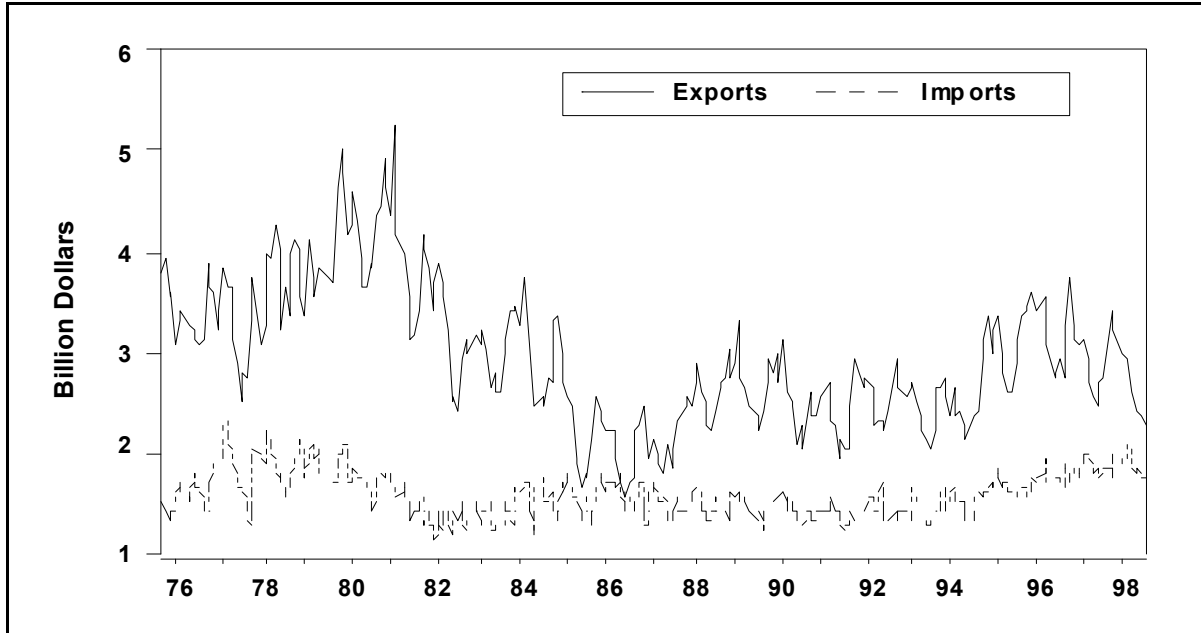
With exchange rate movements of the magnitude that have occurred since 1995, it is not surprising that the question of macroeconomic impacts on agriculture is again receiving attention. The financial meltdown affecting Korea, Thailand, Malaysia, the Philippines and Indonesia has been watched closely as their currencies devalued (by an average of nearly 60 percent in the second half of 1997) and their national incomes have fallen. The impacts on total U.S. agricultural exports have been assessed by Coyle *et al.* as a drop of around 6 percent in 1998, with livestock products suffering the largest decline, and with increased domestic demand and exports to other regions offsetting some of the losses in Asia. Were the crisis to spread to Japan, China and Taiwan, the same study projects a drop in exports on the order 10 percent or more for food grains, feed grains, and nongrain crops, and over 20 percent for livestock products and processed foods. A drop in agricultural exports of \$6-10 billion arising from depressed world demand and appreciation of the dollar would severely pinch U.S. farm income, lead to renewed calls for safety net government interventions, and dampen enthusiasm for open markets and trade agreements.

With the fall in farm prices from their near-record levels reached in 1996, the total value of U.S. agricultural exports to Asia did fall nearly one-third by 1998 (despite extension of over \$1 billion in short-term credit guarantees), and this drop in exports had just the effects suggested. Phil Paarlberg (1999) argues from back-of-the-envelope calculations that the large decline in farm prices itself can not be attributed to a decline in Asian demand. He attributes falling prices to increased world production instead. But world output of wheat and coarse grains was only 10 percent higher over the three years 1996/97-1998/99 than during the three years 1993/94-1995/96. The price movements from corn at \$4.25 and wheat at \$6.50 in mid 1996 to \$1.90 and \$2.40, respectively in late 1998 do not seem fully explained by comparative static calculations using world production or world demand. The observed price movements are better understood in a dynamic sense: they are always speculative and speculation involves uncertainty on the demand and supply sides.

What role do exchange rates play in the dynamics of agricultural trade? Figure 2 traces monthly movements of the real values of U.S. agricultural exports and imports (in dollars) from October 1975 through August 1998 using time series provided by the Economic Research Service, USDA. Co-movements of the exchange rate (Figure 1) and real export value is apparent: turning points in the direction of export value correspond to those of the exchange rate and exports rise with depreciation and fall with appreciation. Price and quantity effects are reinforcing for

export value (e.g., depreciation raises dollar prices and increases export quantities), whereas for import value these effects work against one another (e.g., depreciation raises dollar prices and lowers import quantities). Thus it is not entirely surprising that import value shows less consistent co-movement with the exchange rate: import value rises in the late 1970s and late 1990s even as the dollar depreciates, and falls in the early 1980s despite dollar appreciation.

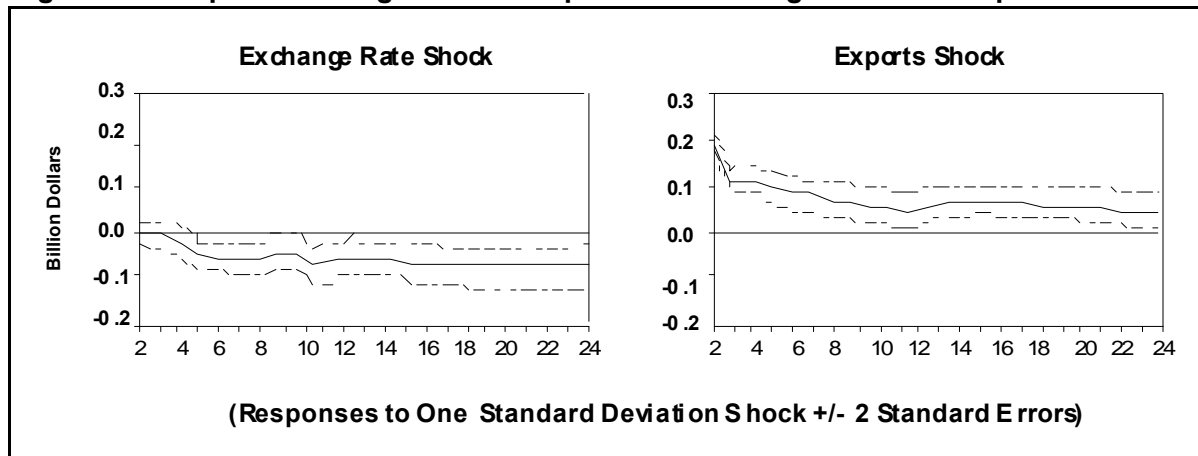
Figure 2: U.S. Real Agricultural Exports and Imports



Source: ERS/USDA.

Preliminary econometric estimates confirm the visual impression from Figure 2. In a VAR model of the exchange rate and export value, the exchange rate shocks can be interpreted to convey macroeconomic effects, while agricultural export shocks reflect principally sectoral developments. The exchange rate appears essentially exogenous (shocks to the exchange rate show little contemporaneous correlation with shocks to export value and these shocks explain over 98 percent of exchange rate forecast error variance through a 24-month-ahead horizon). Exchange rate shocks also have explanatory power for agricultural export value: they explain nearly 10 percent of its forecast error variance at a six-month horizon, nearly 20 percent at a 12-month horizon, and 35 percent at a 24-month horizon.

The dynamic responses of export value to exchange rate and exports shocks are shown in Figure 3. Sectoral shocks show somewhat of a cyclical pattern over two years, while exchange rate impacts appear significant after a lag of four months and then have an increasing cumulative effect – an appreciation of the dollar lowers export value. In a model of agricultural import value, the exchange rate again appears essentially exogenous, but exchange rate shocks explain less than 2 percent of forecast error variance of imports through 24 months ahead, thus they have essentially no explanatory power for this side of aggregate trade.

Figure 3: Responses of Agricultural Exports to Exchange Rate and Export Shocks

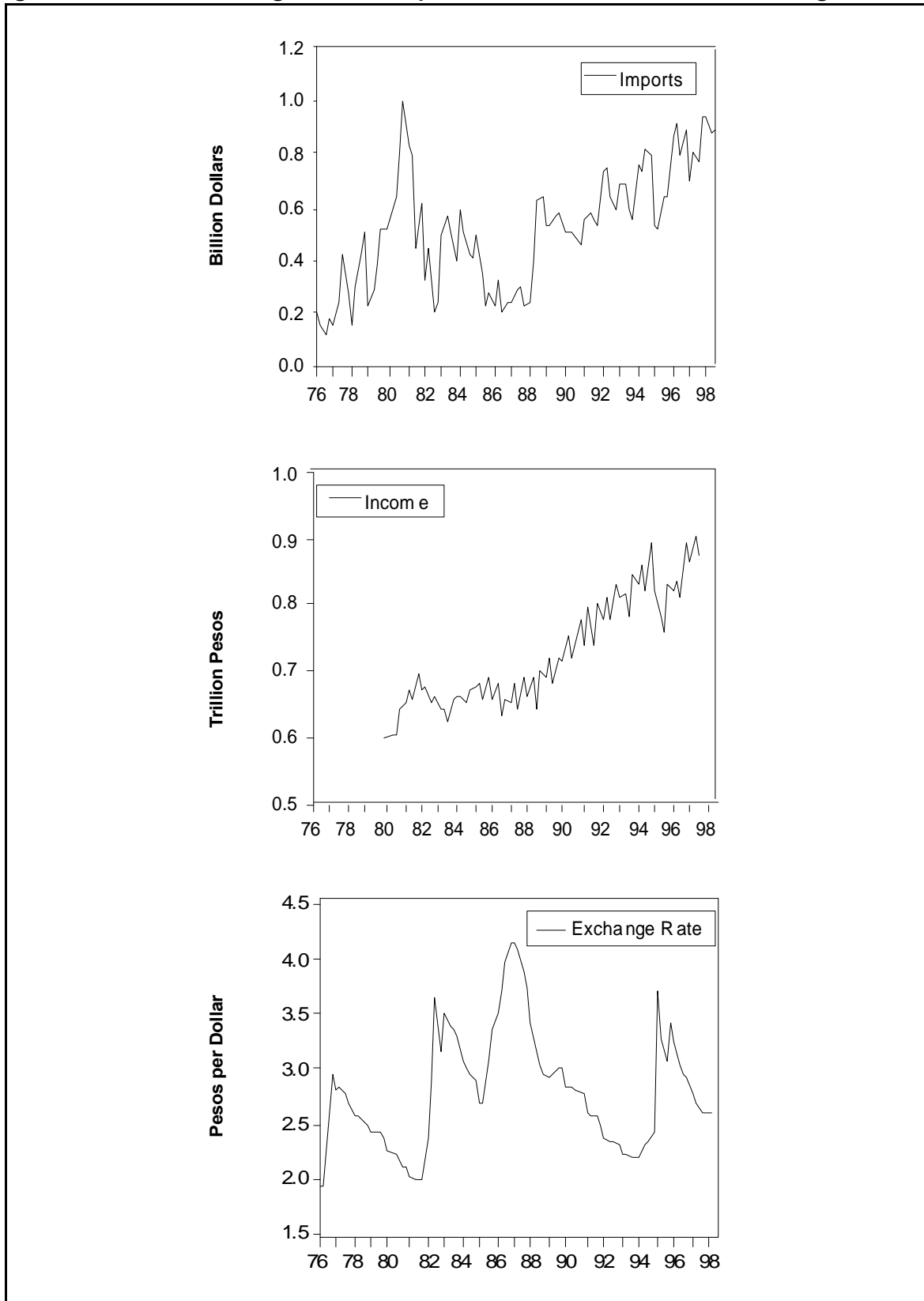
Source: Calculated by Author.

Figures 4-6 further illustrate potential exchange rate impacts on U.S. agricultural exports. Figures 4 and 5 display quarterly series for real agricultural import value (in dollars), real GDP, and the bilateral real exchange rate for two countries – Mexico and Japan. These series form the basis for aggregate import demand equations in which to explore income versus price effects. Bewley and Orden (1994) estimated such an equation for total Australian real imports. In a VAR model, the additional equations for the exchange rate and income allow the interdependencies between these macroeconomic aggregates to be modeled as well, rather than treating them unrealistically as independent and exogenous.

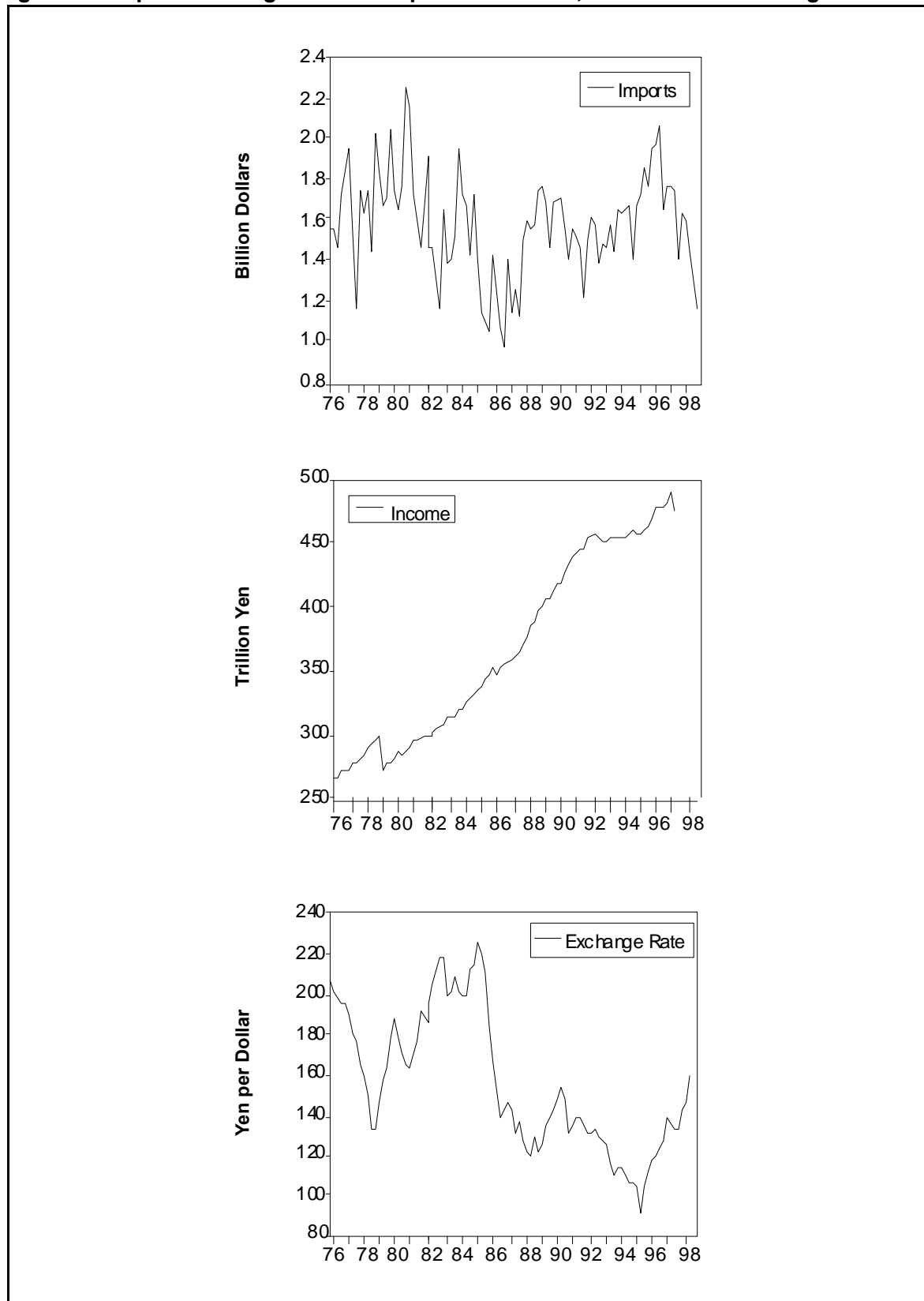
For Mexico, three substantial devaluations (1982, 1985-86 and 1994) are readily apparent followed by cumulative real appreciations over subsequent years. There are trend increases in income and imports, but income and possibly imports appear to drop with each depreciation. For Japan, the bilateral exchange rate follows a pattern more closely aligned with the trade-weighted U.S. dollar, and income but not imports shows a strong upward trend. It is not easy to see a relationship between exchange rate movements and import value.

In the econometric models, exchange rate and imports shocks show substantial contemporaneous negative correlation for Mexico but not Japan (-0.39 compared to -0.14). For Mexico, exchange rate shocks explain about 30 percent of the forecast error variance for agricultural imports at horizons from one to eight quarters. Income shocks explain little of the forecast error variance at short horizons. For Japan, the explanatory power of these shocks is similar but exchange rate shocks have little explanatory power in terms of forecast error variance for about one year, then account for 20-30 percent of the forecast error variance over horizons through two years. Income shocks explain less than 5 percent of the forecast error variances of agricultural imports at horizons through two years.

Figure 4: Mexico: Real Agricultural Imports from U.S., Income and Exchange Rate



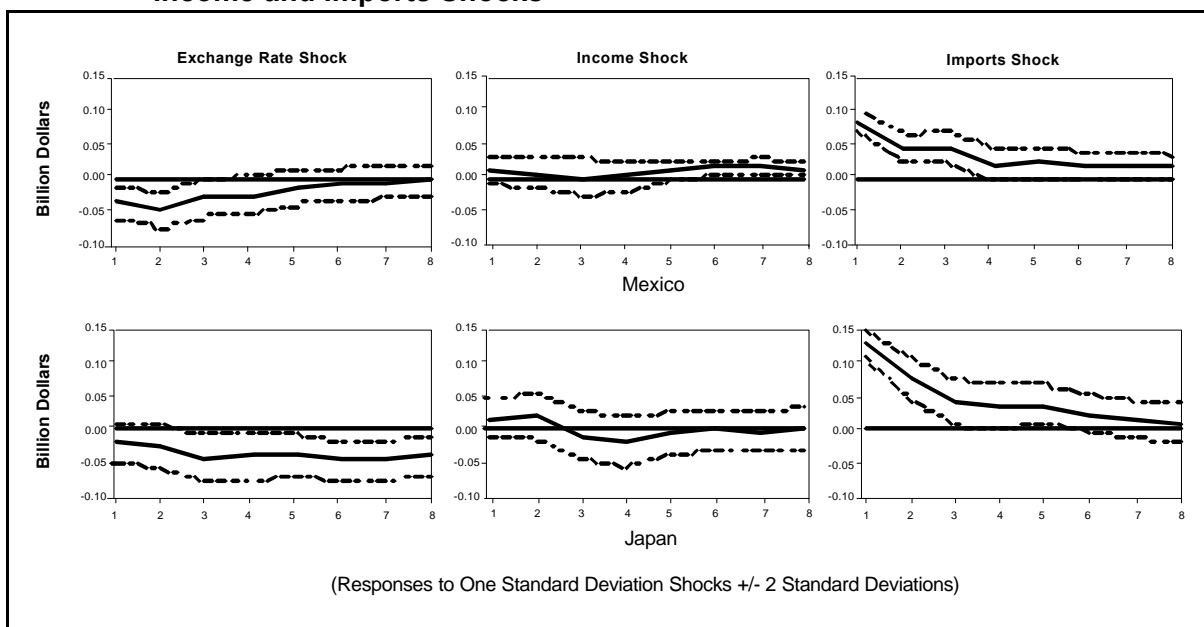
Source: ERS/USDA.

Figure 5: Japan: Real Agricultural Imports from U.S., Income and Exchange Rate

Source: ERS/USDA.

The dynamic responses of agricultural import values in Mexico and Japan to exchange rate, income and imports shocks are shown in Figure 6. These responses show similar patterns, but with stronger exchange rate and income effects for Mexico. Shocks to import value dampen out over four to six quarters in both countries. An exchange rate appreciation lowers import value in the short run in both countries, with the effects appearing larger (about 1/2 of the standard deviation of a shock to the imports series itself) and they are statistically significant for Mexico. The cumulating effect of an income shock also is evident for Mexico: it is smaller in magnitude after six quarters than the short run effect of an exchange rate shock but is (marginally) significant. For Japan, income shock effects are positive but do not appear statistically significant.

Figure 6: Mexico and Japan: Responses of Agricultural Imports to Exchange Rate, Income and Imports Shocks



Source: Calculated by Author.

Taken together, these preliminary results suggest that effects of the exchange rate (and income) on agricultural trade can be measured in time-series models. This is an interesting result since the samples of observations now includes a period of much more stable macroeconomic conditions (in particular of relative exchange rate stability) than prevalent during the 1970s and 1980s. Schuh's classic article again appears to have pointed analysis in a fruitful direction.

EXCHANGE RATES, POLICY AND TRADE RELATIONS

Is there a risk that we understate macroeconomic influences on agriculture and agricultural trade if we concentrate too narrowly on formal empirical measures such as those reported above? I am inclined to answer this question in the affirmative on the basis of a descriptive analytical assessment of U.S. agricultural policy reform in the twentieth century recently completed with co-authors Robert

Paarlberg and Terry Roe. We see farm policy as having followed a turbulent and as-yet incomplete path toward progressively more “cashing out” of market interventions adopted in the 1930s, especially for export crops. There is little movement along alternative strategic reform paths, which we characterize as a slow program “squeeze out” or an abrupt retrenchment, either with compensation to farmers (a “buy out”) or without such compensation (a “cut out”).

One of the basic themes in our analysis of the movement that has occurred along the cash out reform path for agricultural policy in the United States is the importance of macroeconomic circumstances to farm policy innovations. The other important policy determinants we identify include additional economic factors (in particular the conditions of international markets, fiscal constraints, and the slow systemic effects of technology developments and labor-adjustment), as well as political factors (mostly party control in Congress, the power of political lobbies, and the political feedback from previous policy decisions; to a lesser extent shifting ideas and engagement in international negotiations). Some of these policy determinants are closely interrelated with macroeconomic conditions, others more nearly independent. Several observations about the importance of macroeconomic factors arise in this context.

First, early in the twentieth century it took more than hard times in agriculture to bring about a high-order change in policy regime toward extensive market interventions through farm price supports and supply controls. Agricultural exports and prices had collapsed shortly after the First World War, and the 1920s were a hard decade for the farm sector, but it was not until the more general macroeconomic collapse after 1929 that conditions were set which brought a Democratic president and Congress to power, and brought a new direction to farm policy. The interventionist policies of the Agricultural Adjustment Act of 1933 had parallels across the economy. The basic structure of farm support policy through market interventions did not emerge in isolation, and most likely never would have.

Once the new farm programs interventions were in place and powerful interests became organized to defend them, they created substantial market distortions and proved that sectoral policy could dominate macroeconomic forces. In my assessment, Schuh’s classic article overstates the macroeconomic argument, if we take seriously his claim that agricultural resources were undervalued because of exchange rate overvaluation in the 1950s and 1960s, not just less overvalued than they would have been at an equilibrium exchange rate. Prices were still at war-time high levels in the early 1950s and agricultural interests resisted downward pressure on price supports in subsequent years. This was also a period in which strong productivity growth was making farm products less costly. By one estimate, wheat prices were 50 percent above market clearing levels (at the existing exchange rate) and feedgrains 20-30 percent above market clearing levels at the time Dwight Eisenhower left office in 1961 (Cochrane and Ryan, 1976).

Significant policy reform occurred in the 1960s that let prices fall and compensated farmers with direct payments (coupled to production levels). As a

result, CCC stocks were lower at the end of the decade than they had been from the mid 1950s through mid 1960s. But substantial increases in idled acres accompanied these price and payment policies – idled acres were over one-fifth of the acreage planted in 1970, more than double the acreage idled in the 1950s. A devaluation on the order of 10-15 percent by itself would have been unlikely to increase demand enough to bring this acreage into production and sustain market prices above the government supported levels. Exchange rate overvaluation led to an overstatement of the degree to which farm resources were overvalued by domestic policies in the 1950s and 1960s, but probably not to undervaluation of those farm resources.

Third, the macroeconomic instability in the 1970s and 1980s did not prove fruitful for farm policy reform. At first it seemed possible that the export boom and high prices in the early 1970s would allow farm support program participation to be squeezed out, as nominal support levels fell behind inflation. That outcome was thwarted when agricultural interests succeeded in ratcheting up price support guarantees. Then when the exchange rate appreciated in the 1980s, the full meaning of the view that the effects of macroeconomic policy could swamp those of sectoral policy again became evident. In the 1930s, macroeconomic conditions had driven farm policy toward interventions when a broad domestic and world market collapse in the absence of farm support programs came on top of agricultural export markets that had already been depressed for a decade. In the 1980s, the strong appreciation of the U.S. dollar with price support policies in place depressed export sales that had been growing for the past decade. When U.S. market shares fell sharply in this context, a struggle ensued between those who wanted to aid farmers by restoring U.S. competitiveness with lower price supports, and those who wanted a more determined use of supply controls. The first approach followed the cash out reform strategy, while the second would have revived a more severe interventionist approach of the depression era.

Pursuit of the cash out prevailed in the end, and lower support prices in the 1985 farm bill meant fewer market distortions than otherwise, but this cash out step did not come cheaply. Farm groups were politically powerful enough to insist that income support through deficiency payments increase as market prices fell. Stocks that had accumulated under support prices that had been too high for too long forced use of supply controls as well as larger cash payments, even as support prices were lowered. The magnitudes of these interventions masked what reform progress was being made; progress that came from the recognition that export-oriented agriculture can not ignore exchange rate impacts on its competitiveness. Whatever the econometric estimates, this was a substantial exchange rate effect.

It was fortunate for agriculture that the dollar began to depreciate at about the time that price support policy was being revised to accommodate a strong dollar. Devaluation helped restore U.S. exports, it helped bring down excess stocks, and it contributed to allowing the easing of acreage supply controls. At this point there were hopes that the GATT negotiations would promote substantial further reform, but instead those negotiations ended up (eight years later) exempting the main farm policies of Europe and the United States from any disciplines, and changing the form

of agricultural protection around the world more than the levels of this protection were reduced.

The next major step in U.S. farm policy did not come until 1996, under the FAIR Act, when payments to farmers were almost completely decoupled from production decisions and market prices, annual acreage restrictions were abolished, and price support loan rates were capped at relatively low levels. Adoption of the FAIR Act reflected a change in party control of Congress and a market price boom that made decoupled payments lucrative. The price boom reflected anticipated supply and demand factors, but one can hardly argue that changed macroeconomic expectations were primarily responsible for driving prices upward. Thus, again the idea that macroeconomic forces swamp sectoral factors in determining agricultural market and policy outcomes can be overstated.

FUTURE TRADE AND TRADE RELATIONS

The arguments presented suggest that movements of the real exchange rate matter to agriculture: they are not always dominant, but they can be. From about 1987 through 1995 attention focused on the exchange rate diminished in the United States because rates were relatively stable. Strong appreciation through late 1998 has renewed interest in exchange rate effects, but does not necessarily portend continued strengthening of the dollar! Indeed, since late 1998, the dollar has fallen in value against the yen and other currencies. Exchange rates are inevitably difficult – really impossible – to predict into the future. Today there are reasons to think the dollar could depreciate further (for example, as the Euro becomes established as a reserve currency, or in light of continuing large U.S. trade deficits) or could appreciate (if Asian economic woes deepen). In neither case does it appear that the industrial world is on the verge of the kind of chaotic macroeconomic circumstances of the 1970s and 1980s. Formation of the Euro and the stable recent macroeconomic policies of the United States suggest the opposite.

That appreciation of the dollar creates agitation for protection and government support for trade sectors is observed across industries and time periods. One need only recall the pounding of sledge hammers on imported cars in demonstrations outside the U.S. Capitol in the 1980s or the emotional lobbying for farm income support at that time to recognize this phenomena. In the late 1990s, anti-dumping complaints of the U.S. steel industry – an industry whose evolution to a capital-intensive competitive sector parallels that of agriculture – are a reminder of the political pressures currency movements engender. In agriculture, the 1996 FAIR Act suffered a near-death experience in 1998 – some will argue the wounds are mortal: \$6 billion was added to farm support spending and nominally decoupled payments were raised as compensation for falling market prices.

Strong further appreciation of the dollar would have detrimental effects on farm policy worldwide, by undermining reform in the United States. Such a conclusion may be seen as non-symmetric and thus unwarranted – appreciation of the dollar means depreciation of other currencies, so offsetting pressures on farm

policies elsewhere might lead to something of a net wash. In my view, under the FAIR Act the United States has moved far enough forward along the path of decoupling farm support from market interventions that exchange rate movements would have asymmetric effects on policy evolution internationally. For those countries in which depreciation would favor farm policy liberalization, the effects on policy outcomes would not be as strongly positive as appreciation of the U.S. dollar would prove detrimental. The effects of dollar depreciation are symmetric, and would favor reform.

To illustrate this point, consider the case of the United States and EU. If the FAIR Act survives, the EU will find itself using acreage controls to sustain its farm policies while the United States pursues market-driven production levels unfettered by land use restrictions. This reverses the previous relative effects on competitiveness of policies in the two blocs, where from 1980 through 1995 the United States used supply controls and the EU for the most part did not. The EU is placed at a competitive disadvantage by the new policy mix. Simultaneously, the United States is positioned to press the EU in international negotiations to give up the “blue box” of WTO exemptions for programs making payments tied to production controls, since the United States itself is no longer using these exempted policies. The EU has reasons of its own to move toward decoupling, to accommodate expanded membership. Thus, convergent influences might culminate in further movement toward less market intervention in agriculture.

A strong appreciation that depresses U.S. farm prices and exports makes an optimistic reform scenario less likely. Dollar appreciation could shift U.S. farm policy back toward explicitly interventionist price supports (higher loan rates not restricted to a fixed level of output), or even toward adoption of new supply controls, perhaps through a paid land diversion. With marketing loans, the US would avoid the stocks-accumulation problem under which appreciation prompted lower loan rates in 1985. Competitors in world markets would decry this “unfair” subsidization, and the United States would lose a basis for arguing for greater liberalization worldwide. Meanwhile depreciation of other currencies would be lessening the cost of foreign farm supports – for example in the EU. These are circumstances under which convergent influences are less likely to favor elimination of the WTO blue box or negotiation of other farm policy reforms.

SUMMING UP

This paper has examined the question of exchange rate effects on agriculture raised forcefully by G. Edward Schuh some 25 years ago as a new era of international capital mobility and flexible exchange rates emerged worldwide. Exchange rate movements drive a wedge between domestic and foreign prices of a single good. More generally exchange rates serve an equilibrating role when markets requires a systematic movement in the relative prices of traded and nontraded goods. Exchange rate movements depend on international capital flows, and the macroeconomic factors determining these flows, including monetary policy. Monetary shocks have

nonneutral effects which explain some of the variability in agricultural prices. Moreover, macroeconomic conditions are often decisive in determination of domestic agricultural policies, and hence competitiveness in world markets and tensions in trade relations.

These structural policy implications of exchange rate movements, along with their direct effects on markets at any given moment in time, are why exchange rates are important to agriculture.

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IMPACT OF THE ASIAN CRISIS ON TRADE FLOWS: A FOCUS ON INDONESIA AND AGRICULTURE

Richard R. Barichello

INTRODUCTION

In the recent Asian crisis, large exchange rate adjustments and, for the case of Indonesia, a currency depreciation occurred that dwarfs most previous depreciations observed under conditions of modest inflation levels. From its value prior to the onset of the Asian crisis in June 1997 (Rp. 2400 per U.S. dollar) to its March 1999 level (Rp. 8800), the Indonesian Rupiah lost almost 80 percent of its value. At its low point it had lost about 85 percent (Rp. 15,000 in July/August 1998). This caused an increase in traded goods prices of 3.7 times or 270 percent at the March exchange rate. Furthermore, this depreciation was abrupt in its timing in that most of the fall took place from October 1997 to May 1998. Devaluation was experienced under conditions of relative balance in the prior macroeconomic situation which is not only unusual in historical context but is somewhat unique among other Asian countries experiencing this crisis.

The Indonesian experience is unique in a number of ways, including the extent of the crisis. Furman and Stiglitz (1998) wrote... "The depth of the collapse in Indonesia, if not unparalleled, is among the largest peacetime contractions since at least 1960 (excluding the experience of the Transition economies)." This raises the question of what is the impact of such a dramatic exchange rate movement and economic collapse on important economic variables such as the level of exports and imports? Examining such questions may offer guidance as to what kind of policy responses can minimize the economic turmoil from exchange rate instability. This has become more relevant now, given that exchange rates have become so much more unstable in many countries in the three decades since the abandonment of the Bretton Woods agreement in 1971 (Orden, 1999).

The focus of this paper will be the effect of the Asian crisis on Indonesian trade flows. Discussion begins with the conditions that led to the crisis, followed by an examination of effects of massive currency depreciation on a variety of Indonesia's trade flows. Aggregate exports and imports (excluding the oil and gas sector), and agricultural exports and imports (at the aggregate and the specific commodity level) are used to illustrate impacts. This focus is used because we have more ready access to detailed trade data and, in some cases, detailed commodity market and policy knowledge. We also have cost data for a sample of commodities which were used to simulate the likely production or trade effects of the currency depreciation. For reasons discussed later, Indonesia's circumstances may be unique enough that the results may not be easily generalized to other countries in Southeast Asia. The situation for wheat, Canada's largest export to Indonesia, is also examined. Finally the effect of these changes in Indonesia on prospective trade flows with Canada, and

the effect these changes are likely to have on Canada's exchange rate, are considered. The data used are from the Indonesian Central Bureau of Statistics, monthly import and export revenue data from January 1997 before the crisis to December 1998.

BACKGROUND

There are some important features of Indonesia's economy and that of other Association of South East Asian Nations (ASEAN) countries that preceded the crisis (Flatters, 1998). These countries had unusually high growth rates during the 1980s and 1990s, and high domestic savings and investment rates, increasingly open trade and industrial policies. This followed more than a decade of gradual trade deregulation, rapid expansion of labour-intensive manufactured exports, some balance between taxation and subsidy in the agricultural sector, prudent macroeconomic policies (i.e., disciplined non-inflationary monetary policy, non-deficit fiscal policy and relatively appropriate exchange rates). Increasingly, capital markets were better developed and opened up. From the experience of previous macro crises, one would not have expected these Asian economies to be likely candidates for economic collapse.

However, there were policy areas and circumstances in some sectors that created problems. For example, there were some sectors with considerable protection, with supporting import restrictions, investment licensing restrictions, and sector-specific or firm-specific tax exemptions. The banking sector had grown substantially under programs of liberalization, but the enforcement of prudential regulations and financial supervision was often weak. This was sometimes combined with small capital bases, pressures on banks to lend to risky and dubious ventures of state owned enterprises and privileged investors, and a rapid increase in foreign debt held by some banks. The result was a set of banking systems with poor balance sheets and unusual leverage that would be acceptable only in times of rapid growth when most loans would be repaid and lending errors were few. But the system was ill-prepared to deal with a major reduction in economic growth or currency depreciation.

Despite differences across countries, the similarities in this crisis were: (i) underlying structural problems in the financial and real sectors, and (ii) excessive exposure to short term capital flows. Then in 1997 there was a massive reversal of capital flows. Using data from the Institute of International Finance², net private investment to the five countries most affected (Indonesia, Malaysia, Philippines, South Korea and Thailand) ... "fell from \$93.8 billion in 1996 to -\$6.0 billion in 1997, implying a net reduction of \$99.8 billion. Equity investment accounted for \$17.6 billion of this drop, and private credit for \$82.1 billion. This is a huge reversal of capital flows, and could not help but have serious implications for the economies involved, despite the offsetting increase in official capital flows of \$33.5 billion" (Flatters, 1998).

² As reported in the Asian Wall Street Journal, September 30, 1998.

A third common factor that inhibited recovery is that the crisis lowered incomes in all five economies. This resulted in negative economic growth in the five countries, and lowered growth in the whole region. Given the heavily integrated trade flows within the region, particularly with Japan which has had its own economic difficulties to deal with, this has meant a major loss of export demand among the five worst-hit countries.

In Indonesia, there were some additional elements that should be noted to help understand trade flows. First, the extent of currency depreciation, loss of income and export demand, and lingering domestic recession were more substantial in Indonesia than in any of the other Asian countries. Second, there was the issue of a large build-up of foreign debt in the non-bank private sector. This has introduced a major debt restructuring problem that is still plaguing the private sector and its ability to resume production. Third, at the start of the crisis, Indonesia was in good shape in terms of macroeconomic soundness. The currency was judged to be somewhat overvalued, but probably by no more than 20 percent, and there was no fiscal deficit or serious inflation problem. So the depreciation introduced a large disequilibrium in the prices between traded and non-traded goods that is being worked out in 1998 and 1999 with a high level of inflation. The inflation level in 1998 was roughly 80 percent although inflation levels in 1999 have become much lower. Fourth, there is now even greater competitiveness in many sectors where Indonesia's costs are internationally lower and where there is substantial know-how and skills. There remain some heavily protected sectors where Indonesia is uncompetitive, particularly firms that were associated with Suharto's children and a small number of closely allied interests.

Fifth, Indonesia's policy response to the crisis, although initially sound, was mixed during late 1997 and the first half of 1998. This created considerably lower levels of credibility in the government's commitment to reform as well as in the soundness of government policy responses. In the second half of 1998 there also was a major increase in political uncertainty and social unrest, creating even more economic uncertainty and investment risks. The end result was a sharp decline in investor confidence that appears still to be inhibiting new investment and external financing (Flatters).

Another issue is that the crisis has not affected Indonesia in a homogeneous fashion across the country. The crisis is worst in those industries where there are many non-tradeable goods being produced and where domestic demand is critical, where imported raw materials are important, and where credit or external financing is important. More idiosyncratically, the crisis also affects those firms that had been most highly levered and that had incurred large levels of foreign currency debt. In general this means that the outer islands (outside Java) and resource-producing sectors with relatively large value-added, like a large part of the agricultural sector, are not badly hurt. Most of the agriculture sector produces tradeable goods, either exported or import-competing goods, and for such producers, output prices have increased markedly. It is also the case that for farm production, traded inputs account for a small percentage of total revenues (less than 20 percent), and credit

accounts for an even smaller proportion of total revenue. So net incomes in this sector have grown substantially with the crisis.

The Asian crisis as it affected Indonesia can be summarized as follows. Mid-year 1997 brought about a major liquidity outflow in private capital which started a depreciation of the Rupiah. That depreciation accelerated so that currency value fell by roughly 80 percent in the period from August 1997 to February 1998. Asset markets, notably land and stock market values deflated sharply. A major banking crisis followed with the capital outflows, shrinking collateral values and rapidly depreciating currency values. This sector was very vulnerable to these changes due to many poor balance sheets, weak levels of capitalization, and high levels of foreign debt exposure. The end result was a collapse in the provision of credit.

High levels of foreign debt exposure also affected a number of private sector firms that became technically insolvent. With the increased cost of foreign debt service, many such firms were crippled by an inability to service this debt and obtain further credit. Heavy layoffs and increased unemployment followed, with consequent declines in labour income. With this widespread loss of purchasing power, domestic consumption declined and import demand dropped. Raw material imports also fell with the combination of higher Rupiah costs and the disappearance of short-term financing. Despite the favourable exchange rate, exports also were reported to have declined in many industries along with the fall in imported raw materials and the decline in offshore demand for Indonesia's exports throughout Asia. All of this combined to generate a real GDP decline in 1998 of 15 percent. Following the fall of the Suharto regime there has also been an increase in political instability plus widespread social unrest during 1998, making it even more difficult for the economy to return to normal.

The purpose of this elaborated background is to give some appreciation for the circumstances that contributed to and arose from Indonesia's dramatic exchange rate depreciation. It is also to show that the currency depreciation was only a part of the substantial changes that have comprised this crisis. More variables than the exchange rate have been changing to affect trade flows.

EFFECT OF EXCHANGE RATE CHANGES ON INDONESIA'S TRADE FLOWS

Expectations In Relation to the Aggregate Data

With a Rupiah depreciation of the magnitude Indonesia has experienced, one might expect a large effect on trade flows. For traded goods, the output price facing Indonesian producers roughly tripled, although the costs of imported raw materials also tripled. Over whatever margin there is for domestic value-added, profits should have increased to increase production for export or to compete with imports. This supply response should occur with some lag and may not be observed for more than a year for some products like tree crops with long gestation periods. Consequently export response, even to a tripling in output price, may be lagged enough so as not to be observed within our relatively short data period of less than a year and a half.

On the import side, prices also increased roughly three-fold and demand would also be expected to fall. The extent of this response would depend on the demand elasticity, and its speed dependent on how quickly demand can be reduced in response to sharp price increases. But on the consumption good side it can be expected that import demand would decline faster than exports could increase if production expansion were involved. So on this basis, exports can be expected to be increasing with more of a lag than imports would decline, which should be occurring quickly.

Other Factors

Actual trade data will incorporate the influence of other variables, noted above, that have changed in addition to the Rupiah depreciation. First, the financial sector was substantially shut down in 1998. Many banks were struggling to maintain solvency. There was reportedly little trade finance available, and credit generally was difficult to obtain. This would have the effect of limiting production and import financing for those firms requiring bank finance. It would act as a heavy tax upon export expansion for operations relying upon imported raw materials but without the capacity to self-finance. Most primary agricultural sectors would avoid this constraint because of the small share of purchased raw materials in farm operations (Barichello *et al*, 1998). Therefore, the effect of these financial sector difficulties would be to reduce observed export response except in the agricultural sector where credit would seem to be less important and where exports should show more rapid growth.

A related financial issue in the non-agriculture sector is that a number of private firms had large levels of foreign debt and their situation has been like that of the many banks described above. Many have reportedly been effectively shut down as they deal with restructuring their overhanging foreign debt. Until their foreign debt restructuring is resolved, there is unlikely to be any export response from these firms.

Second, export demand for some commodities is reportedly down, specifically those whose markets are largely in Asia, especially Japan. As well as lowering sales, this may have lowered world market prices, so export revenues would drop on both accounts. It is unclear exactly which *agricultural* commodities would be affected by the fall in Asian demand, because most Indonesian agricultural exports face a broader world demand. Further, the demand for most food products is relatively income-inelastic, meaning a more modest reduction in demand from Asian markets. The broader effect of this demand factor would be to reduce observed export response, but this is unlikely to be particularly important for agricultural exports.

Third, within Indonesia the fall in domestic demand should mean lower sales to the domestic market. The only effect this is likely to have on trade flows would be to generate additional supplies for export sale (i.e., an outward shift in the excess supply curve), which would increase export response. However, a related domestic issue is the increase in political and social unrest observed since mid-1998. The unrest would increase the uncertainty associated with a variety of economic functions, from

input supply availability to transportation and storage, increasing costs in all these elements of the supply chain. This would have the effect of raising costs and decreasing export supplies to world markets. To the extent that investor confidence also falls, as is widely claimed, these negative export effects would be greater through raising the cost of capital to Indonesia during these times.

A final matter that would affect aggregate trade data for agricultural commodities is the gestation period of the product. Many Indonesian agricultural export commodities are perennials where production cannot be expanded quickly. Tree crop exports such as coffee, palm oil, rubber, cocoa and tea are all examples. In these crops, there may be no supply response within the time period of our data, and export revenue data will only reflect world market price movements. If those movements are negative (for long run trend reasons or short run increases in supply due to other countries in the region trying to export more under these conditions) it will appear as if exports have declined in response to the currency depreciation.

Several other issues that could have an effect can be discounted. The considerable initial lending from the International Monetary Fund (IMF) and the World Bank is mostly being used to recapitalize banks, or is not yet significantly disbursed. Also, there are numerous deregulation measures that are also being undertaken, but these measures will have their impact in several years time, not in the present.

Potential Agricultural Exports

To anticipate the impact of Indonesia's currency depreciation on agricultural profitability and potential exports for different commodities, a series of partial budgets were constructed and examined for this purpose (Barichello et al, 1998). This study was built on field work done over recent years using the Policy Analysis Matrix approach, and had the benefit of relatively up-to-date farm cost and revenue data. Output prices were adjusted up to 1998 values for both traded and non-traded outputs and inputs, and the input-output coefficients were kept the same as in the original studies. The commodities examined were rice, corn, soybeans, sugar, dairy, crude palm oil, and cashew nuts. The results show that *all* commodities become export competitive. Some of this was borne out in 1998 field work (eg., corn).

But there are some caveats that must be considered before accepting such results. First, the export response as calculated will be overstated in some cases. There is an additional constraint on export response in agriculture, namely the competition across traded agricultural goods for common inputs such as land. All export commodities will become more profitable, but after the general equilibrium effect of rising land prices, only some of the increased exports will be profitable. This will mean simply that observed export response will be less than what would have been predicted by partial equilibrium budgets for these commodities calculated without increasing land prices.

Second, some commodities may not have been exported previously, in which case there are issues such as product grading and quality levels that previously may

not have been important on the domestic market. Also, changing trading, storage and transportation patterns from serving only the domestic markets to serving overseas markets can take some time to work out. These factors may delay export response in the short run from what one would expect from making longer run calculations.

RECENT INDONESIAN TRADE DATA

We start with aggregate data on non-oil/gas export revenues from Indonesia for the period from January 1997 to December 1998. The data were obtained from the Central Bureau of Statistics reported in U.S. dollars. Oil and gas exports are subtracted from total exports because they are a significant part of the total and often conform to longer term contracts rather than current conditions.

Non-Oil/Gas Exports

Non-oil/gas exports are displayed in Figure 1. To interpret this pattern of exports, note that the currency began to depreciate in August 1997, but the real decline did not occur until October, and the most precipitous fall was from December 97 to February 98. Over that latter period the US dollar value of the Rupiah fell from about Rp. 4000 to Rp. 12,000. To help interpret these data, a vertical dashed line is drawn in all figures at October 1997 to indicate the time period when the Indonesian exchange rate began to fall significantly.

The striking feature of this export performance is its lack of a trend since October 1997.

Exports grew strongly in the first half of 1997, peaked in August, then levelled off and declined slightly to December 1997. From December 1997 to December 1998, exports have shown a somewhat erratic pattern but without trend. From December 1997 to February 1998, non-oil/gas exports fell by 17 percent, rebounded fully in March, and continued up and down to August in the range of \$3.1 to \$3.9 billion per month. From August to December 1998 exports stabilized with a small decline to about \$3.2 billion per month. A time trend fitted to the post-October 1997 data is highly insignificant statistically and it explains almost none of the variation.

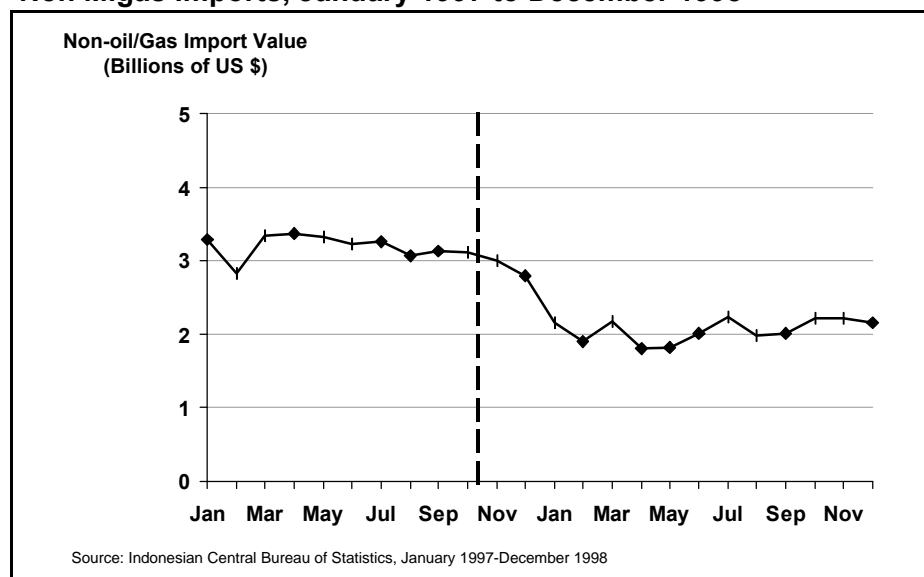
Figure 1: Non-Oil/Gas Exports, January 1997 to December 1998



Evidence of an exchange rate-induced export boom since the largest part of the depreciation is not yet seen in these data, even after 14 months. The last time Indonesia significantly devalued its currency (by about 40 percent in September 1986) the dramatic export growth that followed began to be revealed in the aggregate data in about 8 months time. Then, as now, we could find specific sectors where exports were booming at an early stage, particularly in local medium-scale firms and industries with large amounts of value added, such as (in the current case) textiles, wood and rattan furniture production and some parts of agriculture. This time the depreciation was much larger but, aside from the large fluctuations in the actual exchange rate, an export response is being constrained by the many other factors outlined above that appear to be affecting a different but large set of firms.

Non-Oil/Gas Imports

The situation for aggregate imports is displayed in Figure 2. We anticipated that imports would be reduced by the depreciation more quickly than exports would be increased, and the evidence of Figure 2 supports this expectation. Non-oil/gas imports were following a slight decline during most of 1997 until October. Then they fell by 40 percent from October to February 1998. Subsequently they have bounced along between \$1.8 and \$2.2 billion per month, and have stabilized at \$2.2 billion during the last quarter of 1998. The import decline is statistically significant using a time trend, either measured from January or August 1997, and it explains about two thirds of the variation in import values.

Figure 2: Non Migas Imports, January 1997 to December 1998

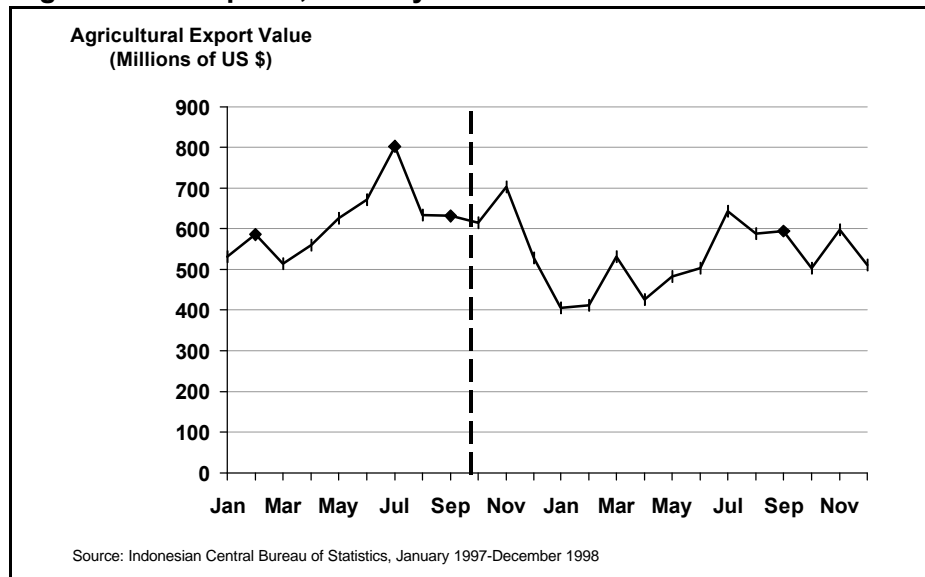
This pattern in imports is consistent with their exchange rate sensitivity, but several other factors occurring would give similar results. One such factor is domestic income, although it would seem unlikely that incomes would have fallen as quickly as imports did. The collapse of the banking sector and drying up of credit would also produce this result, given that import financing through bank credit is widely used. Further, a reduction in investor confidence or any other factors that would damage export activity would also have a negative effect on imports to the extent that those exports would use imported raw materials.

Agricultural Exports

The data on Indonesia's agricultural exports are shown in Figure 3. Similar to the case of aggregate exports, it is not easy to detect the effect of the currency depreciation in agricultural exports. This is a little surprising, given that on *a priori* grounds there is reason to expect that agricultural exports would be more responsive to the depreciation than would manufactured or non-agricultural exports. Agricultural exports are dominated by raw or primary products, and the production of these primary commodities involves few imported raw materials in contrast to most manufactured exports.

Looking at the data more closely, there is substantial pre-depreciation growth in exports, from January to July 1997, of at least one third over the half year. This growth is followed by a sharp decline that more than erased the gains in the first half of the year, particularly the November 1997 to January 1998, similar to that observed for aggregate non-oil/gas exports. In 1998, there is a fairly steady increase from January-February to year end of about 50 percent again. But given the time pattern of the depreciation, the general chaos in exchange rate movements and financial markets that reigned in the December 1997 to February 1998 period, and some lagged response in expanding farm exports, the 1998 pattern of exports is quite consistent with moderate growth in exports in response to the depreciation.

Figure 3: Agricultural Exports, January 1997 to December 1998

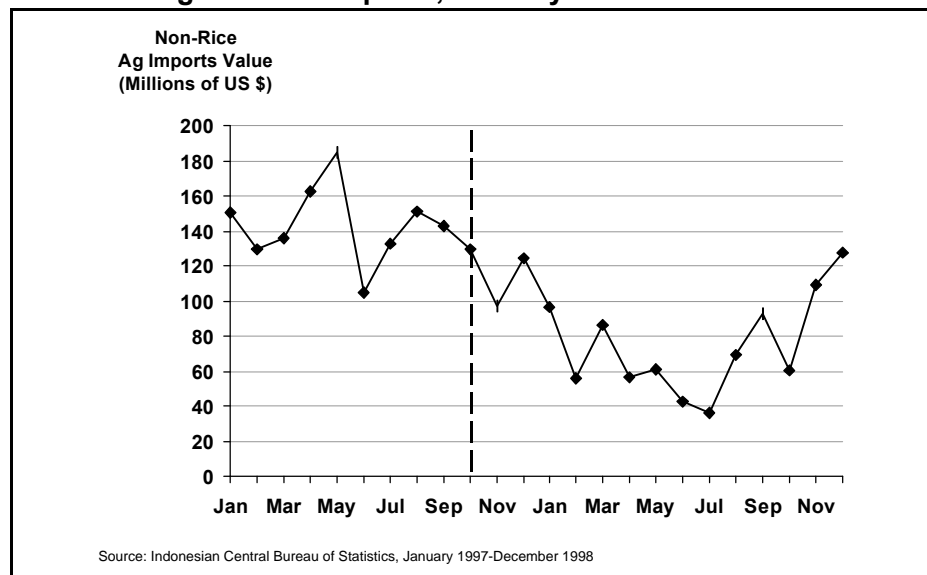


Agricultural Imports

The picture of agricultural imports is given in Figure 4. The data in this figure are calculated to exclude rice imports. The rationale for this omission is somewhat like that used for removing oil and gas trade from the aggregate export and import data – rice is a very large category among agricultural imports that often responds to political circumstances more than direct economic conditions and does so erratically, so including it will often conceal how other import markets are responding to the depreciation. The pattern of imports for the first eight months of 1997, prior to the currency depreciation, is erratic but trendless (and statistically highly insignificant). However, from August 1997 to July 1998 the pattern is clear – agricultural imports are declining³ but these imports bottomed out in July 1998 and have increased almost all months to the end of the year.

These results are similar to those for aggregate imports in terms of the apparent responsiveness of imports to exchange rate changes. In both cases imports (aggregate and agricultural) appear to respond significantly and rapidly to exchange rate changes. However there is a differences. First the decline in agricultural imports following the currency depreciation was more gradual and extended than was observed for aggregate non-oil/gas imports. Second, in the last five months of 1998 agricultural imports actually increased which is an unexpected result.

³ A negative time trend through the import data is highly significant and such a simple equation explains two thirds of the variation in imports.

Figure 4: Non-Rice Agricultural Imports, January 1997 to December 1998

These patterns of agricultural export and import responses to exchange rate changes in Indonesia are also consistent with those patterns observed by Orden (1999) in examining U.S. trade data. He finds that U.S. agricultural exports to Asia fell by nearly one-third in 1998. From the data above, the decline would likely be even greater for U.S. exports to Indonesia. He also finds that, historically, U.S. imports respond less clearly to exchange rate changes, and that too is consistent with the exports from Indonesia in the current Rupiah depreciation. However, the mixed effect of the depreciation on Indonesian exports may be a “temporary” situation, given the intermediate-term unravelling of the banking system and other domestic economic uncertainties.

DISAGGREGATED EXPORT DATA

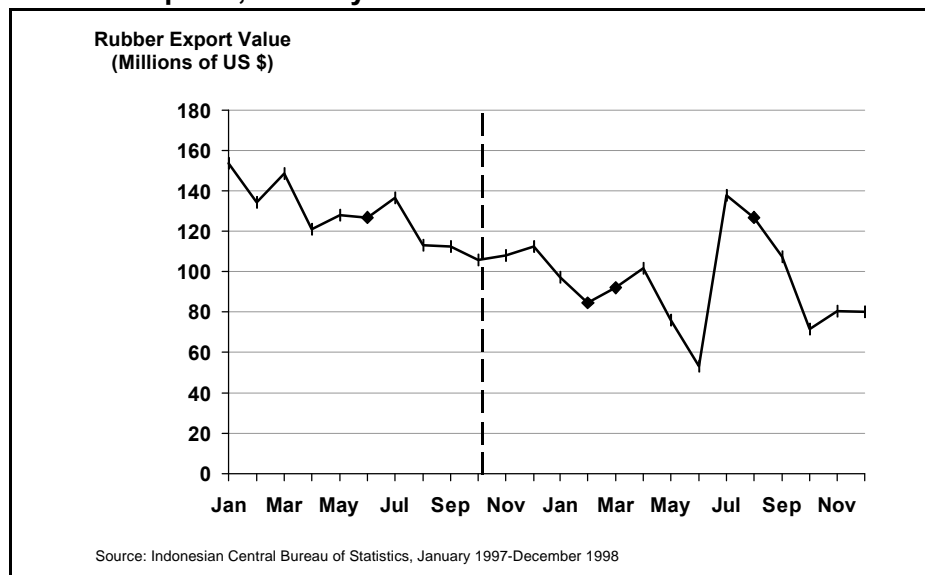
More insight into the export response from agriculture can be obtained from disaggregated commodity-specific export value data. These are found in Figures 5-8 and cover rubber, palm oil, fruits and vegetables, and a residual category – “other agricultural commodities”. This latter category includes all agricultural exports other than fish, shrimp, rubber, fats and oils, coffee, cocoa, processed fish, processed fruits and vegetables, other processed foods, fruit and vegetables, animal feed and tea.

Of particular interest are Figures 5 and 6, covering rubber and palm oil. Both are traditionally major agricultural exports from Indonesia and both are tree crops. It takes about 3-4 years from the time of a new planting until there is significant production from the new investment. In addition, both are subject to quite large price movements and cycles in the respective world markets. These two commodities accounted for about 40 percent of Indonesia’s agricultural exports in the last 2 years.

Rubber

In the case of rubber, exports decreased steadily from January 1997 to June 1998 so that by the end of this period, exports were only about 35 percent of what they were at the start. With the increase in plantings and production over the last decade, it is unlikely this decline represents a reduction in export quantities, but rather it is likely a reflection of declining world prices. Then, in July 98, exports more than doubled, following which exports declined again. Because this is a tree crop, another factor might be that rubber farmers, in observing the shift in the exchange rate, decided to undertake more replanting to increase future production. This would normally involve taking down some rubber trees to make room for the new trees, losing some production in the process. But more market-specific knowledge is needed to explain this unusual export revenue pattern, coupled with data on export quantities from Indonesia over the period. One point is clear, however, that this steady decline in exports from rubber will affect the level of aggregate agricultural exports. In fact, it will be offsetting increases in exports from the aggregate of non-rubber agricultural commodities to yield the basically flat pattern of all agricultural exports. More market-specific knowledge is needed to explain this unusual export revenue pattern, coupled with data on export quantities from Indonesia over the period in order to follow exactly what occurred. One point is clear, however, that this steady decline in exports from rubber is large enough to affect the level of aggregate agricultural exports. In order to yield the basically flat pattern of “all agricultural exports”, the decline in rubber exports must have been offset by increases in exports from the aggregate of non-rubber agricultural commodities.

Figure 5: Rubber Exports, January 1997 to December 1998

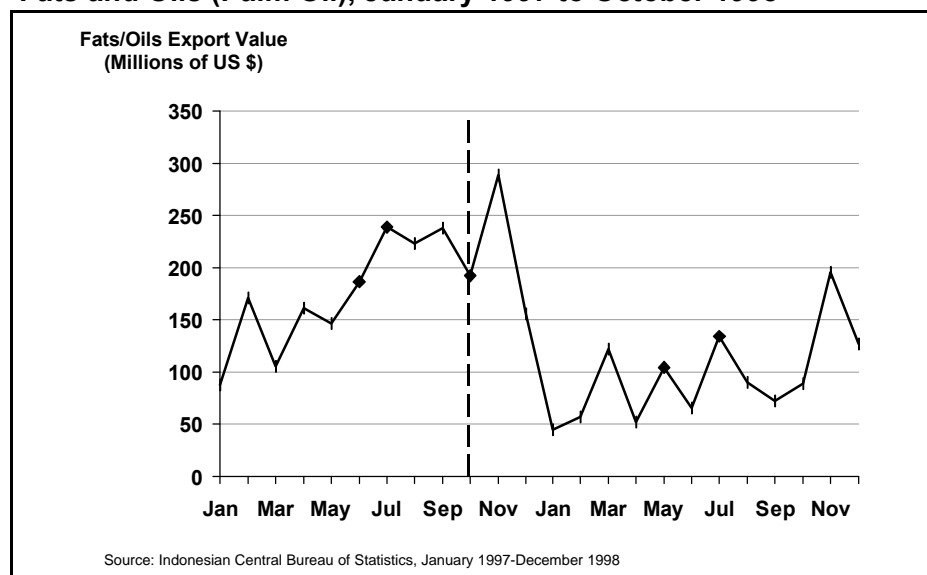


Palm Oil

The case of palm oil is shown in Figure 6. This trade flow pattern is interesting because it is different from that of rubber and more consistent with what we observe for all non-oil exports. Exports were growing strongly from January to November

1997, after which there was a dramatic fall in exports, from \$280 million in November to \$50 million in January 98. Subsequently, exports have increased in an erratic fashion to December, tripling on trend from January to December 1998. Although this may seem like a large increase, it regains no more than half the export revenues achieved in the second half of 1997. This relatively modest increase is probably due to palm oil market prices declining during the post-depreciation period. A clearer understanding of these export revenue movements again requires more detailed knowledge of the palm oil market.

Figure 6: Fats and Oils (Palm Oil), January 1997 to October 1998



Fruits and Vegetables

Fruits and vegetables are examined in Figure 7. They account for one-tenth the level of rubber exports but are cited by some as having good export potential. Their export pattern is also erratic. In fact, from what one can glean with only two years of data, export revenues appear to be roughly constant in U.S. dollar terms. January 1998 exports almost doubled from December 1997 but they then fell back to less than half in the subsequent 6 months. Since that time (July 98), exports have been increasing again back to a mean level over the 1997-98 period. If this pattern is exchange rate related, there is little in the data to indicate this is so.

Other Agricultural Goods

This category captures a large number of categories "not elsewhere specified", including spices, and it is a reasonably large category. Over the July-December 1998 period, this category accounted for average monthly exports of about \$62 million, about two thirds the value of monthly rubber exports. This category shows a time pattern that is only weakly consistent with an exchange rate-induced export increase. There is post-depreciation increase in this category of exports but the same observation applies to the first 10 months of 1997, prior to the major part of the Rupiah depreciation, perhaps because it is aggregated across so many individual

commodities that the idiosyncratic effects of individual markets are aggregated out. These exports clearly rose in the first half of 1997, but for the next year remained flat or even declining. Then, from June 1998, this category of exports increased by a factor of roughly 2 to September 1998 and promptly lost almost all of this in the last quarter of that year. The mini export boom seen in the third quarter of 1998 took a while to get going, but such a delayed output expansion would be consistent with the production circumstances of many types of farm products. However, it is a puzzle to explain why this category lost all its export growth in the last three months of 1998.

Figure 7: Fruit and Vegetable Exports, January 1997 to December 1998

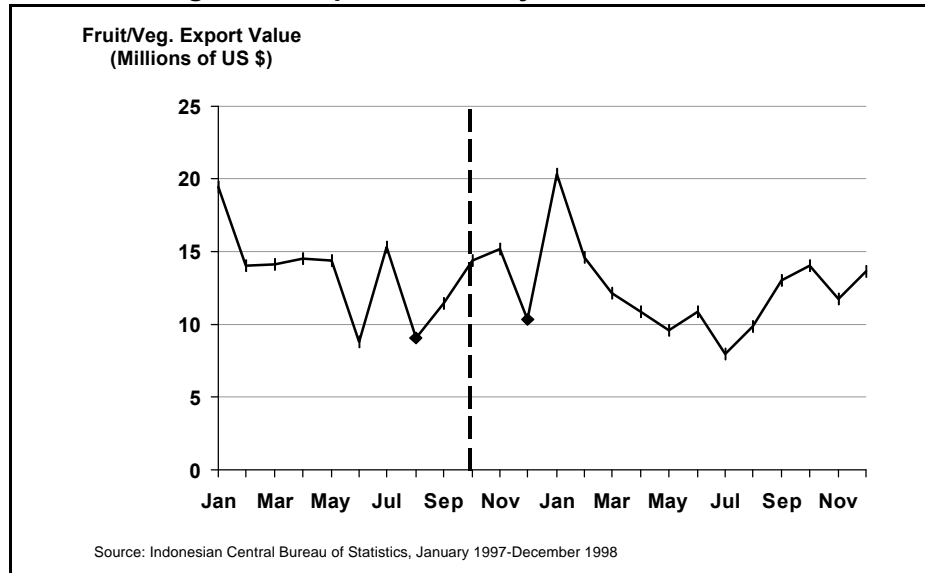
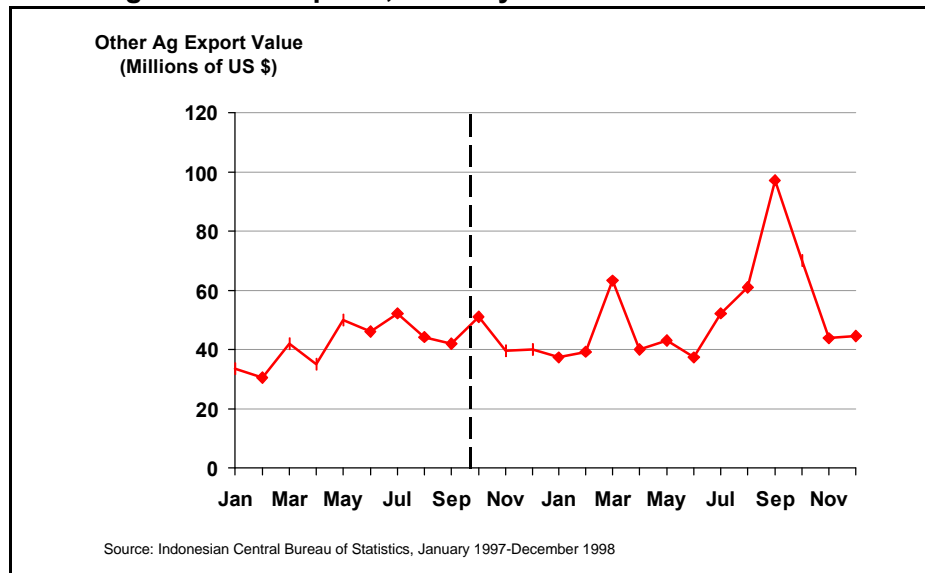


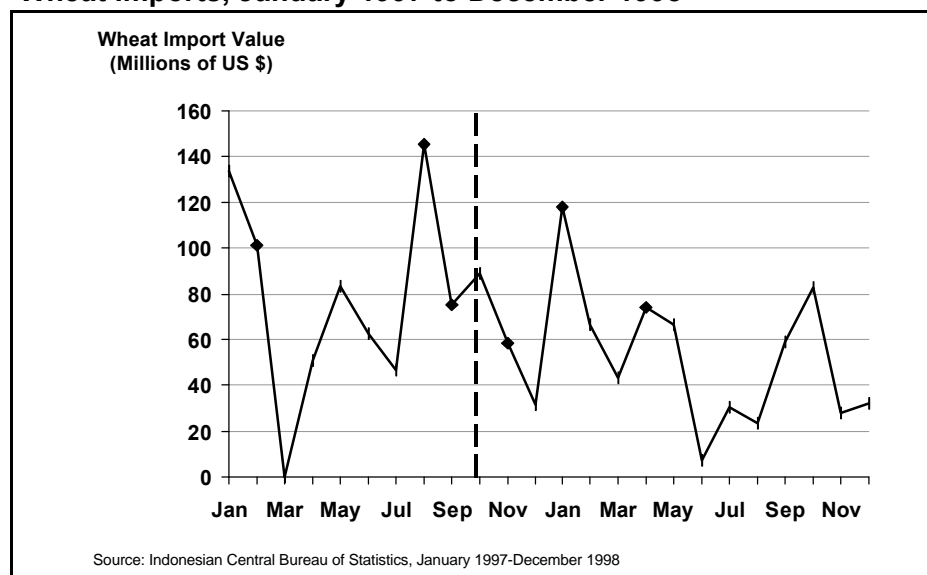
Figure 8: Other Agricultural Exports, January 1997 to December 1998



Disaggregated Import Data: Wheat

An Indonesian import commodity of particular interest to Canada is wheat. It is by far Canada's most important export commodity to Southeast Asia and Indonesia (Kennedy and Vercammen, 1997), with exports to Indonesia valued at around \$10 million per month over the 1992-94 period. The monthly pattern of wheat imports into Indonesia for 1997-98 is given in Figure 9 below. It is somewhat different from the pattern of all agricultural imports (excluding rice) in that wheat imports are more erratic and do not show as clearly a downward trend following the currency depreciation. The erratic nature of the data may only indicate that shipments are made less frequently than monthly. Still, a statistically significant negative time trend is found, and this explains one quarter of the variation in wheat imports. Like the case with aggregate agricultural imports, wheat imports have declined gradually over the whole time period since the currency depreciation began, unlike the more immediate and dramatic crash in imports experienced in the non-agricultural import data. This may indicate that wheat imports, at least from Canada and the United States, are commonly financed by the exporter with government loan guarantees and so do not rely upon the domestic Indonesian banking system.

Figure 9: Wheat Imports, January 1997 to December 1998



Over the period of 14 months from the start of the depreciation, wheat import values have declined considerably, from \$90 million in October 1997 to about half of that value for the average of the last three months (October-December 1998), \$48 million. However, one might have expected an even larger decline for a commodity which is something of a luxury among the hard-hit middle class in Indonesia and which has a reputation as being an income-sensitive food. The answer probably lies in the fact that wheat is not used solely for flour to make bread, but is used also to produce wheat noodles. And Indonesia (one firm in particular) is now the largest producer of wheat noodles in the world with large export markets. So a considerable volume of imported wheat may be being re-exported in the form of noodles. This

could explain why wheat imports have not fallen as much as might have been expected and why these imports periodically show substantial growth.

EFFECTS ON CANADA'S EXCHANGE RATE AND TRADE FLOWS

One question that arises is the effect that the Asian crisis will have on the Canadian exchange rate and agricultural trade flows. On the first part of that question, Canada's trade with Southeast Asia is relatively small and on the agricultural side, our trade with Southeast Asia is tiny. In 1994, Canada's agricultural exports to Southeast Asia were valued at \$235 million, and that same year, Canada's imports from the region were about twice as large, \$476 million (Kennedy and Vercammen, 1997). Some perspective can be gained by comparing this trade with current trade flows with the United States of about \$1 billion per day. We do not have the necessary data to answer this question with much accuracy, but it is difficult to see that the Asian crisis, restricted to the five main affected economies (Indonesia, Korea, Thailand, Malaysia and Philippines) will cause trade flows to change enough to cause more than minor effects on the Canadian dollar.

But we can say a little more about the *change* in trade flows, using Indonesian data as a guide. For Canada's exports to Indonesia (Indonesia's imports from Canada), we have already seen a fairly large drop in those exports and the Indonesian import picture appears to be stabilizing. It would seem that unless there are further declines in the Rupiah, there will be no more dramatic drops in their imports, and the adjustment that will now come about is in the other direction, a gradual increase in imports as incomes start to increase and the financial sector becomes more functional. In other words, the fall in Canada's exports to the region would appear to have bottomed out and there is the gradual prospect of a return to export growth. Within the agricultural sector, this would mostly affect wheat exports.

On the import side (imports from Indonesia), here the adjustment is quite incomplete as far as Indonesia is concerned. Exports from Indonesia have just started to grow in line with their new competitiveness, so increases in Canada's imports from Indonesia are likely. How much this will be at the expense of other country's imports and how much from direct competition with Canadian production will vary by sector. In agriculture there would appear to be few cases where there is direct competition with Canadian production, with a possible exception being competition in the cooking oils market.

CONCLUSIONS

In examining the effect of currency depreciation on trade flows, few more dramatic examples of massive depreciation can be found than Indonesia in 1997/98. In fact, the serious shock received by that economy from the 80 percent loss in its currency value has led to a collapse in lending by the country's banking system, *de*

facto bankruptcy for the many firms that had engaged in heavy borrowing in U.S. dollar terms, and negative growth in 1998 of 15 percent.

On the surface, this would seem to provide an interesting case for looking at the response of trade flows to such a large currency depreciation, given the large effect increase in comparative advantage that would seem to be conferred. However, it has been our task in this paper primarily to document the trade flow response in the case of Indonesia within some 18 months of the beginning of the depreciation. Although some effort is made at interpreting the changes in trade flows that have followed the depreciation, these efforts are particularly difficult because there have been so many factors at work simultaneously. An appropriate model of this situation to predict or explain trade flows is much more complex than just the depreciation's direct effect on exports and imports. Also, a much more detailed data set is needed than that to which we had access for this research.

Having said that, here is a summary of what the data appear to show to the end of 1998. Following the currency depreciation there has been clear change in imports, both at the aggregate level and in the agriculture sector. This is a quick, relatively brief and significant reduction in import flows, particularly when the industrial sector is included. This is partly explained by the drying up of credit from the collapse of the banking system, not just the increase in the relative price of imports. In the agricultural sector, and wheat in particular, the decline has been more gradual and extended. This may reflect concessionary credit provisions which are common among food exporting countries.

The effect of the depreciation on exports has been much more delayed, erratic and difficult to discern. With a few exceptions, there has not been the strong increase in exports that one might expect from a tripling of export prices in local currency (Rupiah) terms. This is most clear for aggregate exports, where imported raw materials have been reduced significantly, having the effect of reducing output levels, not to mention any growth, in some export industries. These effects differ considerably across industry sectors, and depend in part on the extent of imported raw materials in total costs, and the ability of firms in that sector to self-finance or otherwise avoid the banking sector. In general, agricultural and local resource firms have little demand for imported raw materials, have therefore benefited substantially from the depreciation, and have increased export production.

Another general result is that the expansion of exports has been stretched out in time more than might have been expected. This may be due to the difficulties in getting other domestic inputs, including credit, due to economic uncertainties created by the social and political unrest of the last year, and in the case of tree crops, due to the long gestation period of getting new production from new trees. It is also commonly observed that exports actually fell in the period of fastest currency depreciation, November 1997 to February 1998. Apparently there was so much uncertainty or chaos at this time that simply maintaining past contracts and production levels was very difficult. This has further delayed the expansion of exports that would ultimately be expected in response to the large competitive

advantage that the depreciation has opened up. It is also likely that the export expansion will continue for some time, as wage adjustment will likely take some time to complete, notwithstanding the rapid rate of inflation in 1998.

To ascertain the direct effects of the Asian crisis on Canada, it is likely that the Canadian dollar exchange rate has been little affected, due to the small proportion of daily trading that has been changed by these events in Southeast Asia. But the data from Indonesia would suggest that most of the reduction in exports from Canada to the region have already occurred. The increase in low cost imports from Indonesia due to the depreciation, however, has only started to take place. For the most part this can be expected to affect competing exporters to Canada.

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BANK OF MEXICO

Daniel Garcés-Díaz

The Mexican Economy and the Asian Crisis

The Asian crisis is affecting the Mexican economy through two channels:

- Balance of Trade
 - approximately 20 percent of Mexican exports to the United States face intense competition from Asian countries;
 - Mexico had real exchange rate appreciation when measured against U.S. trading partners;
 - like other petroleum exporting countries, Mexico suffered a fall in oil prices in 1998; and on the
- Capital Account
 - Mexico has the perception of increased risk in emerging markets;
 - Mexico is concerned with the contagion phenomenon which was prevalent in 1998.

Following the Asian tumult, Mexico experienced a depreciation in the peso. New Zealand, Australia and Canada also experienced pressure to their exchange rates. But exchange rate movements do not have the same effects for all countries in some of the important macroeconomic variables. Because of the linkage of exchange rates to inflation, inflation expectations and wage adjustments, monetary policy has to respond to these movements to avoid feeding a shock into wages and non-tradable goods prices. In Singapore, the Philippines, Malaysia, Korea, Thailand and Indonesia, the inflation response to depreciation in the exchange rate was low.

The effects of exchange rates to price levels are very different among the countries suffering from the Asian crisis. In Mexico, it is often argued that more active real exchange rate policies should be adopted. The Mexican experience is that whenever that has been tried, the result has been an accelerated rate of inflation. Although, the response of total imports and exports to exchange rate adjustments can be shown to be significant, the case for agricultural imports and exports is not as clear.

There has been discussion in Mexico recently as to whether the country should keep its current exchange rate system or change it for something else. People are very concerned about fluctuations in the exchange rate, their effects on inflation, and the behavior of several other macroeconomic variables. Interestingly enough, if you

go to Mexico City, chances are that you will see demonstrations with large signs saying, "We want another Bretton Woods" or something similar. People, for one reason or another, are very interested in the effects of exchange rates on economic activity.

The Orden Paper

David Orden's paper has a graph (Figure 6) with an impulse-response analysis for Mexico. He shows that the exchange rate shock had an effect from the first to the third quarter. At the end of the two-year period, the forecast error variance explained by the shock in the exchange rate is about 30 percent. The income shock is only significant after the sixth quarter, yet the forecast error variance explained is small.

I redid some of the calculations using monthly instead of quarterly data, applying a vector autoregression with 12 lags and seasonal dummies. A dummy variable was introduced to account for the effect of the beginning of NAFTA, but it was not significant, so it was left out. My result was that the response of agricultural imports to shocks of real exchange rates was smaller than that reported in Orden's paper. My results showed effects from the third to the fifth months of the simulation. At the end of the two-year period, the part of the forecast error variance explained by this shock is about 14 percent.

In Orden's paper, income becomes significant only after the sixth quarter. In my case, the shock to income on agricultural imports is more significant at the beginning (from the third to the fifth month), then it continues into the same period as in Orden's calculations. The forecast error variance explained by the shock is about 13 percent, very close to that of the exchange rate shock. These results indicate that it is not so clear that the exchange rate has large shocks on the behavior of Mexican imports. However, these are very preliminary results and are subject to revision.

An exercise that occurred to me, which is not in Orden's paper, was to check for the response of Mexican agricultural exports to shocks in the exchange rate. I used 12 lags and seasonal dummies and no dummy variables for the beginning of NAFTA. With this system, I only got significant response in the third month. This does not appear to be very impressive. From this result we could say that there is a small effect of the exchange rate on Mexican agricultural exports.

I ran another vector autoregression including the NAFTA dummy, which in this case was significant (it seems there was an effect coming from the beginning of NAFTA on Mexican agricultural exports). The effect that we detected previously (without the NAFTA dummy) in the third month disappears completely. The conclusion is that after controlling for the beginning of NAFTA, there is no effect from the exchange rate on Mexican agricultural exports. This seems to be consistent with the results obtained in Barichello's paper. Indonesian agricultural exports did not seem to respond to the devaluation of the Rupiah, even though it was a fairly large devaluation.

The Barichello Paper

I want to take issue with Barichello's interpretation of the slope of the decline of agricultural imports in Indonesia. The paper suggests that the effect of the exchange rate devaluation is mostly responsible for the decline. I am concerned about that interpretation because the GDP went down about 15 percent in Indonesia in 1998. That seems to me to be a very strong movement in economic activity and income to justify the swings that we saw in agricultural imports in Indonesia. I believe that we need to look more closely into the data to make sure we are not overstating the effect of the exchange rate on trade flows.

From these results, some people have suggested using the exchange rate as a tool to improve exports or control the level of imports. I believe that these suggestions should be taken with some care. What we have seen from the results of Orden's and Barichello's papers is that imports in Mexico and Indonesia did not respond very strongly to movements in exchange rates. This variable only seems to be very important for countries who have very strong export-orientated sectors, like the United States, but for countries like Mexico and other Latin American countries, this does not appear to be the case.

Section 2

Foreign Investment Arrangements

The objective of this section is to review literature and experience with various forms of private sector arrangements in commercialization of trade potential between countries.

FOREIGN INVESTMENT, COMPETITIVENESS AND TRADE

Charles R. Handy and John A. Bamford

INTRODUCTION

Foreign direct investment (FDI) is increasing globally. FDI has become a key factor in the restructuring of the global economy as we enter the new millennium. Issues surrounding the linkages among trade, investment, competitiveness, economic growth, employment, and the business climate are increasingly becoming key aspects of government policy. This paper attempts to provide some background information on trends in FDI and its relationship to some of these issues and policy concerns, including the capability of our analytical tools to effectively deal with the policy aspects of these issues.

This paper starts with a review of global trends in aggregate FDI and trends in aggregate FDI within the NAFTA countries, followed by a review of trends in agri-food sector FDI within NAFTA. The second section presents information on the nature of investment attractiveness and reviews the factors that affect this. The third section of the paper presents some discussion of the linkages among FDI, competitiveness and trade, and identifies some of the related policy issues. The final section of the paper briefly discusses the need for policy analysis of the agri-food system and the gaps between this need for analysis and the capability of current analytical tools.

TRENDS IN FOREIGN DIRECT INVESTMENT

Global Trends

Facilitated by increased trade and investment liberalization, FDI has been growing faster than international trade (16.7 percent vs. 7.7 percent average annual growth from 1991 to 1997), reaching record highs in 1995, 1996 and again in 1997

(Table 1). This environment has also heightened competition among nations in attracting international investment. The ten largest host countries received about 65 percent of FDI inflows in 1995 while the smallest 100 recipient countries received only 1 percent. Developed countries accounted for 60 percent of world FDI inflows and 86 percent of world FDI outflows on average for the period 1995-1997.

Table 1: World FDI-Inflows and Exports

	1991	1992	1993	1994	1995	1996	1997
	(Billions of U.S. Dollars)						
FDI-Inflows	158.9	175.8	217.6	243.0	331.2	337.6	400.5
Exports	3418.0	3661.0	3651.8	4169.0	4969.0	5172.2	5333.1
FDI-Index	100	111	137	153	208	212	252
Export-Index	100	107	107	122	145	151	156

Source: World Investment Report. 1997,1998. UNCTAD, United Nations; and Monthly Bulletin of Statistics, Vol. LII No. 10-October 1998, United Nations.

Over the past 25 years there have been three global FDI-boom periods and two FDI-recession periods (Table 2). The world's largest 100 transnational corporations (excluding banking and financial institutions) with roughly \$US 1.4 trillion in assets abroad, account for about one third of global FDI stock, and are all based in developed countries (Table 3).

Table 2: Global Trends in FDI Flows – Developed, Developing Countries and the World

	Developed Countries		Developing Countries		The World	
	In	Out	In	Out	In	Out
	(Annual Averages in Billions of U.S. Dollars)					
FDI-boom periods						
1979-1981	36.8	55.8	16.3	1.3	53.2	57.1
1986-1990	131.8	163.5	26.3	11.7	158.9	175.1
1995-1997	213.3	316.4	128.1	52.0	356.4	369.9
FDI-recession periods						
1975-1977	14.6	27.3	6.5	0.4	21.1	27.8
1991-1992	117.2	184.7	45.6	15.0	166.3	199.8
FDI - Last 5 Years						
1993	138.9	205.8	72.5	34.9	217.6	240.9
1994	141.5	241.5	95.6	42.5	243.0	284.3
1995	211.5	306.5	105.5	45.6	331.2	352.5
1996	195.4	283.5	129.8	49.2	337.6	333.6
1997	233.1	359.2	148.9	61.1	400.5	423.7

Source: World Investment Report.1997, 1998. UNCTAD, United Nations.

Table 3: Global Trends in FDI Stocks – Developed Countries, Developing Countries and the World

Period	Developed Countries	Developing Countries	The World
	Billions of U.S. Dollars (% of World Shown in Brackets)		
1980	509.2 (97.1)	15.4 (2.9)	524.6
1985	659.4 (95.7)	29.5 (4.3)	688.9
1990	1,629.8 (95.6)	74.4 (4.4)	1,704.5
1995	2,557.4 (91.5)	233.9 (8.5)	2,793.5
1996	2,830.9 (90.9)	281.6 (9.1)	3,115.9
1997	3,192.5 (90.1)	342.2 (9.9)	3,541.4

Source: World Investment Report.1998. UNCTAD, United Nations.

Mergers and acquisitions are increasingly used as the central corporate strategy for establishing foreign firms abroad. Investment outflows to infrastructure from the major home countries have recently begun to increase, as capital raised from public sources is no longer sufficient to meet the financial requirements of infrastructure development. FDI inflows have recently surpassed official aid as the principal source of external financing in developing countries, driven largely by privatization deals, joint ventures and greenfield (new investment) projects in infrastructure and the manufacturing sectors. The current boom in FDI flows to developing countries reflects sustained economic growth and continuing liberalization and privatization in these countries. The trend in FDI inflows in developing economies, and, in particular, non-privatization inflows, is correlated with the growth in domestic output (GDP).

South, East and South-East Asia continue to be the largest host developing region, recently peaking at 63 percent of developing country inflows in 1995, then declining to 55 percent by 1997. China has been the largest developing-country recipient since 1992, receiving between 55 and 60 percent of the inflows to South, East and South-East Asia every year from 1993 to 1997. Investment flows into Latin America continue to be susceptible to special circumstances that are specific industry related or privatization induced, thus exhibiting wide year-to-year fluctuations and a generally “lumpy” pattern of investment. Notwithstanding significant changes in geographic patterns of FDI from south to north, Africa remains marginalized as a destination of FDI. Central and Eastern Europe FDI inflows have reached record levels, driven by waves of privatization and by economic recovery.

NAFTA Trends

The trends in NAFTA FDI outflows, inflows and exports follow the same pattern as world trends, with both FDI inflows and trade increasing over time, but at even greater growth rates. For example, FDI outflows grew at 21.8 percent annually on average for the period 1991-97, FDI inflows grew at 24.2 percent, and exports grew at 9.1 percent (Table 4).

The United States is the major host country for FDI inflows into the NAFTA region, accounting for about 80 percent. Mexico has consistently attracted a greater amount of FDI than Canada over the 1990s. While FDI inflows to the NAFTA region are growing in absolute terms (Table 4), its percentage of total World inflows declined from around 40 percent in the late 1980s to about 20 percent in the early 1990s, but has steadily recovered to 28 percent in 1997 (Table 5).

Table 4: NAFTA FDI Inflows, Outflows and Exports

	1991	1992	1993	1994	1995	1996	1997
	(Billions of U.S. Dollars)						
FDI Outflows	39.3	43.2	81.3	84.4	102.8	83.0	128.5
FDI Inflows	30.3	28.1	52.7	64.5	79.1	91.0	111.1
Exports	576.2	610.3	640.2	712.5	824.0	885.8	972.0
FDI-Index Out	100	110	207	215	262	211	327
FDI-Index In	100	93	174	213	261	300	367
Export-Index	100	106	111	124	143	154	169

Source: World Investment Report, 1997, 1998. UNCTAD, United Nations; and Monthly Bulletin of Statistics, Vol. LII No. 10-October 1998, United Nations. (Mexico exports for last half of 1997 are estimated).

Table 5: NAFTA Trends in FDI Inflows

	Canada	USA	Mexico	NAFTA	World
	Billions of U.S. Dollars (% of World in Brackets)				
1985-1990	5.2	48.6	2.6	56.5 (39.8)	141.9
1991	2.7	22.8	4.8	30.3 (19.1)	158.9
1992	4.8	18.9	4.4	28.1 (16.0)	175.8
1993	4.8	43.5	4.4	52.7 (24.2)	217.6
1994	8.5	45.1	11.0	64.5 (26.5)	243.0
1995	10.8	58.8	9.5	79.1 (23.9)	331.2
1996	6.4	76.5	8.2	91.0 (27.0)	337.6
1997	8.2	90.7	12.1	111.1 (27.7)	400.5

Source: World Investment Report, 1997, 1998. UNCTAD, United Nations.

NAFTA countries enjoyed a significant share of FDI inflows as a result of merger and acquisition activities during the global restructuring period beginning in the mid-1980s and ending in the early 1990s. Increased flows of FDI to developing countries, beginning in the early 1990s, reduced the share of total FDI flowing to developed economies. As a result, NAFTA countries' share of global FDI flows has declined.

The United States currently provides about 90 percent of FDI outflows from the NAFTA countries, Canada about 10 percent, and Mexico less than 1 percent. Collectively, NAFTA FDI outflows accounted for from 25 to 30 percent of World FDI

outflows over the past 5 years (1993-97), an increase from the 20 percent level common for the period 1985 to 1992 (Table 6).

Table 6: NAFTA Trends in FDI Outflows

Period	Canada	USA	Mexico	NAFTA	World
	Billions of U.S. Dollars (% of World in Brackets)				
1985-1990	4.8	21.6	0.2	26.6 (17.1)	155.6
1991	5.7	33.5	0.2	39.3 (19.8)	198.1
1992	3.5	39.0	0.7	43.2 (21.5)	200.8
1993	5.9	74.8	0.6	81.3 (33.7)	240.9
1994	9.1	73.3	2.0	84.4 (29.7)	284.3
1995	11.2	92.1	- 0.5	102.8 (29.2)	352.5
1996	8.5	74.8	- 0.3	83.0 (24.9)	333.6
1997	13.0	114.5	1.0	128.5 (30.3)	423.7

Source: World Investment Report.1997, 1998. UNCTAD, United Nations.

Notwithstanding the 372 percent increase in NAFTA inward FDI stocks from 1980 to 1990, and a further 175 percent increase from 1990 to 1997, the NAFTA share of total World inward stocks dropped from around 30 percent in the 1980s to 27 percent in the 1990s (Table 7). Similarly, NAFTA outward FDI stocks increased 213 percent from 1980 to 1990 and a further 201 percent from 1990 to 1997, while NAFTA share of World outward FDI stocks declined from over 40 percent in the 1980s to 30 percent in the 1990s.

Average foreign direct investment relative to stocks is about 12 percent for NAFTA as a whole, for Mexico, the United States, and the World. For Canada, both inward and outward foreign direct investment as a percent of stocks, is lower by a third to a half this level (Table 8).

Agri-Food Trends

Foreign affiliate sales account for about 60 percent of total international commerce in processed food products. Exports account for about 30 percent. Sales through licenses and joint ventures account for the remaining 10 percent.

The world's top 100 food processing firms in 1998 ranged in size from Nestle (Swiss) with \$45 billion in food sales, to Barilla (Italy) with sales of \$1.9 billion. Of these 100 largest firms, 36 are European, 33 are headquartered in the United States, 17 are Japanese, 4 are Brazilian, and 3 each are Canadian and Mexican (Food Engineering International, p.37).

The Canadian food and beverage sector exhibited higher-than-average propensity to attract foreign direct investment over the past decade. This is evident from the increase in sector share of total FDI in Canada from 6.6 percent in 1985 to 9.5 percent in 1995, while FDI stocks in the food and beverage sector grew from \$6 billion to almost \$16 billion. Foreign-controlled firms accounted for 20 percent of

food and beverage sector assets in 1992, relatively high compared with other manufacturing industries. The U.S. food and beverage sector's share of total FDI is smaller than Canada's and fell slightly from 2.5 percent in 1987 to 2.2 percent in 1996. About 12 percent of the U.S. processed food sector is foreign owned.

Table 7: NAFTA Trends in FDI Stocks

Period	Canada	USA	Mexico	NAFTA	World
	Billions of U.S. Dollars (% of World in Brackets)				
Inward Stocks					
1980	54.2	83.0	8.1	145.3 (30.3)	480.0
1985	64.7	184.6	18.8	268.1 (35.4)	756.7
1990	113.1	394.9	32.5	540.5 (31.1)	1,736.3
1995	122.5	560.9	66.6	750.0 (27.4)	2,732.6
1996	128.9	630.0	74.7	833.6 (27.2)	3,065.3
1997	137.1	720.8	86.8	944.7 (27.3)	3,455.5
Outward Stocks					
1980	23.8	220.2	0.1	244.1 (46.5)	524.6
1985	43.1	251.0	0.5	294.6 (42.8)	688.9
1990	84.8	435.2	0.6	520.6 (30.5)	1,704.5
1995	117.6	714.6	2.6	834.8 (29.9)	2,793.5
1996	124.7	793.0	2.2	919.9 (29.5)	3,115.9
1997	137.7	907.5	3.3	1,048.5 (29.6)	3,541.4

Source: World Investment Report.1998. UNCTAD, United Nations.

Table 8: NAFTA FDI Flows as a Percent of FDI Stocks

	Region	1990	1995	1996	1997
			(%)		
NAFTA Inward – Flows/Stocks	Canada	7.0	8.8	5.0	6.0
	USA	12.1	10.5	12.1	12.6
	Mexico	7.7	14.3	11.0	13.9
	NAFTA	11.5	11.6	12.0	12.9
	World	11.7	12.1	11.0	11.6
NAFTA Outward – Flows/Stocks	Canada	5.5	9.5	6.8	9.4
	USA	6.3	12.9	9.4	12.6
	Mexico	16.7	-19.2	-13.6	30.3
	NAFTA	6.1	12.3	9.0	12.3
	World	14.1	12.6	10.7	12.0

Source: World Investment Report. 1998. UNCTAD, United Nations.

FDI is larger and growing faster than trade as a means of international commerce in the food industry for most developed countries. Foreign affiliate sales of food and beverage products in Canada and the United States are two to three times

greater than their firm's exports into these markets (Henderson et al, 1996). Data are available to analyze the relative size and growth of FDI and trade in the food and beverage sector between the United States and the World, Canada, and Mexico.

Sales by U.S.-owned affiliates in other countries are four times larger than U.S. processed food exports. Sales from U.S. affiliates abroad grew 7.9 percent annually during 1990-98 to \$140 billion. But U.S. exports also grew at an average rate of 5.7 percent per year. Thus, in the aggregate, FDI sales growth did not come at the expense of exports (Table 9).

U.S. inward FDI is also larger than processed food imports. Sales from foreign-owned affiliates in the United States grew at a 1.6 percent average annual rate from 1990 reaching \$53.4 billion in 1998. Imports have grown much faster than inward FDI, increasing at an average annual rate of 5.1 percent from 1990-98 (Table 10).

In terms of FDI and trade between the United States and its NAFTA partners, U.S. FDI sales in Canada are over twice as large as U.S. processed food exports to Canada, but both are growing rapidly. U.S. affiliate sales in Canada grew at an average annual rate of 3.9 percent from 1990-98. U.S. exports are growing even faster at 8.8 percent per year (Table 11).

Table 9: Sales of U.S. Affiliates Abroad vs. U.S. Processed Food Exports

	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Billions of U.S. Dollars)								
Affiliates Sales	76.0	82.3	87.6	95.4	104.9	115.3	121.2	131.0	140.0
US Exports	18.9	20.3	22.8	23.4	26.2	29.4	30.1	31.3	29.4
Affiliate-Index	100	108	115	126	138	152	159	172	184
Exports-Index	100	107	121	124	139	156	159	166	156

Source: Exports from U.S. Census monthly trade data aggregated to annual, affiliate sales from U.S. Department of Commerce, Bureau of Economic Analysis. 1998. *U.S. Direct Investment Abroad: Operations of Parent Companies and Their Foreign Affiliates*. October. Washington D.C. Affiliate sales for 1997-98 are ERS estimates.

Sales by Canadian-owned affiliates in the United States have been more variable, but have still grown at an average rate of 3.3 percent from 1990 to 1998. U.S. imports from Canada grew at an annual average rate of 7.8 percent – slightly below the growth rate of U.S. exports. Growth in both FDI and trade between these two countries give strong evidence of a highly integrated and expanding regional market (Table 12).

As in Canada, U.S. FDI sales in Mexico are over twice as large as U.S. processed food exports to Mexico. Sales from U.S. affiliates in Mexico grew from \$3.2 billion in 1990 to an estimated \$6.6 billion in 1998 – an average of 9.5 percent per year. U.S. exports into Mexico grew at an average annual rate of 12.4 percent over this same period (Table 13).

Table 10: Processed Food Sales of Foreign-owned Affiliates in the United States vs. U.S. Imports of Processed Food

	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Billions of U.S. Dollars)								
Affiliates Sales	47.1	47.7	46.8	46.8	48.9	51.1	49.6	52.0	53.4
US Imports	20.5	20.6	21.8	21.8	23.8	25.0	27.8	30.2	30.2
Affiliate-Index	100	101	99	99	104	108	105	110	113
Imports-Index	100	100	106	106	116	122	136	147	148

Source: Exports from U.S. Census monthly trade data aggregated to annual, affiliate sales from U.S. Department of Commerce, Bureau of Economic Analysis. 1998. *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies*. July. Washington, DC.

Table 11: Processed Food Sales by U.S. Affiliates in Canada vs. U.S. Exports to Canada

	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Billions of U.S. Dollars)								
Affiliates Sales	9.2	8.9	10.2	10.9	11.3	11.2	11.6	12.0	12.5
US Exports	2.7	3.1	3.3	3.6	4.0	4.2	4.6	5.0	5.3
Affiliate-Index	100	97	111	118	123	122	126	130	136
Exports-Index	100	115	122	133	148	156	170	185	196

Source: Exports from U.S. Census monthly trade data aggregated to annual, affiliate sales from U.S. Department of Commerce, Bureau of Economic Analysis. 1998. *U.S. Direct Investment Abroad: Operations of Parent Companies and Their Foreign Affiliates*. October. Washington D.C. Affiliate sales for 1997-98 are ERS estimates.

According to Mexican sources, from 1994 to 1997 about 40 percent of total FDI into Mexico's processed food industry came from the United States, Canada was second with 14 percent of the total, followed by the United Kingdom and the Netherlands. In recent developments, Corn Products Incorporated acquired the controlling interest of Arancia-CPC, Mexico's largest corn product processor. Currently, Smithfield Foods is negotiating to buy Grupo Alpro, Mexico's largest pork processor. Even with the strong FDI growth in Mexico, U.S. exports to Mexico have also grown by 12.4 percent annually. Following the sharp drop in 1995, after the peso devaluation, U.S. exports to Mexico have grown about 20 percent per year from 1996 to 1998.

In contrast with Canada, Mexico's FDI sales in the United States are smaller than its processed food exports to the United States. Processed food imports into the United States from Mexico grew from \$1 billion in 1990 to \$2.3 billion in 1998, an average growth rate of 9.6 percent. From almost zero in the early 1990s, Mexican-owned affiliate sales in the U.S. processed food sector increased from \$585 million in 1995 to \$664 million in 1996, and may be close to \$1 billion in 1998 (Table 14).

Table 12: Processed Food Sales by Canadian-Owned Affiliates in the U.S. vs. U.S. Imports from Canada

	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Billions of U.S. Dollars)								
Affiliates Sales	5.8	5.6	5.1	5.3	6.7	6.5	6.8	7.2	7.5
US Imports	3.5	3.6	3.9	4.2	4.6	4.9	5.7	6.3	6.4
Affiliate-Index	100	97	88	91	116	112	117	124	129
Imports-Index	100	103	111	120	131	140	163	180	183

Source: Exports from U.S. Census monthly trade data aggregated to annual, affiliate sales from U.S. Department of Commerce, Bureau of Economic Analysis. 1998. *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies*. July. Washington, DC. Affiliate sales for 1997-98 are ERS estimates.

Table 13: Processed Food Sales of U.S. Affiliates in Mexico vs. U.S. Exports to Mexico

	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Billions of U.S. Dollars)								
Affiliates Sales	3.2	4.3	4.5	6.0	6.0	5.3	5.5	6.1	6.6
US Exports	1.1	1.6	2.0	2.0	2.4	1.7	2.1	2.4	2.9
Affiliate-Index	100	134	141	188	188	166	172	191	206
Exports-Index	100	145	182	182	218	155	191	218	255

Source: Exports from U.S. Census monthly trade data aggregated to annual, affiliate sales from U.S. Department of Commerce, Bureau of Economic Analysis. 1998. *U.S. Direct Investment Abroad: Operations of Parent Companies and Their Foreign Affiliates*. October. Washington D.C.

This represents an average annual growth rate of 17.2 percent from 1995 to 1998. Mexican investment in the U.S. food sector is lead by Grupo Industrial Bimbo, producing bakery products and tortillas, and by Gruma, a major corn miller and tortillas producer.

Multinational food companies establish affiliates in other countries primarily to serve customers in the host country. U.S.-owned foreign affiliates had sales of \$121 billion in 1996. Of those sales, 75.9 percent remained in the host country, while on average only 2.5 percent were exported to United States. The remaining 21.6 percent was exported from the host country to the rest-of-the-world (Table 15).

Table 14: Processed Food Sales by Mexican-owned Affiliates in the United States vs. U.S. Imports from Mexico

	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Billions of U.S. Dollars)								
Affiliates Sales	-	-	-	-	-	0.59	0.66	0.75	0.95
US Imports	1.08	1.03	1.04	1.14	1.29	1.60	1.80	2.08	2.24
Affiliate-Index	-	-	-	-	-	100	112	127	161
Imports-Index	100	95	96	106	119	148	167	193	208

Source: Exports from U.S. Census monthly trade data aggregated to annual, affiliate sales from U.S. Department of Commerce, Bureau of Economic Analysis. 1998. *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies*. July. Washington, DC.

Table 15: Distribution of Sales of U.S.-Owned Foreign Affiliates, 1996

US Affiliate Location	Total Affiliate Sales	Destination of Affiliate Sales		
		Host Country	Rest of the World	United States
	(Billions of U.S. \$)		(%)	
The World	121.2	75.9	21.6	2.5
Canada	11.6	89.3	1.8	8.9
Mexico	5.5	94.9	2.1	3.0

Source: U.S. Department of Commerce, Bureau of Economic Analysis. 1998. *U.S. Direct Investment Abroad: Operations of Parent Companies and Their Foreign Affiliates*. October. Washington D.C.

With long common borders that facilitate truck and rail transport, one would expect U.S. affiliates in Canada and Mexico to ship a higher share of their sales to the United States than would be the case for all U.S. affiliates worldwide. However, to date, this is only true for Canada. In Canada, a relatively high-wage country, U.S. affiliates exported an average of 8.9 percent to the United States, with 89.3 percent remaining in the host country and only 1.8 percent exported to the ROW. Many U.S. affiliates in Canada have product mandates, often importing semi-processed ingredients from the United States, and then specializing in producing specific finished products for a large regional market such as the eastern United States/Canada. In contrast, U.S. affiliates in Mexico, a relatively low-wage country, exported an average of only 3.0 percent of their sales to the United States. Thus to date, most U.S. food firms have not established affiliates in Mexico as export platforms to the United States. While affiliates on average export only about 3 percent of their sales back to their home country, most trade between affiliates and the home country is intra-firm trade. World-wide, nearly 80 percent of U.S. trade with its affiliates (both imports and exports) is between the affiliates and their U.S. parents.

THE NATURE OF INVESTMENT ATTRACTIVENESS

The environment for FDI and trade has changed significantly since the mid-1980s. Technological and policy-related barriers to the movement of goods, services, capital, professional and skilled workers, and firms have been reduced substantially. At the same time, technological developments have greatly enhanced the ease with which goods, services, and intangible assets can be transported. In addition, the tasks related to organization and management of firms can be implemented over distances. Liberalization of rules and regulations governing trade, investment and technology flows has increased the degree to which new possibilities created by technology can be realized. These changes have led to a substantial increase in international production and trade and a substantial presence of foreign affiliates in the world economy today.

Shatz (1997) identifies two types of investors: (1) *market servers*, for whom the objective is to serve the market in the host country, and (2) *exporters*, for whom the objective is to establish an export platform from which to serve markets outside the

host country. These two types of investors have different criteria for making their investments. Broadly speaking, market servers look for large, fast-growing markets, while exporters look for low-cost production sites.

Market servers are typically more willing to compromise on some country characteristics, such as strength of contract enforcement, investment incentives, and labour costs, to get access to a large market, such as China, Brazil, India or Russia. Exporters, on the other hand, are typically less willing to compromise on issues affecting investor protections such as intellectual property rights, and are much more likely to be concerned about the overall competitiveness of the country being considered for investment.

The strategies of food manufacturers for accessing foreign markets were studied in detail in a joint study by Agriculture and Agri-Food Canada and the Economic Research Service of the USDA (Vaughan et al., 1994). In this study, interviews were conducted with senior officials of 17 multinational food manufacturing firms with operations in the United States and Canada. For 15 firms, foreign affiliates accounted for the highest proportion of sales outside the home country. All 17 firms supplied foreign markets with exports to some extent, but many used exports only if the foreign market were unable to support local production. Licensing accounted for a small share of the firms' sales.

The choice between foreign affiliates and other means of accessing a foreign market is influenced by several factors. These factors can be grouped into two types:

1. Factors affecting the feasibility of production outside the home market:

Firms consider several explicit costs when determining the feasibility of production in a market. These include: cost and availability of inputs (especially raw materials and labour), value of products relative to their delivery costs, infrastructure (transportation and storage), barriers to entry, tariffs and other government policies, ability to achieve economies of scale, and demand (size and potential for growth).

2. Factors affecting risk and control:

Firms may want to exercise control over the production and distribution of their products to maintain a consistent level of product quality, deliver their products in a timely manner, and respond quickly to consumer needs. However, firms must balance their desire for control with their exposure to the different financial risks associated with each strategy. The financial risks arise due to lack of knowledge or experience with the specific market tastes and preferences or marketing practices, the reaction of rival firms in a foreign market, the degree of economic and political instability in the market, insufficient infrastructure, and unreliable or poorly trained labour. Wholly-owned foreign affiliates offer the greatest control over production and distribution but expose the firm to the greatest financial risk. Exports offer control over production, but, in the absence of a distribution licensing agreement or joint venture, offer little control over the distribution process. Joint ventures represent the middle of the spectrum. As firm's knowledge increases over time, its perception of

risk changes, affecting the trade-off between risk and control, and, ultimately, the strategies selected. (Vaughan et al., 1994; Henderson et al., 1996)

Food manufacturers are often constrained to being more multi-domestic than global (Rama, 1991 as cited by Vaughan, 1995). The main reason for this is that consumer tastes and preferences, and the characteristics of food products are less standardized across regions than many other manufactured products, such as computers. In some cases, transportation costs relative to product value limit the distance over which food products can be economically transported. The ongoing need for food manufacturers to take local preferences into account requires some degree of decentralized, downstream, consumer-linked activity, such as marketing strategy, to take place within target markets. At the same time, competitive pressures are forcing multinational food firms to rationalize upstream activities, such as production and research, to lower their costs. Multinational food firms must trade off benefits from increased scale economies against added costs of delivery, in their decision process.

In general, multinational food firms prefer serving markets with affiliates rather than exports to obtain increased control over intangible assets, such as trademarks and proprietary technology. Local affiliates have a greater ability to maintain the quality and reputation of brand name products by ensuring superior customer service and timely delivery. In addition, food demand is often characterized by strong regional preferences. By producing in the host region and having full control over production and distribution, the firm is better equipped to tailor products to local tastes while avoiding potential local resistance to imports. These ownership benefits make exports less attractive and provide a strong motivation for foreign production. (Vaughan, 1995)

There appears to be a sequential relationship between FDI and trade in food and beverage manufacturing. First, domestic food products are exported. Then when product acceptance is demonstrated, market entry proceeds through licensing and strategic alliances for distribution. This stage is often followed by FDI (usually mergers and acquisitions) moving production into the market for better control. In this scenario, exports may shift from final products to intermediate products and/or services to support local production in the foreign market. Henderson et al. (1996) were unable to find a consistent relationship between FDI and trade in their review of the literature.

In recent years, there has been a significant trend toward rationalization of firms and plants on a regional basis. Trade liberalization and increasing competitive pressures are presumably encouraging food firms to increase specialization within geographic regions and invest in internationally cost-competitive plants. Food firms seem to be aiming to exploit economies of scale, become more efficient, and purchase inputs from the most cost-competitive source. Clearly, expansion beyond the domestic market allows firms to pursue growth opportunities unavailable in their domestic market. It also allows them to spread risk through geographic

diversification, and to fully exploit brand name products and technology-related intangible assets.

FDI responds to profit opportunities and costs within specific economic sectors in target countries. Hence, the business environment within a target country plays an important role in FDI decisions. In a survey conducted by the World Economic Forum (World Economic Forum, 1997) international executives identified, in rank order, the following top 5 factors in investment location decisions:

- size of national market of target country;
- expected growth in market size of target country;
- ability to repatriate capital and remit profits;
- productivity and work habits of workers; and
- infrastructure.

The Forum survey also showed that among the countries that offer large and growing markets, the factors which tend to determine which countries get the most FDI are:

- macroeconomic stability;
- regulatory regime;
- quality of infrastructure; and
- cost of labour.

Based on these results, it would appear that foreign investors do not seem to pay much attention to factors which used to be considered important, such as corporate tax rates and structure, tax holidays, cheap credit, subsidies and other types of investment incentives (Hu, 1997). It may be that such factors are more important at the municipal or other sub-state level in influencing the location or site-selection decision once the country for investment has been established.

For food industries, the following key factors in investment attractiveness were cited by interviewees in a recent study conducted for Agriculture and Agri-Food Canada (Deloitte and Touche, 1997):

- market size/market growth prospects;
- level of government intervention;
- administrative/regulatory burden for business;
- corporate and personal tax rates;
- environmental policies/regulations;
- political/economic/social stability;
- raw material availability;
- wage rates/unionization/labour costs and availability; and
- profit potential.

These factors are essentially the same as those identified by the World Economic Forum in their 1997 Executive Survey, and those identified by Vaughan et

al. in 1994. In particular, they are associated with the market serving investors criteria outlined by Shatz (1997).

Apparently different kinds of FDI respond to different kinds of considerations. There is general agreement on the factors that influence FDI, such as laws governing foreign investment, taxes, wages, potential market growth, corruption and other considerations that determine whether a business will earn profits, and whether profits will be enough to justify the risk. What is not clear is the relative weighting of these factors, and the degree to which these weightings may be unique to the specific investment situation, the country in question, and the firms involved.

INVESTMENT, COMPETITIVENESS AND TRADE

There are several areas in which investment plays a role in global competitiveness and trade when agriculture and the agri-food sector are expanded into the global market place. This section reviews four of those areas identified in a recent analysis by Agriculture and Agri-Food Canada (1998).

Supply Capability

In most economies, land for food production is a limited resource. Investment in research contributes to higher crop yields and improved quality. In developing economies, investment is required to develop and enhance crops appropriate to the natural resource base, and to develop and apply appropriate tools and techniques of production. Foreign direct investment in biotechnology companies is emerging as a significant factor in the global restructuring of the agriculture and agri-food sector. Intellectual property rights is a key policy issue. Exploiting proprietary research is one of the important factors underlying foreign direct investment as this is often best achieved through outright ownership of the production facilities exploiting the technology

Beyond the farm gate, increased processing capacity will require substantial investment in food and beverage manufacturing plants and equipment. The economic scale of food processing plants in many cases is world scale. World-scale facilities often require significant investment. Achieving world-scale production facilities may also lead to significant consolidation in some industries, possibly raising competition policy issues.

In developing economies the need for infrastructure to facilitate economic development is generally greater than government resources can effectively address. Foreign direct investment has become the principal external source of funding for infrastructure projects in many developing countries (Hu, 1997). This presents an interesting policy development; the private ownership of public resources. It may also present some competition policy issues in the area of access to markets or facilities.

Productivity Improvement

Supply chain management is also emerging as a significant factor in global competitiveness. In developed economies, with relatively well developed supporting industries, supply chain coordination is increasingly achieved through strategic alliances and a variety of contractual arrangements. However, in developing economies such coordination is often achieved through outright ownership and may involve considerable effort on the part of a manufacturer to finance and develop necessary infrastructure, train labour, provide technology and teach suppliers how to work more effectively with each other and with the company. The data on FDI suggest that it may be for these reasons, among others, that “greenfield” investment (i.e., investment in new facilities) appears to be greater in developing economies, while mergers and acquisitions continue to dominate foreign direct investment in developed economies. However, this observation has yet to be confirmed by analysis.

Sustained growth in global markets will require significant improvement in the rates of productivity growth along the agri-food chain from farm to fork. Based on some preliminary analysis looking at the Canadian agri-food sector, improvements of 300-400 percent in the traditional rates of productivity improvement may be required. (Agriculture and Agri-Food Canada, 1998).

Productivity improvement is also usually a function of the ratio of capital to labour. Increased capital requires investment. More sophisticated capital also requires more sophisticated, better educated labour. More productive labour usually earns higher wages and salaries. These observations are consistent with the analysis of investment and productivity carried out by Barber and Baldwin (1997).

The evidence presented in the previous section on NAFTA trends shows that U.S. owned affiliates in Canada export about eight percent of their sales to the United States whereas U.S. affiliates in Mexico and the rest of the world export only two to three percent of their sales back to the United States. This suggests that global competitiveness may not be about exploitation of low priced labour in developing economies. Rather, it may be that global competitiveness is driven by the effective use of productive, highly paid, sophisticated and well educated labour in conjunction with access to modern technology and equipment. This may be particularly true if value-added differentiated products are the focus rather than bulk commodities, which also appears to be a trend in international trade.

In the Canadian case, recent analysis of Canadian agri-food manufacturers using Census of Manufacturers data (Barber and Baldwin, 1997) shows that, compared with domestically-controlled establishments, foreign-controlled establishments are larger, account for an increasing share of total sector output, exhibit higher and increasing labour productivity, have greater capital intensity, employ an increasing share of the total sector labour force, have a higher-skilled labour force, pay higher wages, and have less volatility in employment over time.

Market Access/Market Development

FDI leads to greater integration with export markets through intra-firm trade and investment. Intra-firm trade reduces transaction costs with respect to trade. Intra-firm trade flows between parents and affiliates, and among affiliates, has increased in importance as multinational enterprises (MNEs) have established more integrated international production systems. Intermediate inputs are a growing element of intra-firm trade. In the United States, the share of exports to other foreign affiliates in intra-firm exports of foreign affiliates rose from 37 percent in 1977, to 53 percent in 1983, to 60 percent in 1993. A substantial proportion of Canada's trade in food and beverages is intra-firm as well. In the mid-1980s (before the major period of restructuring), foreign-controlled firms accounted for about 55 percent of total imports and 35 percent of these imports were received through intra-firm channels.

As globally positioned firms focus on better control of the supply chain to squeeze out costs, maintain product quality and exploit proprietary firm knowledge and expertise, access to their supply chains may become a more important issue for producers and service suppliers if they want to share fully in the expansion of global demand for agriculture and food products.

Investment and Trade

To the extent that FDI facilitates trade in goods and services, gains similar to those achieved from conventional integration through trade may be realized, including gains from rationalization and increased competition. Thus, international investment is a vehicle through which MNEs exploit benefits of specialization and economies of scale. To this extent, FDI should contribute to a superior allocation of world resources, and higher levels of total world production and international trade. FDI may also help countries to exploit their respective comparative advantages in serving export markets.

There are some growing concerns, particularly in western Europe, centered around the question of whether FDI outflows would reduce home country capital stocks, take away jobs and cause unemployment. The experience of the United States and Japan suggests that these concerns are not necessarily well founded. Both are dominant suppliers of FDI, and have the lowest rates of unemployment among the industrialized world. In recent periods, vigorous job creation in the United States followed massive outward foreign investment by U.S.-based MNEs. Certainly significant global mobility of capital does create pressure for domestic labour market reforms, and may expose countries with labour market rigidities to risks of high jobless rates. However, a causal relationship between strong FDI outflows and rising unemployment is difficult to establish (Hu, 1997, p. 38).

A related issue is whether global strategies of MNEs generate or displace home country exports. Henderson et al. (1996) note that anecdotal evidence from the U.S. food manufacturing sector provides support for both the displacement and creation of exports from FDI. One MNE strategy is to use exports to enter a foreign market, but eventually move to FDI. This strategy suggests that FDI displaces

exports. Alternatively, increased FDI may generate trade for several reasons. First, foreign affiliates may be highly specialized and may not be producing all of a firm's product line. Second, foreign affiliates may be engaged in activities that provide a much needed vertical linkage for the expansion of its export demand. Further, the presence of foreign affiliates may make it easier for the parent firm to respond to new export opportunities in neighboring regions or countries.

According to the World Investment Report (UNCTAD, United Nations, 1996), FDI, as the principal method of delivering goods and services to foreign markets, and the principal factor in the organization of international production, increasingly influences the size, direction and composition of world trade, as do FDI policies. In turn, trade and trade policies exert various influences on the size, direction and composition of FDI flows. While both trade and FDI impact growth and development independently, maximizing their combined contribution implies the need for an integrated approach to trade and investment policies.

Firms produce both goods and services, and most international transactions have significant intersectoral components. As well, many of the associated trade and investment effects of internationalization through trade are intersectoral in nature. This makes it increasingly difficult to isolate separate trade and investment effects associated with the internationalization sequence of a particular product, firm, industry or sector. What seems clear is that trade eventually leads to FDI, and, second, on balance, FDI leads to more trade. The result is an intensification of international economic interactions.

As firms move to establish globally integrated production systems, decisions to locate any part of the value-added chain are inherently made with a view to converting global inputs into outputs for global markets. FDI locations and trade flows are determined simultaneously. As a result, the issue is no longer whether trade leads to FDI or FDI to trade; whether FDI substitutes for trade or trade substitutes for FDI; or whether they complement each other. Rather, it is: how do firms access resources – wherever they are located – in the interest of organizing production as profitably as possible for the national, regional, or global markets they wish to serve? In short: where do firms locate their value-added activities? The decision about where to locate is simultaneously a decision about where to invest and from where to trade. It follows from this that what matters are the factors that make particular locations advantageous for particular activities, for both domestic and foreign investors. From a policy perspective, it means that national policies on FDI and trade need to be fully coordinated and consistent with each other. (World Investment Report, UNCTAD, United Nations, 1996)

For the food and beverage industries, it seems that interregional competition at the sub-national level (but including competition between regions located in different countries) is emerging as the focus of trade and development strategies of the future. International trade between countries (in the aggregate) is likely to become less relevant as a focus for strategy and analysis.

POLICY ISSUES AND ANALYTICAL CAPABILITIES

FDI and trade appear to be inextricably linked in what could be described as a symbiotic relationship. Growth in one usually leads to growth in the other. Decline in one can lead to decline in the other. Not only does FDI result in increased economic integration among national economies, but it is also a key factor in the increased consolidation, productivity improvement, and global competitiveness of industries, including agri-food industries. This, in turn, is forcing increased emphasis on agri-food system coordination all along the food chain from farm to fork.

Policy issues associated with FDI center on factors which affect the business climate, the ability of businesses to profitably succeed in the international marketplace, and in economic terms, overall market performance. These issues include:

- competition and investment policies;
- trade policy;
- intellectual property rights;
- environmental regulation and standards;
- labour regulation and standards;
- regulatory harmonization;
- education policy; and
- taxation policy.

These policy issues may have greater significance to post-farm gate segments of the agri-food system than to the farm level. Moreover, increasingly the post-farm gate segment of the agri-food system is exercising political and economic pressure to change these elements to improve the business climate for their benefit.

What affects one segment of the agri-food chain ultimately affects the whole chain. In the new market structures that exist, that reality is far more transparent than in the past. As a consequence, agricultural policy, food policy and more general economic policies are perceived to be linked more tightly than in days past. Policy analysis must increasingly take into account vertical impacts, along the chain, of policies that are targeted at one segment of the chain.

Policy tools and analysis in agriculture tend generally to focus on the primary sector. Macro models, by their very nature, focus on the economy as a whole. There is, therefore, a gap between the need for policy analysis along the agri-food chain and the capability of existing tools and models to effectively generate relevant policy information on these vertical interactions. In addition, the close coordination along a given agri-food chain may be unique to the players actively involved in that particular chain, their products, locations, and individual circumstances. Aggregate analysis at the level of the sector may become less and less relevant to understanding policy impacts on the system as a whole.

Policy decision-makers will increasingly require better information about the

impact of specific policy decisions on the trade-offs along the agri-food chain. Lobbyists will need to understand how policies focused on their segment of the food chain impact on other segments. Agricultural economists and policy advisors will have to expand the analytical capabilities of their tools and models to more effectively deal with these issues, or risk becoming increasingly irrelevant to policy issues of the day. This observation implies new responsibilities to applied economists, and it reinforces the relevance of the role and objectives that organizers set out for this workshop series.

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STRATEGIC ALLIANCES AND JOINT VENTURES UNDER NAFTA: CONCEPTS AND EVIDENCE

David Sparling and Roberta Cook

INTRODUCTION

Cooperative business relationships are dramatically changing the structure of the North American agri-food sector. An examination of recent events in the grain industry reveals the extent to which cooperative ventures are becoming integrated into international agribusiness. When Cargill decided to expand its presence in Canada it participated in several joint ventures, one with Hazzard Farm Services in a grain elevator business, another with Agricore in a Vancouver port terminal and several with retail level dealers. Competitor ADM entered into a joint venture with United Grain Growers (UGG) of Manitoba purchasing 40 percent of UGG. ADM provided an infusion of funds and secured access to 170 grain elevators in the Canadian prairie provinces in return. Among its myriad of other alliances, ADM has an alliance with Grupo Maseca (GRUMA) of Mexico, the market leader in wet corn milling, flour mills and soybean products, and it recently acquired 22 percent of the stock in GRUMA. Meanwhile, Saskatchewan Wheat Pool (SWP) entered into three joint ventures: a port facility in Manzanillo with Comercializadora La Junta (CLJ) of Mexico; a grain elevator in Northgate, North Dakota with General Mills; and a terminal in Gdansk, Poland with European partners. SWP was also involved in a long standing relationship with Canadian competitor, Agricore, to market grain internationally through a joint venture agency, XCAN.

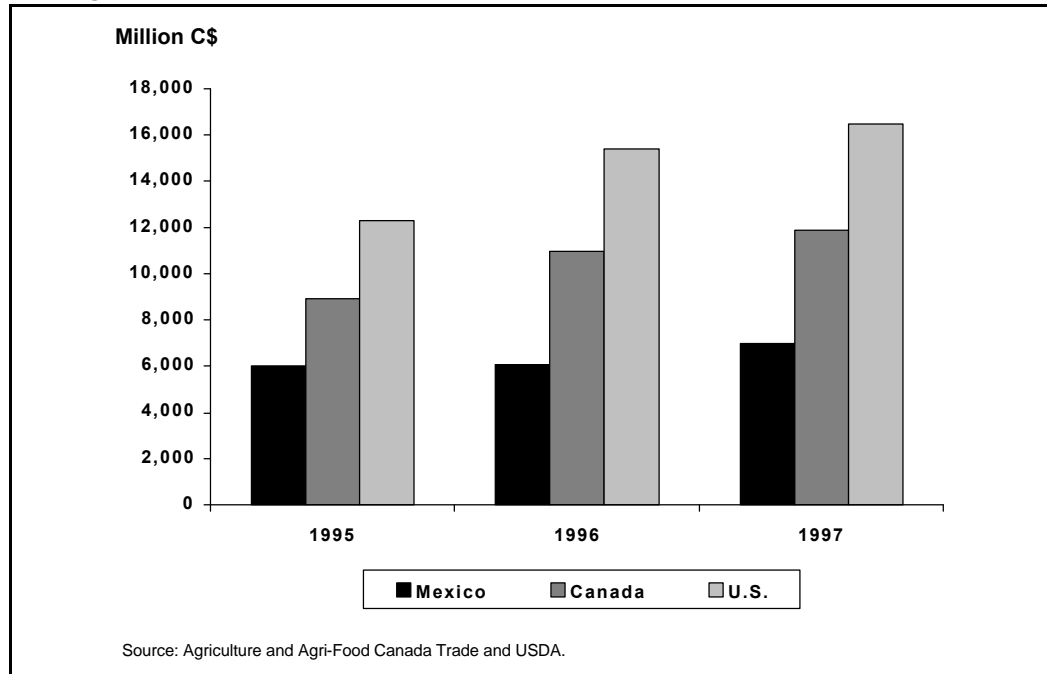
The North American Free Trade Agreement (NAFTA) has reduced or removed many of the impediments to U.S./Canada/Mexico trade. However, it takes more than lower trade barriers to capture the economic benefits from increased agri-food trade. Firms must organize sufficient resources to identify new markets and opportunities and to produce, distribute and service products in those markets. Entering new international markets is beyond the capabilities of many companies, prompting many to look to other organizations for the additional resources and capabilities needed.

Although alliances between trading organizations date back to the time of the Phoenicians, the number of new alliances has grown exponentially in the last decade. In the United States, alliance formations ranged from 55-124 per year in 1970-82 (Ghemawat et al., 1985) to an annual average of 391 during the four year period 1986-89 (Culpan, 1993). In the 1970s and 1980s, domestic joint ventures occurred twice as often in the United States as international joint ventures (Killing, 1983). By 1987, U.S./foreign alliances had overtaken U.S./U.S. alliances (Culpan, 1993). The results of the 1990s are dramatically different. Consultants at Booz, Allen, Hamilton estimate that 32,000 strategic alliances have been created worldwide in the last three years, with three-quarters of them international alliances¹. Alliances account for at

least half of the market entries into Latin America, Asia and Eastern Europe (Adarkar et al., 1997). Strategic alliances and joint ventures are the new international business norm, not the exception.

Under NAFTA, economic interaction and integration between Canadian, Mexican and U.S. agribusiness firms has increased dramatically. Both agri-food trade (Figure 1) and foreign direct investment have grown substantially (Handy and Bamford, 1999).

Figure 1: Agri-Food Exports to NAFTA Partners



Trade and investment figures tell only part of the story. They track the flow of products and investments, but overlook the flow of knowledge and profits between firms and nations. These flows, so essential to global competitiveness, are facilitated by close corporate interaction, through mergers and acquisitions but also through co-operative relationships, strategic alliances and joint ventures.

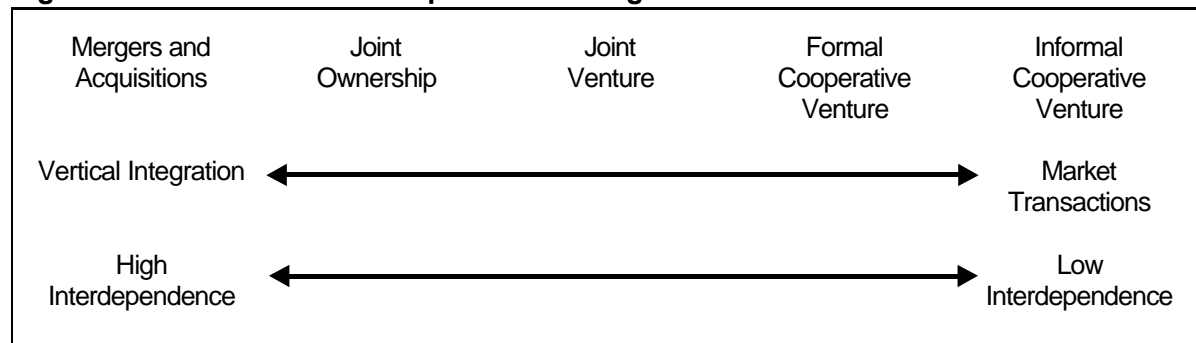
The ability to use cooperative inter-firm relationships will be an important factor in corporate success. This paper examines agri-food strategic alliances and joint ventures, beginning with a discussion of alliance types and definitions. A conceptual model, the strategic alliance life cycle, is presented. The nature of NAFTA related agri-food joint ventures and strategic alliances is discussed. An analysis of alliances and joint ventures involving the fresh produce industry in Sinaloa, Mexico are examined at the industry level and at the level of an individual firm. A discussion and conclusions follow.

¹ The Economist, April 4, 1998, pg. 69.

JOINT VENTURES AND STRATEGIC ALLIANCES - DEFINITIONS

Interactions between organizations can take many forms, from market transactions to relationships so close that it is difficult to distinguish where one organization ends and the next begins. Lorange and Roos (1991) examined inter-firm relationships along two dimensions, first, as a continuum ranging from vertical integration, or hierarchies, at one end to free market transactions at the other and second, by the degree of interdependence (Figure 2).

Figure 2: A Continuum of Cooperative Arrangements



Source: Lorange and Roos 1991.

Definitions of cooperative relationships vary. Joint ventures carry the connotation of shared ownership (Badaracco, 1991). Some authors define a joint venture as a separate legal entity with ownership shared by both partners (Harrigan, 1984, Geringer, 1991). In this paper, a more liberal definition is employed. Joint ventures (JVs) are defined as legal arrangements where ownership and management of an organization are shared by more than one organization. This appears to be consistent with the generally accepted agri-food industry definition of JVs. Many of the grain industry examples cited in the introduction are of this type and are defined by both participants and popular press as joint ventures.

Strategic alliances (SA) are defined more broadly, covering a variety of flexible cooperative arrangements between organizations, from fluid, short term cooperation to long term, formal agreements (Das & Teng, 1998; Murray and Mahon, 1993). In a strategic alliance, partners remain independent after forming the alliance, both share alliance management and benefits, and both contribute to the alliance on a continuing basis (Yashino and Rangan, 1995).

For purposes of this paper, strategic alliances are defined as cooperative relationships between² organizations that meet the following criteria:

- Partners share resources, capabilities and/or knowledge on a continuing basis;

² Most alliances occur between two organizations but there are many instances of relationships among three or more. Note that in this paper references to alliances between two organizations could also refer to relationships among more than two organizations.

- The alliances have strategic intent for the partners; and
- Alliance objectives include the sharing and/or exchange of products, services, knowledge and profits.

The last criterion encompasses a multitude of cooperative activities ranging from shared research and product development, closer product and information ties, process improvement, to distribution and service integration. Thus, strategic alliances include all forms of cooperative relationships in Figure 2 between market transactions and vertical or horizontal integration, relationships sometimes called “hybrid arrangements” (Borys and Jemison, 1989).

A CONCEPTUAL FRAMEWORK – THE STRATEGIC ALLIANCE LIFE CYCLE

There is an extensive literature addressing the issues concerning strategic alliances and joint ventures. To organize the issues and theory in a manner that provides relevance to academics, policy makers and managers, we examine strategic alliances using a strategic alliance life cycle framework. We will discuss the issues in the order they must be addressed by alliance participants, beginning with the need and motivation for cooperation, progressing through alliance creation, operation and maintenance, and ending with the dissolution of the alliance. Table 1 summarizes the key issues, factors to be considered and theory applicable to each stage of the strategic alliance life cycle.

Motivation For Cooperation

When a firm’s corporate strategy includes entry into new international markets or development of new products or services for those markets, one of the first decisions to be made is whether the expansion should be undertaken independently or in cooperation with an external partner. In making this decision several factors come into play.

Interaction of Political and Resource Related Factors. An initial motivational assessment is based on whether the primary motivators for alliance are political or resource related. Political decisions and government regulations shape many international business arrangements. Restrictions on foreign ownership and participation in local economies, financial incentives, rules on knowledge acquisition or relationship preferences of government and quasi-government agencies for domestic partners all play a role in encouraging or coercing foreign firms to partner with local companies. Companies also enter alliances to secure resources needed to meet strategic objectives. Das et al. (1998) categorized resources as financial, production, distribution and managerial. The last category is expanded here to include all technical, managerial and local knowledge related to R&D, design, production and distribution in the new market.

Table 1: Strategic Alliance Life Cycles - A Conceptual Model

Phase	Motivation for Cooperation	Alliance Creation	Alliance Maintenance	Alliance Dissolution
Key Issues	Determining the need to enter into a cooperative venture. Setting objectives	Selecting a partner(s) Format for cooperation and definition of boundaries Clarifying expectations objectives and partner contributions	Control and maintaining smooth operation of venture Extracting profits and knowledge Evolution of relationship	Extracting two organizations from the venture with minimum disruption Sale, absorption or dissolution
Factors	Political Factors Strategic Goals Resource requirements	Nature of planned interaction – product vs. R&D Partner Objectives Partner Requirements Cultural differences	Bargaining power Comparative learning Distribution of benefits Response to environmental changes	Degree of interrelation Rights to jointly developed products, facilities and knowledge Bargaining Power
Underlying Theory	Transaction costs – Kogut (1988) Organizational Theory – Pfeffer and Nowak (1976) Competitive Advantage – Porter (1980) Supply Chain Management and Quality Management	Capabilities and Competencies – Prahalad and Hamil (1990) Risk/Resource Relationships Das and Teng (1998) Networks and social interaction – Gulati (1998) Contracting – Schrader (1986)	Competition for Learning – Private vs Common Benefits – Hamel (1991), Khanna (1998) Agency Theory – Barry et al. (1991) Resource Dependence Strategic interdependence and environmental uncertainty, Kumar & Seth (1998) Cultural and Behavioral Effects – Lane and Beamish, 1990	Property rights Valuation models

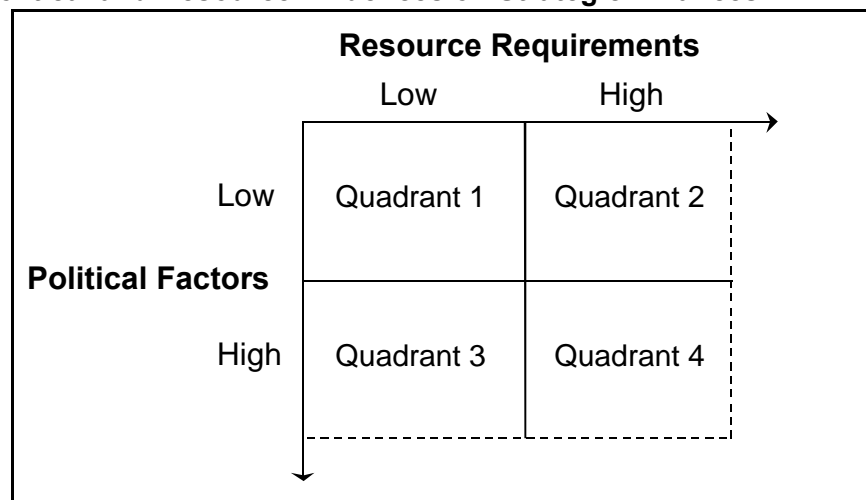
Source: Compiled by authors.

Analysis of the strength and interaction between political factors and resource requirements provides a measure of the need for the alliance and the challenges that will arise in creating and maintaining it. It can also provide insight into strategies for alliance partners. Consider the four quadrants of Figure 3. Firms in quadrant 1 have little internal or external incentive to enter a strategic alliance and should proceed independently. Those in quadrant 2 will use strategic alliances to secure necessary resources, without the distorting effects of political interference. Firms with high political motivation and low resource needs (Quadrant 3) are frequently forced into alliances that they would not otherwise have entered. This may stress the relationship and, since resources are not scarce, organizational compatibility should be the primary focus. Such alliances are at risk when the political situation changes, illustrated by the reversion of ownership to many multinationals when India reversed its regulations against foreign majority ownership of Indian subsidiaries³.

A quadrant shift appeared possible in 1992 with the Mexican government's reform of Article 27 of the Mexican Constitution. The reform modified Mexico's land tenure and agricultural investment policies and laws, relaxing some restrictions on foreign ownership of land and legalizing the rental of ejido land and the transfer of property rights to private individuals. Many thought the constitutional reform would shift some firms from quadrant 3 to 1, eliminating the incentive for partnering. However, even with the reform investment in farming was still restricted, both for domestic and foreign firms, and so joint ventures and strategic alliances remain the norm. Access to quality land is such an important resource issue that most foreign firms involved in agricultural production in Mexico are in quadrant 4.

Firms in Quadrant 4 have both political and resource incentives for creating an alliance. The final structure of the relationship is often shaped by the political considerations and may evolve as regulations change, but the resource requirements will provide incentive to continue the relationship.

Figure 3: Political and Resource Influences on Strategic Alliances



Source: Compiled by Authors

³ Yashino and Rangan, *Strategic Alliances*, 1995 pg. 5-6.

Objectives for Strategic Alliances. The specific objectives for firms entering strategic alliances may be further analyzed. Agri-food companies enter alliances to secure market access, supply assurance or resources. Four traditional explanations for alliances are discussed in the literature:

- Cartelizing an industry.
- Sharing risk.
- Bringing together complementary resources and capabilities, or
- Surmounting barriers.

To this list Badaracco (1991) adds a fifth – sharing embedded knowledge, knowledge that is found only in the structure, relationships and people of a firm. Embedded knowledge can only be accessed through prolonged close relationships between firms. Sharing knowledge through alliances is becoming a more common theme in the literature (Hamel, 1991, Khanna, 1998).

In international markets the incentives for firms to create alliances to achieve these objectives is magnified. New markets and countries present barriers and risks not found in domestic markets and there are many factors that may be mitigated by working with local organizations. Typically, resource requirements are greater in international markets and both sides have much to learn from each other.

Drivers of Strategic Alliances. Firms enter strategic alliances as part of corporate strategy and that strategy is being driven by several changes in the current operating environment.

- Globalization

Reduced trade barriers, improved logistics capabilities, multiculturalism and increased interest in international foods have all stimulated agri-food trade and alliances.

- Information Systems Capabilities

More flexible and powerful information systems allow easier integration of the information systems of different organizations, reducing the barriers and transactions costs between them.

- Quality/Environmental Systems

HACCP, ISO 9000 and ISO 14000 alter the way organizations think about internal operations and their relationships with partners. The drive for product identity and traceability in food chains provides an added incentive for alliances.

- Supply Chain Management

Maximizing performance across the network of organizations making up a supply chain requires high levels of commitment and cooperation among chain members. As organizations seek to differentiate their products and move away from the price dominated competition of commodities, they inevitably create longer term and closer relationships with both their customers and suppliers. Advances in biotechnology will allow agri-food products to be designed and produced for specific niche markets that will require precise management of the supply chain.

- Understanding Core Competencies and Competitiveness

Managers have developed a greater understanding of the role of core competencies in corporate success. With this awareness has come the realization that competitiveness can be enhanced by combining complementary capabilities and competencies of different organizations in close, long-term relationships.

- National Culture, Policies and Preferences

Although political obstacles to ownership and market entry are diminishing, there are still national and cultural differences that make strategic alliances attractive vehicles for entering new markets.

The need for alliances has several theoretical underpinnings. Transaction cost theory proposes that firms enter alliances to reduce the transaction costs associated with entering new markets (Jarillo and Stevenson, 1991, Kogut 1988). The organizational theory model attributes the formation of strategic alliances to a firm's reliance on other firms in its environment for its resources and the firm's need to reduce uncertainty and to stabilize the process of acquiring those resources (Pfeffer and Nowak, 1976). Porter (1980) suggests that firms enter into alliances in response to competitive pressure in order to achieve competitive advantages through low-cost leadership, differentiation or focus strategies.

At the end of the first phase of the alliance life cycle a firm should understand why an alliance is necessary to implement corporate strategy and be prepared to set alliance resource requirements and objectives.

Alliance Creation

Selecting a Partner. In the second phase of the strategic alliance life cycle, firms select partners and determine alliance structure. Partner compatibility is evaluated on several dimensions – objectives, resources, capabilities and competencies. While objectives for the two partners need not be identical they should be compatible. Partner resources and capabilities should complement those of other alliance members. Partners require a shared vision of where the alliance is heading and whether the needs of partners and the reasons for allying are likely to change. The latter is vital to determining alliance form, longer-term joint venture versus a more fluid and flexible alliance.

Harvey and Lusch (1995) proposed a scoring model for rating partners, analyzing prospects at the macro-economic, industry and firm levels. While scoring

models are useful for selecting the best alternatives from relatively large sets, in most alliance situations the set of suitable candidates is relatively small and issues of compatibility of corporate culture and complementary capabilities are most important. A scoring model does have the advantage of ensuring that all important factors in alliance formation are considered.

Nature of Alliance Flows. Badaracco (1991) categorizes inter-firm relationships as either product or knowledge links. The nature of the linkages is important in determining alliance form. Where linkages and flows between organizations are primarily product based, sharing of knowledge is limited to that required to exchange products, requiring less interaction between partners. In contrast, knowledge links are designed to share the knowledge and skills embedded in the relationships, procedures and people in a firm. This requires prolonged and close interaction, dictating an open and sharing alliance structure often achieved through joint ventures.

The Role of Relationships. Alliances result from the interaction of firms and people operating in a network of related businesses (Gulati, 1998; Stabell, 1998). Personal and business relationships influence the form, evolution and ultimate success of an alliance (Gulati, 1998). When searching for alliance partners, companies generally begin (and often end) with the firms and people they are already working with. In less industrialized countries, personal relationship building is frequently an essential precursor to alliances (Lane and Beamish, 1995).

Relationships played a major role in the Saskatchewan Wheat Pool/CLJ joint venture in Manzanillo. Years of market transactions between the two had resulted in a close relationship between the two companies and their leaders. SWP's global expansion strategy dictated securing access to grain terminals in global ports. CLJ understood Western Mexican grain markets and had a plan for establishing an elevator in Manzanillo but lacked financial resources. Based on its favourable relationship with SWP, CLJ approached SWP and a 50/50 JV grain terminal was created.

The impact of relationships on strategic alliance success extends beyond the firms directly involved in the alliance. A less researched aspect of inter-firm relationships is the impact of clusters on organizational success. Porter (1998) defines clusters as "geographic concentrations of interconnected firms and institutions in a particular field."⁴ Porter asserts that untangling the paradox of location in a global economy offers insights into how companies continually create competitive advantage. He observes that, "paradoxically, the enduring competitive advantages in a global economy lie increasingly in local things – knowledge, relationships and motivation that distant rivals cannot match."⁵

Clusters exhibit a high degree of competitive success that results from the complex interactions of multiple firms, working together and competing in ways that

⁴ M. Porter, *Clusters and the New Economics of Competition*. Harvard Business Review, Nov/Dec. 1998, pg. 78.

⁵ Same as above.

drive innovation and excellence in the industry as a whole. Examples of agri-food clusters include the California Wine cluster, mid-west grain and meat clusters, the further processing/prepared food cluster in Toronto, and the Sinaloa winter vegetable industry cluster.

Cluster relationships and corporate compatibility were the foundation for a successful food processing joint venture in Ontario. Five small, innovative, food processing companies who dealt with many of the same customers and suppliers recently joined together to create Coming Home Foods, a joint venture producing private label frozen foods for the U.S. market. The JV resulted from a meeting of the company leaders to search for potential synergies and shared opportunities.

Contributions to International Alliances. Contributions by partners in international joint ventures vary. In a study of 70 joint ventures in Argentina, Brazil, Mexico, Turkey, Philippines and India, Miller et al. (1996) compared motivation and issues between industrial country firms and their partners in less industrialized nations (Table 2).

Table 2: Firm Contributions to International Joint Ventures

Less Industrialized Country Firm Contribution	% of JV's citing this category	Industrial Country Firm Contribution	% of JV's citing this category
Knowledge of local politics	70	Process Technology	74
Knowledge of government regulations	68	Product Technology	72
Knowledge of local customs	68	International Reputation	70
Knowledge of local markets	65	Finances	65
Provision of financing	58	Management Knowledge	59
Local reputation	58		
Access to local market	54		

Source: Miller et al. 1996, pp. 6-7.

These findings parallel those of Trevino (1998) for Mexico. Foreign companies enter into ventures with Mexican firms to gain local business and political relationships and expertise in return for technology and expertise in reorganizing organizational structures. In a study of Spanish joint ventures, Llaneza and Garcia-Canal (1998) noted that international JVs tended to focus on acquiring knowledge of local conditions, business practices and culture whereas domestic JVs place more emphasis on sharing R&D knowledge. International JVs tended to have fewer partners and less equitable sharing of equity while domestic alliances tended to be more a sharing between equals. The inequity tends to be exacerbated in JVs in less industrialized countries, a result consistent with Beamish's findings (1988).

Risk and Structure. Alliance risk affects the choice of alliance form and control mechanisms. Das and Teng (1998) divide alliance risk into two categories, relationship and performance risk. Relationship risk is attributable to a firm's involvement with outside organizations. Opportunistic behavior by one firm might allow it to capture resources and knowledge from their partner, often eliminating the need for the alliance. Relationship risk only arises from firm to firm interaction.

Performance risk is attributable to the alliance's interaction with its environment. Even if firms cooperate successfully there are still risks that the venture will not succeed due to partner capability shortcomings, competition, or environmental changes.

Firms enter strategic alliances to reduce performance risk, but the process of integrating operations with a partner exchanges performance risk for relationship risk. Das and Teng (1998) relate these two risks to four resources (financial, technological, physical and managerial) prescribing an alliance orientation depending on a partner's main resource contribution and their most significant risk concern.

Alliance form depends on the nature of flows, objectives and risks involved in the relationship. Joint ventures offer advantages of greater control than less structured alliance forms at a cost of reduced flexibility. Once a form has been agreed upon, finalizing agreements remains a challenge. Miller et al. (1996) reported that in joint venture creation two issues dominated the discussions, equity structure and technology transfer. Equity structure was seen as the most important and most difficult issue to resolve. An important component of any alliance agreement is a well-defined dispute resolution process to mitigate the impact of changing circumstances as well as exit provisions for both parties.

Alliance Management

Issues in Strategic Alliance Management. Although creating alliances is a challenge, maintaining them is far more difficult. Bridging international and organizational cultural differences can stress even the most compatible relationships. The most significant problems for international joint ventures tend to be cultural differences (Miller et al., 1996), although these may not be obvious during the creation phase. As well, differences in corporate culture between family owned vs large multinational or multinational vs state owned bureaucratic companies add to alliance management difficulties (Adarker et al., 1997). Problems related to multi-nationality figure prominently in joint ventures between large multi-national corporations and smaller national companies. Frequently cited issues include export rights, taxes, dividend and investments, differences in size, capabilities, decision-making styles, reporting expectations and ability to invest in the venture.

Maintaining flexibility in a relationship is essential, so that it can evolve as changes in the operating environment or internal capabilities occur. Kumar and Seth (1998) examine the roles of strategic interdependence and environmental uncertainty in control design for managing joint venture-parent relationships. They define strategic interdependence as "a function of the importance and extent of shared resources" and environmental uncertainty as "a function of the extent and importance to the organization of changes in different elements in the task environment"⁶. Joint venture control and coordination mechanisms available to

⁶ Kumar and Seth (1998), pg. 581-2.

parent companies include direct contact and socialization among parent and JV personnel, structure and role of the JV board in JV management, incentives and JV management staffing.

Parent – JV relationships represent a tradeoff between the JV's need for independence to respond to environmental uncertainty and the parent's need to integrate JV activities with its strategy. Kumar and Seth found that the need for strategic interdependence resulted in increased use of all but JV staffing to align JV activities with those of the parent. In situations of high environmental uncertainty JV's require independence and the ability to respond quickly and independently to environmental changes. Such circumstances had a moderating effect on contact and integrative mechanisms and the internal role of the JV board (Kumar and Seth, 1998).

The Role of Learning in Strategic Alliance Evolution. Alliances in which organizations attempt to learn from each other frequently develop into "learning races" where participants seek to learn faster than their partners and internalize the other's competencies (Hamel, 1991; Tei, 1997). Considering the difference between private benefits accruing to a single partner and common benefits accruing to both partners helps put learning races into context (Khanna et al., 1998). Incentives to invest in the alliance depend on the ratio of private to common benefits for the firms involved and their relative progress toward learning objectives. As a firm gets ahead in the learning race, it has more incentive to invest to capture the benefits. The lagging firm has incentive to reduce its investment. Understanding learning races can help participants comprehend the changing nature of their relationship.

Just as changes in political regulations may move firms from quadrants 3 or 4 to 1 or 2, technology advancements, organizational learning and improved internal capabilities may move firms from quadrants 2 to 1 or 4 to 3. Such changes will alter the motivation for the alliance, requiring it to evolve or terminate.

Alliance Dissolution

International expansion is inherently risky and the level of dissatisfaction within strategic alliances has been found to be extremely high. The rate of success for both international alliances and cross-border acquisitions is approximately 50 percent (Bleeke and Ernst, 1991). Even if an alliance is successful, changing environmental conditions or corporate capabilities frequently reduce the need for the alliance for one or both partners. The average life of a strategic alliance is seven years and 80 percent of joint ventures result in the sale by one partner to the other (Bleeke and Ernst, 1991, 1995). Bleeke and Ernst (1995) divided strategic alliances into six categories and concluded that only the alliance of two strong, non-competing firms is likely to result in a sustainable long-term alliance.

Since unanticipated shifts in corporate capabilities, strategy or the environment can change the need for a strategic alliance, it is essential that firms consider strategies for determining when and how an alliance will be dissolved from the beginning. This includes prescribing conditions for reviewing alliance performance, for altering structure and operating agreements and for disentangling

partners from the alliance if necessary. Disengagement strategies can help reduce the financial and operational costs associated with dissolving an alliance.

We will examine characteristics and examples of strategic alliances and joint ventures under NAFTA at three levels. We will begin at the agri-food sector level and then examine experiences within a single industry and region, the Sinaloa vegetable industry. We will end by considering the inter-firm experiences of a single agribusiness family, the Ley family of Mexico. Many of these alliances began prior to NAFTA and may or may not be related to any specific NAFTA effects.

GENERAL CHARACTERISTICS OF STRATEGIC ALLIANCES AND JOINT VENTURES UNDER NAFTA

Motivation for Cooperation

For international partners in NAFTA agri-food alliances, the two primary objectives for forming alliances are either market entry or sourcing related. Domestic partner objectives, on the other hand, tend to be finance, knowledge and technology acquisition but may include sourcing.

The external partner in market entry relationships generally searches for local knowledge, distribution and marketing capabilities and provides domestic partners with technical skills and financing. Market entry alliances are formed at all levels. Food service distributor AmeriServe Food Distribution Inc. joined in a strategic alliance with MetroRichelieu Inc. gaining distribution in the Eastern Canadian market and providing MetroRichelieu with access to AmeriServe's product lines. The alliance is market entry for one partner and sourcing related for the other. Wal-Mart's joint ventures with food retailer Cifra of Mexico secured Wal-Mart's access to the Mexican market in return for capital, and expertise in technology and information systems.

Sourcing related alliances abound at the production and primary distribution levels. The numerous alliances between grain giants ADM and Cargill are examples of arrangements designed to secure grain supplies. The ADM alliance with UGG exhibits the sourcing/finance exchange between internal and external partners. UGG received cash necessary for continued operations from ADM and a Japanese customer Marabuli, for whom UGG was a preferred supplier. ADM and Marabuli secured access to Canadian terminals and grain supplies. Note that ADM's alliances are not restricted to either sourcing or NAFTA jurisdictions. A recent joint venture between ADM and Lesaffre et Compagnie brought operations in France, Canada and the United States into the International Malting Company. This enabled them to globalize brewing and malting capabilities and increase efficiency, while simultaneously securing better access to premium barley supplies and varieties. Similarly Cargill's expansion in Canada through joint ventures with Canadian grain and farm retail companies may be viewed as exchanges of cash and management resources in return for sourcing and marketing opportunities. It is interesting to note

that while the alliances form part of Cargill's Canadian strategy, in Mexico Cargill has chosen to proceed primarily through acquisition.

Alliance Creation

Alliance Structure. Agri-food alliances vary in their organization and structure but common general structures include:

- Licensing agreements

Kerry Foods of Wisconsin and Ireland serviced Canadian ingredients customers through a licensing agreement with Beatrice Foods from 1988 until 1993, when a disagreement caused it to take back its technology. The market demanded a mixture of physical product and knowledge that could only be supplied by a local firm. The product based alliance failed to meet market requirements. Ultimately Kerry acquired a Canadian ingredients company.

- Sole supplier arrangements

For example, Mezban, an Ontario producer of Indian condiments selected W.J. Clark, a Chicago based food product marketing firm, as its sole marketing partner for the U.S. market.

- Strategic alliances

These are non-investment relationships where partners work together in a variety of ways. These are common in relationships focusing on product exchange, such as in the fresh produce industry discussed in the next section.

- Minority investments in domestic firms

Many of the grain examples cited in the introduction fall into this category, as do investments by companies like Labatt's in the Mexican brewing industry.

- Joint ventures resulting in the creation of a new entity

Coming Home Foods of Toronto and XCAN are examples of organizations established to increase scope and reduce transaction costs for partner firms. A significant difference between these two is that the partners in Coming Home Foods offer complementary products to the JV while those of XCAN offer competing products. The latter alliance is coming under increasing pressure as participants like Saskatchewan Wheat Pool move into direct competition with the JV and the other participant Agricore. The venture continues to market canola but the proportion of other grains flowing through the organization is decreasing.

Nature of Alliance Exchanges - Product or Knowledge. The nature of the primary exchanges between partners influences the suitability of the different arrangements. Product-based alliances run the complete range of alliance structures from sole sourcing to joint ventures. These alliances involve lower relationship risks related to unequal learning and thus allow more flexibility in alliance structure.

Knowledge based alliances frequently use an exchange of ownership to control the use and flow of knowledge and technology. Technology alliances are found throughout the agri-food system, from input suppliers to producers and processors. They include technologies ranging from relatively basic process technologies to highly sophisticated production and biotechnologies. For example, Emery Corporation of Toronto supplies the much larger Grupo Vitep's Celatep joint venture with used equipment and expertise in paper carton manufacturing and has an ownership stake in Celatep. Grupo Vitep's Avibel subsidiary has a strategic alliance with Canadian firm Innovatech to acquire expertise and technology in dehydrating egg yolks. This is just one of Grupo Vitep's technology based joint ventures with foreign firms. While there is a preference toward North American partners, Grupo Vitep is also involved in alliances with Swiss, Danish, German and Spanish firms, firms which make everything from mayonnaise to feed and vaccines. UFL Foods of Toronto supplies a combination of ingredients technology and knowledge to its California JV partners Candor/Precision Blending. Much of UFL's international growth may be attributed to its extensive use of alliances and joint ventures.

Alliances and joint ventures among the NAFTA partners have also involved Mexican firms pursuing market access, technology acquisition or other goals in the U.S. and Canadian markets. Empresas La Moderna (ELM), recently renamed Savia, is one of the largest in scope, complexity and investment. In 1985 ELM, led by Alfonso Romo, embarked on a diversification strategy away from its core business of cigarette manufacturing, into agro-biotechnology. ELM entered the vegetable seed industry, by acquiring and merging Asgrow, Peto-seed, and Royal Sluis into its Seminis division. Entrance into the biotech field was achieved via an alliance with, and ultimately complete acquisition of, DNA Plant Technology Corp (DNAP). A network of strategic technology and investment alliances with universities and private firms has enabled ELM to achieve a global position in vegetable biotech and germplasm. ELM has numerous knowledge links with Monsanto. DNAP recently acquired Monsanto's strawberry development program, gaining exclusive rights to existing gene technology and a nonexclusive right to future Monsanto berry technology, of all types. ELM and Monsanto also signed a technology collaboration agreement through which Monsanto will become a "preferred provider" of agronomic quality traits developed through biotechnology.

ELM is also involved in product exchanges. Its position in North American fruit and vegetable production and marketing was established via a series of alliances and acquisitions, all grouped under the Fresh Produce Co. umbrella, a DNAP subsidiary. Partial, and later total, acquisition of a large Sinaloa winter vegetable exporter (RB Packing, Master's Touch label) and joint ventures with growers in the United States widened product lines and extended shipping seasons. ELM integrated forward by acquiring wholesale market operations in the United States and Canada. This represents one of the first times a Mexican produce firm has forward-integrated into the U.S. marketing system beyond the level of a Nogales distributorship.

Alliance Maintenance

Once an alliance is established, it must be managed in the face of both environmental and internal changes. The former may alter the competitive and regulatory environments, and the latter can shift the relative knowledge and resource positions of the partners. Hence, flexibility and planning are assets in alliance survival and evolution. In 1991, when Wal-Mart and Cifra began their joint venture to expand Cifra's stores they included provisions for sharing its future development equally. They later displayed the ability to adapt to unforeseen events. When the Peso collapsed in 1994, Cifra responded by taking full control of the JV while Wal-Mart provided financial backing in return for an increased stockholding position in Cifra. While the partnership continues, its nature has altered from one of shared responsibilities to one approaching an international subsidiary relationship. Reflecting the importance of effective communication in successful relations, Jeronimo Arango, Chairman of Cifra was appointed to the Wal-Mart Board of Directors in 1997.

Another example of providing options is Con Agra's initial JV agreement with Grupo Desc. This involved the purchase of 20 percent of its Universa meat processing subsidiary with the option to purchase 29.9 percent more.

Alliance Dissolution

The reasons for alliance dissolution may be divided into two groups, those related to the performance of the venture and those related to altered partner capabilities or objectives. In the first category, Fleming Cos. Of Oklahoma recently exited its joint venture with Grupo Gigante of Mexico City. Established in 1992, the JV operated five stores. The American store format was not popular with consumers and in 1998 Grupo Gigante purchased Fleming's share of the JV. A production joint venture between Dole and the Canelos Group to produce tomatoes in Mexico ultimately failed because of weather shocks and water shortages which impaired performance. In addition, the expected marketing advantages from Dole's national distribution system and branded marketing program never materialized. Dissolution was facilitated by the fact that it was a product only joint venture and both parties had always met their financial and other obligations to each other. Since the Canelos alliance needs have not changed significantly, the company recently entered an alliance with Chiquita to produce and market tomatoes and other produce.

Similarly, dissolution can occur because the partners evolve in different directions or discover that their objectives are not sufficiently compatible. The ultimate result of many alliances and JVs is the acquisition of alliance assets by one partner. In some cases, sale to a partner was not due to alliance failure, rather, it was but one step in the strategy of either or both parties. In these instances the alliance could be considered a purchase option rather than a true strategic alliance.

INDUSTRY LEVEL EXPERIENCES: THE SINALOA WINTER VEGETABLE INDUSTRY

Firm-level reactions to trade liberalization vary greatly by commodity sector. In the North American fruit and vegetable industry, product perishability and the seasonality of supply and demand are major determinants of industry structure and procedures. Industry fundamentals have caused the North American fruit and vegetable sector to exhibit marked patterns of specialization across several dimensions, including geography, seasons, product lines and markets.

Changes in the last two decades have encouraged joint ventures and strategic alliances between Mexican grower-exporters and U.S. firms, mainly from California, Arizona, Florida and Texas. Consumers demand year-round availability of a wide line of fresh fruits and vegetables with higher expectations of quality and safety. At the same time, consolidation in the grocery and distribution industries has reduced the number of buyers. These buyers expect large volume, year round supply and broader product lines from their suppliers encouraging redundancy in production and geographic diversification of supply. Redundancy through geographic diversification enables shippers to better assure supply in the event of a weather or disease problem in one growing region. The need to trace products through an entire supply chain has also encouraged firms to maintain closer relationships and alliances with their upstream partners.

Product, seasonal and geographic diversification strategies give shippers a competitive advantage and decrease marketing risk but they greatly increase capital requirements and total production risk exposure. To better manage production risk, shippers seek partnerships with knowledgeable growers in different regions, creating upstream joint ventures and alliances with Mexican firms. Although this market-driven trend toward cooperation would have continued in the absence of NAFTA, it has been facilitated and accelerated with Mexico's accession to the GATT in 1986, the implementation of CUSTA and subsequently NAFTA.

The Sinaloa Vegetable Cluster

The state of Sinaloa dominates the Mexican horticultural export industry; accounting for two-thirds of Mexican fruit and vegetable exports and much of the over \$1.9 billion in Mexican horticultural export volume covered by strategic alliances and joint ventures. Sinaloa is the principal location for winter production of a narrow line of fresh vegetables, both for export and domestic consumption. These include primarily: tomatoes, bell and other peppers, cucumbers, squash, eggplant, and snap beans.

In "The Competitive Advantage of Nations" (1990), Porter specified the determinants of national competitive advantage as an interaction of four components: firm strategy, structure and rivalry; related and supporting industries, factor conditions and demand conditions. Dynamic domestic demand helps stimulate the development of an industry and vigorous inter-firm rivalry leads to

innovation and productivity gains. Competitive industries must also have advantageous factor conditions and competent related and supporting industries.

High Mexican per capita consumption of tomatoes, sustained rapid population growth, income growth during certain periods, combined with limited competition during the winter months within Mexico, meant that the Sinaloa industry not only benefitted from robust domestic demand, but was essentially a monopoly supplier to its domestic market. On the export side, Sinaloa competed as a duopolist with the Florida winter vegetable industry, originally a much larger and well-financed industry. However, these quasi-monopoly and duopoly positions are only at the industry level, with a high level of inter-firm rivalry within both the Florida and Sinaloa industries. For both industries this has stimulated the adoption of new varieties and technological packages, leading to greater productivity, quality and for Sinaloa, greater market penetration into both the Canadian and U.S. markets.

In recent years, the Sinaloa winter vegetable export industry has evolved as a dynamic cluster. Michael Porter's (1988) message on the importance of clusters and relationships resonates well in the fresh produce industry context, described as a "people" business, with personal relationships and local knowledge predominant. Perishables are non-durable items with rapid sales turnover, so lack of payment cannot be remedied by repossession of goods. Because of the quick, continuous nature of spot market transactions, handshake deals are common. Trust between buyers and sellers is paramount, leading to reliance on intuition and the development of personal relationships.

The need to identify trustworthy, competent partners with local knowledge is especially important to the Mexican and U.S. sourcing interface. In the past, cultural and underlying value differences have complicated business relationships. As the Sinaloa cluster developed, so did a shared experience, which helped to reduce information and other transaction costs and contributed to Sinaloa's ability to attract the bulk of foreign investment in the Mexican horticultural sector.

Ample water supplies, attractive winter growing conditions, minimal freeze risk, an abundant supply of labor, and geographic proximity to the U.S. border (Nogales, Az.) all helped establish the Sinaloa winter vegetable industry. Capital was provided by large Mexican growers and through alliances with U.S. importers seeking year-round availability of product. A cluster evolved, beginning with Sinaloa growers and U.S. firms. Sinaloan firms share knowledge of local growing conditions, legal/institutional frameworks, ways of doing business in Mexico, and access to land, labor and water. U.S. firms share knowledge of the North American distribution system, production financing and in some cases technical production and post-harvest handling assistance.

Allied industries, like input suppliers, have been attracted to this region to serve the industry in its drive to become more intensive in the use of resources. The industry is breaking more new ground by shifting into hothouse production of specialty tomatoes, European cucumbers and specialty Israeli and Dutch varieties of

colored sweet peppers. While hothouse production is very costly from a capital investment and operating cost per hectare basis, the high yields partially compensate, making per unit costs less prohibitive relative to field production. The development of the hothouse industry reflects a strategy for controlling the growing environment, thereby producing more consistent quality and volumes, in response to the growing demand of large buyers for supply consistency.

This emerging “high-tech” industry is attracting new U.S. investors to the Mexican winter vegetable industry, both via acquisition and joint ventures. Alliances and acquisitions are also occurring among input suppliers seeking to capture more of the “value chain” as the industry shifts to more expensive varieties and growing techniques, often with differentiated product attributes.

The establishment of the Sinaloa winter vegetable cluster, with its strong international linkages and investment ties, offers an opportunity to examine the experience with joint ventures and strategic alliances between NAFTA partners, without identifying causality as necessarily related to NAFTA. While Sinaloa experienced foreign investment long prior to NAFTA, the structure of joint ventures and alliances seems to have been gradually changing since NAFTA, although probably more due to independent drivers than to NAFTA itself.

In the past, few arrangements referred to as “joint ventures” involved creating either separate JV entities or long-term alliances. Instead the focus was on simple and seasonal product exchange, with arrangements referred to as “deals.” Disputes or changing conditions commonly caused them to be dissolved after only one or two seasons with each party seeking new partners. Deals usually involved the importer (often a U.S. shipper of the same commodities) sharing production costs and market risk with the grower. However, the importer generally charged a marketing commission that included a provision for profit, while the grower might not receive any return if market prices were below the landed cost in Nogales. On the other hand, for products with domestic markets in Mexico, the importer faced the risk associated with the practice of “backdooring.” After accepting production advances from the importer, the producer might deliver little product preferring to market it domestically if local prices were higher than export prices. The conflicts associated with these more limited commercial, rather than truly strategic arrangements, made them inherently unstable.

Over time, more strategic arrangements have evolved, where growers and importers have jointly developed production and marketing “programs” designed to meet interdependent strategic objectives for both. These new alliances recognize the mutual dependency of importer and grower and the need to maintain relationships over time, particularly important for firms launching branded or differentiated products, such as high-value hothouse tomatoes and colored peppers. To achieve market success these products must have a consistent marketing presence, in terms of quality, volumes and promotional programs. This requires constant information and technology exchange and investments that can’t be realized on a single season basis. Hence, a few formal joint ventures have emerged, involving the creation of

separate joint venture companies, lasting over extended time periods, with a common culture emerging. R & D has become a factor in some of these relationships as seed companies acquire shippers and trace-back capabilities also grow in importance. In other words, the increasing level of technical sophistication in both production and marketing are having an impact.

FIRM LEVEL EXPERIENCES: THE CASE OF THE LEY FAMILY

Insight into strategic alliances may be gleaned by examining the diverse experiences of the Ley family, from Culiacan, Sinaloa. Active at all levels of the Mexican agri-food sector; the Ley family has participated in a series of joint ventures and strategic alliances with U.S. firms over the last twenty years. Many have progressed through their entire life cycle, while others continue. Three cooperative ventures are highlighted here.

Ley/Safeway – Supermarket Joint Venture

In 1979 the Ley family, owners of a supermarket chain, Casa Ley, established a retail joint venture with Safeway. The original motivation for creating the retail joint venture was financial for Casa Ley, and political/market access for Safeway. Casa Ley's need for a strong financial partner emerged in the aftermath of a major devaluation of the peso. Safeway had a strategic interest in international diversification but Mexican law limited foreign ownership in the Mexican food distribution system to 49 percent. Safeway also needed a Mexican partner to learn local business practices, especially given the political and institutional paradigm of public sector direct intervention in the food production and marketing system. In addition, Safeway did not possess the consumer marketing expertise necessary to compete in the newly evolving Mexican supermarket sector.

A separate joint venture was created and new stores were opened. Safeway initially owned 49 percent of the shares, but increased its position to 50 percent when permitted by the 1989 modifications to Mexican foreign investment regulations.

As of 1998 the endeavor had grown to 73 supermarkets located throughout Northwestern Mexico. Growth was financed entirely by reinvestment of joint venture profits. The joint venture has been successfully maintained because the initial objectives were met and the firms have continued to adapt to the dynamic Mexican supermarket, macroeconomic and general policy environment. Safeway continues to benefit from Casa Ley's operational and market expertise while Casa Ley gains Safeway expertise in technical, administrative and corporate structures and systems. The distribution of benefits has been acceptable to both parties, and relatively balanced bargaining power has contributed to a sustainable relationship, despite changes in the institutional/political framework that now permit and simplify direct foreign investment in food retailing.

The fact that alliance success is dependent on the successful alignment of multiple factors is illustrated by the ultimate demise of another Ley/Safeway

relationship. These two partners were unsuccessful in maintaining a vertically oriented joint venture between Safeway and the winter vegetable production operations of the Ley family. Objectives were not sufficiently compatible when one party focused on grower considerations while the other concentrated on its needs as a retailer. Without a shared vision of the relationship and its future as a guide the alliance proved to be short-lived.

Ley/Sun World International Strategic Alliance

Shortly after the Ley/Safeway winter vegetable failure, Ley developed a strategic alliance with U.S. grower-shipper, Sun World International, to produce proprietary varieties of long shelf-life vine-ripe tomatoes and sweet, colored peppers. Sun World International had an exclusive license to seed varieties developed by LSL, an Israeli vegetable seed firm. Access to these differentiated varieties was restricted to grower partners who paid royalties to Sun World for their use. Sun World also had considerable experience in marketing branded high value vegetables in the U.S. market. Ley entered the alliance to secure access to the seed technology and to acquire a U.S. marketing partner. Sun World motivations were sourcing related, securing access to Ley's production capabilities, and a disciplined grower partner for conducting further R&D on their proprietary seed varieties. The ability and willingness of the Ley partners to conduct carefully controlled seed trials was an important motivator for Sun World.

Sun World and Ley structured a production joint venture contract (not a separate entity), sharing operating costs and splitting profits and losses on a 50-50 basis. An alliance also existed on the marketing side, where Sun World was the exclusive marketer for their proprietary varieties and Ley paid a fixed marketing commission per box sold. With the exception of the proprietary varieties and corresponding royalties, the structure of the Sun World-Ley alliance was the norm for the Sinaloa winter vegetable sector.

The alliance operated for several seasons, but at the same time the Leys marketed other varieties independently through their existing Nogales distributorship. This afforded them an opportunity to compare the net returns from both marketing operations. The Ley's concluded that despite the beneficial technical and marketing learning with Sun World, the alliance did not provide sufficient benefits over operating independently. This was in part due to patent complications which caused Sun World to lose exclusive control of the tomato varieties, allowing competing seed firms to offer equal or superior alternatives accessible without royalties. The loss of licensing royalties, legal costs associated with defense against patent infringement, and other business problems contributed to serious financial difficulties for Sun-World. From the Ley perspective, Sun World was no longer a viable partner and the alliance dissolved amicably.

Ley/NT Gargiulo Joint Ventures

Subsequent to the Sun World alliance, an innovative set of joint ventures was established between the Ley family and NT Gargiulo, at the time the largest U.S.

tomato shipper. NT Gargiulo was involved in year-round production and marketing, with production facilities in Florida, California, the East Coast and Puerto Rico.

The Gargiulo family sought redundancy in production to reduce weather-induced marketing risk in supplying national retail and foodservice accounts. For the Gargiulo's, NAFTA apparently was one of several substantive changes affecting their perception of the competitiveness of the Sinaloa industry. To paraphrase Jeff Gargiulo's position at the time, "While my fellow Florida shippers are going to Washington, D.C. to seek governmental redress from the effects of trade liberalization, I was going to Mexico." At the same time, U.S. retail demand for vine-ripe tomatoes, grown primarily in Sinaloa, was rising. By 1994, several years of R&D in Sinaloa had resulted in vine-ripe varieties with improved shelf life, yields, uniformity, flavor and appearance. R & D provided another incentive for the Gargiulo family, who needed different locations to test new varieties resulting from an alliance with Monsanto.

Although NT Gargiulo was a market leader in the production of mature-green tomatoes, it had little experience producing and marketing vine-ripe tomatoes and no experience producing in Mexico. While the 1992 reform to Article 27 of the Mexican Constitution allowed for corporate investment in farming, legal and practical barriers to producing independently still existed. For example, there were limits on the amount of land that any one farmer could own (100 hectares for irrigated row crops), as well as barriers to gaining access to quality land, via rental or ownership arrangements. These barriers, compounded by the need for obtaining local technical production expertise, provided NT Gargiulo with both political and resource incentives to find a local partner in Mexico.

From the Ley perspective, an important motivating factor was to obtain "true" risk sharing. The production of winter vegetables entails sizeable investment and risk. For example, tomato production and packing costs often exceed \$12,000/hectare or \$1 million/season for even medium scale operators. Ley felt that the typical joint venture contract prevailing in the Sinaloa industry between Mexican growers and U.S. distributors or shippers was not true risk sharing. The marketer (a distributor or shipper) was assured income from the marketing commissions paid by the growers while the grower usually absorbed most of the production risk. Ley was looking for joint ventures that better incorporated both production and marketing risk.

Two separate joint ventures were created, structured to meet the shared objective of a year-round presence of superior quality, branded tomatoes in the North American market. Partner selection was based on the proven history of the firms, their sound financial positions, and on their production, distribution and marketing capabilities. The difficulty in evaluating and sharing ownership in existing physical infrastructure caused them to exclude existing physical investments from the relationship. Instead, they jointly capitalized and shared the operating costs for two separate joint venture entities, one for production and the other for distribution. The new distribution firm became Del Campo Gargiulo, LLC.

Likening an alliance to a marriage, one of the partners noted that “an intrinsic effort is required in keeping it going.” Firm type and culture influenced the relationship; the fact that both were growers enabled them to communicate effectively, in contrast to the Ley/Safeway vegetable production alliance. The ongoing exchange of embedded knowledge between these firms over the last six seasons appears to be an important factor contributing to the success of the alliance. Both have improved their competency in producing and marketing branded Sinaloa winter vegetables. The alliance has enabled them to better meet the needs of the consolidating retail sector and together they have increasingly sought contracts with preferred suppliers to guarantee availability, prices and traceback capabilities. Although Gargiulo has learned about producing winter vegetables in Sinaloa, that firm is probably no closer to producing independently there, due to continuing resource and political constraints.

Lessons Learned

Ley's experiences illustrate the benefits and also the difficulties and risks involved in strategic alliances. In the Ley/Safeway alliances both political and resource factors motivated the partners. The supermarket alliance survived because both parties remained committed to the industry and the venture and shared a vision of its future. Conversely, the production/marketing alliance failed because both parties focused on their own needs, which were different from those of their partner. The Ley/Safeway alliances also illustrated the fact that compatibility in one relationship is no guarantee of success in the next.

Complementary capabilities and shared objectives of joint profit maximization helped create and maintain the Ley/Gargiulo alliance. Initial partner requirements included tests of capital, technical expertise, and the ability to produce and market large, consistent volumes of product. Since both firms had core competencies in production and distribution there was no weak link, but each required the other's expertise in their home country. While cultural differences have been somewhat of an issue, this factor has been minimized both by the Ley family's close ties with the U.S. culture and the “grower culture” the partners share.

On the other hand, in the case of Sun World-Ley, joint profit maximization was not a clearly defined goal. Ley learned about branded marketing in the United States from Sun World, lessening Ley's need for the alliance. Issues related to both performance and relationship risk were likely present in the Sun World-Ley alliance.

In the meantime, most players in the Sinaloa/Nogales industry still retain traditional alliances that are limited to commercial sales transactions and are seasonal rather than strategic in nature. These alliances will be tested in future as fewer, larger buyers attempt to develop closer partnerships with preferred suppliers, implementing supply chain management techniques. These new requisites are causing some U.S. shippers to produce directly in Mexico, by renting land and hiring their own managers, as a strategy for maximizing control as part of a year-round program. While this option is permitted by the reform of Article 27, it remains the

exception with both political and resource factors still causing most U.S. firms to share risk with Mexican partners.

SUMMARY AND CONCLUSIONS

The structure of the agri-food sector is evolving dramatically in response to internal and external pressures. The nature of relationships among agri-food organizations at all levels of the food system, from plant and animal genetics through to retail and food-service organizations is changing. Firms are attempting to reduce transaction costs, food safety and other risks, relying less on the spot market, and developing closer ties with suppliers and other partners.

Strategic alliances and joint ventures play an increasingly important role in inter-organizational relationships, allowing firms to capture benefits from new markets more quickly and at lower risk than through horizontal or vertical integration strategies. The rapid rate of change in competitive markets means that companies may not have the time to develop necessary resources and capabilities internally. This is clearly the case among NAFTA participants, as a plethora of alliances were identified in the North American agri-food sector. Incentives to ally will remain and foreign direct investment (FDI) among the NAFTA partners in each other's agri-food systems will continue to grow, along with sales of affiliates in their neighbor's markets. Firms' risk preferences and perceptions, strategic goals and resources will influence their choices of interaction, from spot market transactions to strategic alliances, joint ventures, and integration via mergers and acquisitions. This will in turn shape the future mix of FDI, sales via affiliates, and trade among the NAFTA partners.

However, NAFTA is only one of many factors affecting commercial and investment relationships and generally not the principal one in the agri-food sector. Market and industry changes have encouraged the evolution of inter-firm relationships away from simple product exchanges, toward strategic alliances focused on coordinating and delivering a bundle of assets, including new product development, year-round supply, quality/food safety assurance and risk sharing. These require much greater exchange of embedded information and technology.

Evidence from the internationally focused alliances in Canada/Mexico/United States presented in this paper highlights issues that must be addressed by firms who participate in strategic alliances. The strategic alliance life cycle framework provides a conceptual basis for examining those issues. Alliances vary depending on the strategies, capabilities and objectives of participants, but to persevere they must continue to offer value to all partners. When the fundamental motivators for an alliance disappear, alliance dissolution usually follows shortly thereafter, typically with one of the partners acquiring the venture.

Although managers frequently spend a great deal of time and effort determining why they need to enter into alliances and with whom, their analysis typically ends with alliance creation. The strategic alliance life cycle approach

recommends that organizations consider more than simply those factors leading to alliance formation. Examining the issues and factors affecting all stages of a strategic alliance's life will enhance the understanding of the alliance process and improve the likelihood of increasing both the longevity and the value of alliances to organizations. This analysis will assist organizations in developing plans for navigating all alliance stages. While the rapid rate of change in global business in general, and the agri-food sector in particular, is encouraging greater use of alliances, the changing environment also means that the conditions supporting alliances are also likely to change more quickly. In the future, firms will move through alliance life cycle stages more rapidly than they have in the past. Planning for that progression from the onset is vital to maximizing alliance benefits and value.

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RABOBANK INTERNATIONAL – MEXICO

Ken Shwedel

Why do firms want to invest? Probably one of the main drivers of investment in Mexico is the mature domestic markets in Canada and the United States. If you look at some of the things propelling the stock market, it is a necessity to firms to continue growing and that growth is in foreign investment.

Tax and Capital Policies are Important

What do companies look for in direct foreign investment? This has already been presented in the Handy/Bamford paper. One of the things that should be emphasized is that tax and capital policies are very important. Tax and capital policies determine the mobility and flow of capital, and the ease of importing and exporting capital. The name of the game is profit and the ability to move monies out of the country as needed is an important criterion.

My particular belief is that the NAFTA document, from the Mexican point of view, is also an investment document. The free trade agreement protects foreign investment in Mexico and the ability to take that money out of Mexico. I would strongly argue that the concept of tax and capital policies is underrated in the analysis of business decisions.

The Relationship of Concentration to Market Power

It was mentioned in the Handy/Bamford paper that the 100 largest companies control one-third of the foreign direct investment. Researchers analyze closely the concept of concentration and control. For example, when studying the Mexican and United States cattle industries, everyone looks at the size – the daily slaughter rates of the largest companies. The U.S. company, IBP, has a daily slaughter rate that in two days is more than the capacity of the largest company in Mexico. I believe that the important issue is the relationship of concentration to market power. The largest company in Mexico, in this case, has only 7 percent of the market. The concept of market power and concentration, and how they interact, are relationships which we need to look at as we go on.

There is a lot of structural change occurring in Mexico as exemplified by the opening up of the economy and increased competition. Structural change is an important part of the process in Mexico, and in other developing countries. Developed and the developing countries have to be viewed in a different context in relation to structural adjustment.

Direct Foreign Investment, Portfolio Investment and Privatization

One of the issues which was not discussed in the Handy/Bamford paper is the relationship between portfolio investment and direct foreign investment. In 1995, when the devaluation of the peso occurred, portfolio investment left Mexico. At the same time, direct foreign investment stayed in country. This indicates that macroeconomic stability is one of the effects of direct foreign investment.

Another point mentioned in the paper is the necessity to attract direct foreign investment. Currently, in Mexico, there is a debate about the privatization of the electric utility industry. Foreign investors are saying that Mexico has to privatize because it needs to send a signal that the country is still privatizing and that structural change is still occurring. I ask the question, "Are we getting on a structural change/privatization merry-go-round?" There becomes a need to do more privatization to attract more direct foreign investment because of the need for more macroeconomic stability and before you know it, there is nothing left to privatize or change. The result may be an economy which is much more open, liberal and market driven than even the countries from which the direct foreign investment is coming.

Companies Have Three Choices

In today's environment for a Mexican company with all of the changes taking place there are essentially three basic choices:

- It can go out of business.
- It can entrench, looking to be a strong player in a regional or niche market.
- It can grow into a national player.

Concerning the latter two choices, direct foreign investment can play an important role whether it be in terms of strategic alliances or joint ventures.

Something that needs more study and analysis is how companies choose strategic alliances versus joint ventures in the NAFTA context. Joint ventures I define as a marriage, and strategic alliances I understand as something like "living together." With strategic alliances, you try it out and see if it works and if it does not, you can walk away.

The Mexican food industry needs assistance in specialization, technology, financing, economies of scale, merchandising and management support. The concept of merchandising and management support was not discussed in the Handy/Bamford paper. Management support is a key area in countries such as Mexico which are moving away from a closed economy to an open economy. The knowledge of competition and how you compete is lacking in these countries.

Another area which is important is financing. One of the errors of looking at credit policy is to compare the real interest rates in Mexico with real interest rates around the world. I believe that in an open economy, you cannot compare real peso

interest rates with real dollar interest rates. You have to adjust the peso rate to a dollar rate. Looking at the cost of domestic credit in dollar terms, Mexican companies' cost of money on the local market is two and a half to three times more than in the U.S. market. At the same time, financing is scarce, especially in certain segments of the economy. Under these circumstances access to financial resources becomes a significant factor in the decision by a Mexican to enter into an arrangement with a foreign company or investor.

In Mexico, there was an opening up of the economy which was not consistent across sectors; some sectors opened up faster than others. Few banks in Mexico have a track record in agribusiness. Although the Mexican financial sector is being opened up and banks are coming in, few banks are coming in with agribusiness expertise.

There is also a political cost for Mexico in direct foreign investment. The decision to allow direct foreign investment is a political decision with political costs. There is also a cultural cost.

THE ALLIANCE PROCESS

David Heilig

In two years of studying business in Mexico and trying to identify new opportunities, I have gone through "the alliance process." It starts with examining previous alliances – people known to be doing business in Mexico. I give them a call and tell them I am coming down, and seek advice. That leads to another phone call and another meeting, and so on. It is no different than doing business in your own country. It is all about relationships; that is nothing new. People buy from people. During this development time, there should be a dedicated period of discovery and relationship building. These relationships and investigations should be done face to face.

The next step is education. Companies are often ill informed about other countries. My approach is to return to the United States and inform a company about what is available in Mexico, what was observed there, how forward thinking the contacts were, and how technically advanced, the businesses were. For example, many of the packing houses are more technologically advanced in terms of food hygiene and food safety than those of the United States.

The "alliance process" continues with achieving a thorough understanding of what goals are to be achieved. Business ventures must be guided by clearly defined objectives. If the objective is to make money, then the firm must have a strategy.

An open mind to the methodology used to achieve goals is needed. Quite often, an American firm wants to come down to Mexico and do it their way, as long as goals are identified, be footloose; as long as we are going to get there, let's not be too concerned about how we get there. To be successful, one must recognize geographical and cultural strengths and differences. Also, companies must discover opportunities or advantages in Mexico versus the United States. This seems obvious, these factors must be analyzed and incorporated in the strategy.

Next comes the negotiation of opportunities and logistics. The actual negotiations, rather than being the most difficult part of the alliance process, may be the easiest. The individuals I worked with in Mexico are highly educated. In the United States, there is a saying, "Grandpa started the company, dad built the company and the kids trashed the company." As a generation rolls over, we have an innate fear of this outcome. In every company visited in Mexico, Grandpa made the son go to school in an area selected so that he brought back special skills to the company. The grandsons also went to school with the same outcome. In some instances you may sit across from someone who has an MBA from Cambridge.

In the beginning aspects of any project it is always imperative that you do the proper amount of "due diligence". A partnership in a foreign country does not change this requirement. A firm must emphasize the completion of all financial and legal pre-work before proceeding. It must be remembered that the cultural differences may seem trite to a large corporation but they must not be overlooked. A proper amount of time and research must accompany any ventures into another culture. It will not only increase the chances of success, but make the transactions all that more enjoyable.

Operational Aspects of Alliances

The companies I have worked with have looked at alliances as long term arrangements. Consequently, exchange rate opportunities and problems have been seen in a longer term context. If you have the mind set of riding out exchange rate fluctuations long enough, you can negate the volatility. If you are really worried about the fluctuations, you are just a speculator – trying to pick the low and sell at the high. This is one of the goals which must be established prior to any work being done on the project. In my opinion it is best for everyone involved to make long term investments in this situation.

The legal structures encountered in Mexico were quite varied for existing entity stock purchase and new entity formation. There is definitely a need for transnational legal structures. We ended up with several structures and some aspects of our alliance were just done with a handshake. Lawyers to write up a contract are always available. But, if you cannot trust the person you are going into business with, the legalities of the deal are not going to matter. Remember that the people in the other country may not trust you any more than you trust them.

Information discovery in Mexico was somewhat difficult. Most of the public data were very dated. My approach is to go at things backwards, and call all of the

people I knew who were doing business in Mexico. Private sector information seems to be more current, focused and specific. Information is available in Mexico, but it may require extensive relationships or it may have to be purchased. Several universities have done broad work in Mexico and this can be a basis for your research start.

Because of the young age of Mexican consumers and businessmen and the fact that the control of companies is rolling over, data must be current. The rapidly changing face of industry and marketing in Mexico requires very up to date numbers, with accurate sources.

Our biggest concern in our alliance was technical knowledge transference – the loss of proprietary information. We worked with a lot of swine building equipment companies. These companies would bring a group from Mexico to the United States to show them a new building design. I toured buildings in Mexico that were not built by U.S. companies, but were exact duplicates. The Mexicans walked through and remembered exactly how they were built. I would ask them, “Oh, ABC company built this.” The Mexican’s would answer, “No, we built it, but it was ABC’s plan.” In those terms and in the new terms of biotechnology, maintaining proprietary information is very important. So, when you go into a foreign country, you are going to have to take some risks – how much am I going to put on the table and how much am I going to lose?

Conclusion: Things to Remember

- Government “approval” does not necessarily mean it can or will happen.
- “Open” trade requires an agreed upon quality standard and specification policy.
- Free trade is complicated by protection clauses and “but if, except when, only then, etc.”
- NAFTA health standards must be adopted by all.
- Transportation logistics or “bumps in the road” can be overcome.
- Economic stability is the goal.
- Cultural understanding and relationships are the key to success.
- Recognize that competition is healthy for everyone *IF* the playing field is level.

ACQUISITIONS AND STRATEGIC ALLIANCES: A MEXICAN CASE STUDY

Sergio Cházaro/DUXX

The agribusiness interests of Monterrey, Mexico, based in Empresas la Moderna (now Savia S.A. de C.V.) started in tobacco. The organization was a cigarette manufacturer and started doing business with small farmers producing high quality tobacco. At one time it had 16,000 producers in partnership. In 1994, the chairman decided to go into the seed business and purchased the Asgrow Seed Company. Later, in 1996, Asgrow was divided. The fresh fruits and vegetables division was retained and the grain and oilseeds division was sold to Monsanto.

In 1995, the company merged with Petoseed Co. Inc. and Royal Sluis, B.V. In 1996, it had an additional merger with DNA Plant Technology Corporation (DNAP). In 1997, it acquired Agrícola Batiz, S.A. de C.V. (ABSA). ABSA had several alliances in the past which did not last very long. ABSA lasted about two years with Empresas la Moderna and about two more years with some other companies. In 1997, Cigarrera La Moderna was sold for \$1.7 billion. Part of the sale was used to pay off debt and the other part was used to buy some new companies (two in Korea, one in India and the LSL acquisition).

DNAP Technologies, a merger partner, does applied research in the development of technologies and transgenic plants. It has experience and know-how in technology and has developed key strategic alliances with other companies. DNAP is involved in production, marketing and distribution.

DNAP Technologies has technological alliances with Seminis, Monsanto, John Innes, CIICA (a center for tropical research located in Tapachula, Chiapas), Mendel Biotech, Kosan, University of California and other universities and institutions. DNAP is working on functional genetics, identifying gene functioning, optimizing benefits for producers and consumers, and improving health and nutritional attributes. As the company has focused on looking toward the future, it has had to decommoitize the business. It has been bringing new products to the producer and the consumer. DNAP has found that with its seed business, the producer can improve his yield and income.

Empresas la Moderna's subsidiary, Seminis, has the largest germplasm bank in fruits and vegetables in the world. It has 52 research and development centers in 18 countries and over 500 scientists worldwide. Twelve percent of its sales are devoted to research and over 20 percent of sales are generated by new products. It has production capacity in 29 countries. Seminis produces more than 20 species and more than 3,000 varieties worldwide. It has marketing and distribution in 125 countries. Fifty percent of its sales are direct to producers. It is working to improve delivery systems by venturing into electronic commerce.

Seminis has research alliances with Monsanto, Zeneca, DuPont, Agrevo, Cornell University, John Innes, five Chinese institutions, Texas A&M University, the University of California, the University of North Carolina, the University of Jerusalem, Wageningen University and 94 other universities and research facilities. These alliances are for production and research.

Seminis has a strategic alliance with Monsanto. That alliance gives Seminis access to technology free of royalties for ten years. It gives Seminis exclusive rights for the use of technology with specific characteristics in fruits and vegetables. It benefits the producer in terms of pest and virus resistance. It benefits the processor and consumer by increasing sugar content, shelf life and ripeness. The value-added benefits are shared on a 50/50 basis with Monsanto.

Section 3

Economic Adjustment in Small Farms

The objective of this session is to present evidence on the impact of policy reforms on the ejido sector and ejidatario households.

POLICY REFORMS AND POVERTY IN THE MEXICAN EJIDO SECTOR

Benjamin Davis, Alain de Janvry, Elisabeth Sadoulet, and Todd Diehl

THE EJIDO SECTOR AND THE REFORMS

The Mexican ejido sector is extraordinarily important in terms of both control over natural resources and social welfare. It contains approximately 60 percent of the rural population, half of the agricultural land, and half of the irrigated land. It is a major reservoir of rural poverty and an important source of migrants to the United States. This sector has been subjected to important reforms since 1990. This includes global reforms affecting the context where ejidatario households perform such as trade liberalization, NAFTA, and real exchange rate depreciation. It also includes reforms directly targeted at the sector such as introduction of individual property rights over land plots formerly in usufruct; descaling of credit, marketing, and technical assistance provided to the ejido by specialized state agencies; devolution of control over ejido affairs to the community; and greater freedoms for individual ejidatarios in making decisions about income strategies. One important objective of the reforms was to change entrepreneurial behavior in the ejido sector, expecting to induce greater efficiency in resource allocation and greater responses to changing market opportunities.

The reforms were accompanied by programs to compensate for the expected negative income effects that trade liberalization, the descaling of institutional services, and the removal of subsidies were to have on the producers of traditional crops. Thus the PROCAMPO program, a system of income support payments to producers, offered direct income transfers to farm households proportionately to the area historically planted in nine major staple crops, irrespective of the idiosyncratic levels of yield achieved. Among other objectives, this program was expected to shelter ejidatario incomes from declining product prices and rising input prices, and to give these households liquidity that they could use to adjust their income strategies to the new economic context.

This paper focuses on an analysis of the impact of the reforms on the incomes, poverty levels, and degrees of income inequality among ejidatario households. Other papers have focused on the impact which these reforms have had on production patterns (Cord, 1998, and Davis, 1998). We analyze in particular two questions central to the impact of the reforms. The first is how the reforms have affected household incomes and what the factors are that have made some households gain more than others. The second is whether the reforms have achieved their objective of stimulating entrepreneurial behavior, reflected in new income strategies and greater ability to derive income from given asset endowments in the new market, institutional, and macroeconomic context. The hypothesis is that, as in China following introduction of the individual responsibility system, greater freedoms have allowed households to make somewhat more efficient use of existing resource endowments. Given the particular economic conditions that were relatively unfavorable to agriculture, and the high degree of farm and off farm income sourcing (referred to as pluriactivity) among ejidatario households, this adjustment may or may not have occurred in agricultural activities.

The second part of the paper presents descriptive statistics to characterize the ejido sector in terms of income, poverty, and inequality, and how it has adjusted to the recent period of reforms. The third section analyses the determinants of income in 1997, both total household income and income by source, stressing the roles of an array of asset endowments and of the institutional and geographical context where households are located. The next section analyzes the determinants of change in income between 1994 and 1997. This analysis helps show how differential asset endowments across households have created differential income effects. We look in particular at the role that PROCAMPO transfers have had on income adjustments during the period, calculating the magnitude of multiplier effects of the transfers. In the last section, to see if the reforms have affected behavior, we decompose the relative roles that changes in asset endowments and changes in incentives and behavior have had on the observed adjustments in income.

POVERTY AND INEQUALITY IN THE EIJO SECTOR, 1994-97

The following analysis of incomes and poverty is based on information derived from two nation-wide surveys of households in the ejido sector:

- A 1994 survey conducted by SRA (Secretariat of Agrarian Reform) and the University of California at Berkeley.
- A 1997 survey conducted by SRA and the World Bank (Louise Cord, Project Director).

These two surveys constitute a panel of 1017 households that allows analysis of changes in income over the period. The data cannot be used to characterize the absolute magnitude of poverty since information is on income, not on expenditures. Because agricultural income is highly erratic, there are negative incomes in each year. Data can, however, be used to analyze poverty on a comparative basis, both across

sub-groups of the ejido population and over time. The basic poverty line was set to achieve a headcount ratio similar to that of the National Institute of Statistics, Geography, and Information (INEGI) in the rural sector in 1994, namely 58 percent. This is the poverty line from which all subsequent comparative analysis is conducted.

The ejido sector is characterized by a high degree of heterogeneity of asset positions and sources of income across households. Even though all households are landed, there is a surprisingly high degree of participation in non-agricultural activities. Table 1 shows that 45 percent of household income was derived, on average, from non-agricultural and non-livestock activities in 1994. In 1997, this percentage had risen to 55 percent. The implication of heterogeneity is that shocks to output, price, wage, exchange rate, and employment created by markets or the reforms are transmitted through the ejido population in highly unequal fashion. Heterogeneity also implies that there are many potential roads out of poverty, relying on different asset endowments across households.

Table 1: Sources of Income, Ejido Households, 1994 and 1997

	1994	1997	% Change in Income	Test of Difference
All Households	Percentage of Total Income			
Total Household Income	100	100	7	
Farm Income	55	45	-11	
Agriculture	40	28	-26	*
Livestock	14	18	32	**
Non-Farm Income	45	55	28	*
Off-Farm Activities	45	43	2	
Wage Income	27	24	-3	
Self Employment	6	10	69	**
Remittances	2	6	244	**
Other Off-Farm Income	10	2	-76	**
Other Incomes	1	12	1797	**
Procampo	0	8		
Alianza	0	0		
Land Rent	0	1		
Garden Plot	0	0	260	**
Wood	0	0		
Ejido Income	1	2	272	**

Source: Authors' Calculations

** 95% confidence that percentages are different

* 90% confidence that percentages are different

The incidence of poverty in 1994, measured by the headcount ratio (P_0), was associated with the following asset endowments and regional contexts (Table 2):

1. *Agricultural asset endowments*: P_0 is 69 percent on small farms (less than 3ha of rainfed equivalent land), 58 percent on medium farms (3 to 7 hectares), and 48 percent on large farms (more than 7 hec-

tares).¹ Hence, low land endowments are an important determinant of poverty.

2. *Human asset endowments*: 69 percent of the households with low human asset endowments (measured in number of non-educated adult equivalent) are in poverty compared to 47 percent among those with high endowments. Human assets include both the number of adults in the households and the average educational levels achieved by adults.
3. *Migration asset endowments*: 59 percent of the households with no remittances in 1994 were in poverty in 1997 compared to 43 percent among those with remittances. Migration assets are better measured as the number of permanent migrants from the extended family (siblings of the household head) and from the household, plus the number of seasonal migrants from the household minus one. This shows that 65 percent of the households with no migration assets were in poverty in 1997 against 49 percent for those with migration assets. Endowment in migration capital is hence important to escape poverty.
4. *Social assets endowments (ethnicity)*: 74 percent of ethnic households live in poverty compared to 53 percent among non-ethnic households. Households are categorized as indigenous if at least one member of the household speaks an indigenous language. Ethnicity is thus very strongly associated with poverty in the Mexican rural sector.
5. *Region*: The incidence of poverty is 56 percent in the North, 23 percent in the Pacific North, 57 percent in the Center, 71 percent in the Gulf, and 68 percent in the South (excluding Chiapas which was not covered by the 1994 survey due to political disturbances at that time). Regional differences are thus very large. The highest incidence of poverty is found in the Southern states: the Gulf and the South.

The 1994-97 period which we analyze here corresponds to agricultural years 1993 and 1996. During this period, very strong macroeconomic shocks affected differentially particular sources of income. The consumer price index increased by 94 percent, and the real producer price of corn and beans (the major crops for the ejidatarios) fell by 28 percent and 59 percent respectively.

¹ In measuring farm size, all land is adjusted for quality differentials (see de Janvry, Gordillo, and Sadoulet, 1997).

Table 2: Change in Poverty and Inequality Among Ejido Households, 1994-97

	Number of Households	Income 1994	Poverty P_0^3 1994	Inequality CV^4 1994	Inequality MAD^5 1994	In Income 1994-97	% change 1994-97	In P_0 1994-97	% change 1994-97	CV 1994-97	% change 1994-97	MAD 1994-97	% change 1994-97	P_0 1997
All households	1017	11296	57.9	4.2	1.1	6.9	-13.1	-13.1	-51.5	-14.4	-14.4	-14.4	-14.4	50
By land assets endowments in 1994 (farm size¹)														
Small	343	6518	69.4	2.9	1.0	21.0	-8.8	-8.8	-34.5	-6.6	-6.6	-6.6	-6.6	63
Medium	296	9152	57.8	2.9	0.9	26.0	-11.1	-11.1	-14.0	-0.7	-0.7	-0.7	-0.7	51
Large	378	17311	47.6	3.6	1.1	-5.9	-20.6	-20.6	-58.4	-23.0	-23.0	-23.0	-23.0	38
By human assets endowments in 1994²														
Low assets	497	7986	69.2	6.9	1.1	21.2	-14.2	-14.2	-64.9	-16.7	-16.7	-16.7	-16.7	59
High assets	520	14460	47.1	2.9	1.0	-0.7	-11.5	-11.5	-41.0	-12.7	-12.7	-12.7	-12.7	42
By migration assets endowments in 1994														
No remittances 94	928	11032	59.4	4.4	1.1	6.0	-12.6	-12.6	-55.6	-15.1	-15.1	-15.1	-15.1	52
Remittances 94	89	14055	42.7	2.3	0.9	13.8	-21.1	-21.1	-5.4	-9.6	-9.6	-9.6	-9.6	34
No migration assets 94	577	9921	64.5	4.3	1.1	-6.0	-7.9	-7.9	-55.9	-12.6	-12.6	-12.6	-12.6	59
Migration assets 94	440	13100	49.3	3.9	1.0	19.6	-22.1	-22.1	-53.9	-18.6	-18.6	-18.6	-18.6	38
By social assets endowments (ethnicity)														
Ethnic	215	5869	74.4	2.7	1.0	19.7	-8.7	-8.7	-13.8	-1.6	-1.6	-1.6	-1.6	68
Non-ethnic	800	12780	53.4	3.9	1.1	5.1	-14.6	-14.6	-52.7	-16.2	-16.2	-16.2	-16.2	46
By region														
North	213	11435	56.3	3.1	1.1	37.6	-28.2	-28.2	-36.6	-20.4	-20.4	-20.4	-20.4	40
North Pacific	116	26199	23.3	2.4	0.8	-36.3	51.5	51.5	-33.8	2.0	2.0	2.0	2.0	35
Center	281	10058	56.9	4.7	1.0	4.5	-10.0	-10.0	-64.6	-13.7	-13.7	-13.7	-13.7	51
Gulf	173	5582	71.1	2.6	1.0	92.3	-23.6	-23.6	-35.7	-15.0	-15.0	-15.0	-15.0	54
South	234	9494	67.9	4.0	1.1	-1.9	-7.5	-7.5	-37.2	-8.4	-8.4	-8.4	-8.4	63
By poverty status in 1994														
Poor	589	1596	100	5.2	1.4	423.0	-36.0	-36.0	-50.5	-33.6	-33.6	-33.6	-33.6	64
Non-poor	428	24646	0	1.5	0.7	-30.2	NA	NA	-10.5	12.2	12.2	12.2	12.2	32

¹ Small, medium, and large farms are defined as 0-3 ha, 3-7 ha, and more than 7 ha of rainfed equivalent land.

² Less and more than the medium level of 4.3 non-educated adult equivalent.

³ PO=Headcount index, or percentage of households living in poverty.

⁴ $CV(x) = \text{variance}(x)/\text{square of mean}(x)$.

⁵ $MAD(x) = \text{mean}|x - \text{mean}(x)|/\text{mean}(x)$.

Source: Author's calculations.

In large part as a consequence of these price effects, agricultural incomes in the ejido fell by 26 percent (Table 1). The implication is that the ejidatarios most vested in agriculture, i.e., those with the largest land endowments in the best endowed regions, and in general the highest income levels in 1994, were hurt the most. As national GDP per capita (GDPpc) fell, wage income for ejidatario households also fared poorly with a 3 percent decline and so did income derived from remittances sent by family members in Mexico. The sources of income that fared well are livestock income which increased by 32 percent, remittance income received from the United States which increased by 244 percent (as the real exchange rate depreciated by 36 percent), income derived from self-employment which increased by 69 percent, and income derived from the government programs in support of farm income, namely PROCAMPO and Alianza para el Campo (Alliance for the Countryside) which did not exist in 1994.

Overall, the period was one of income stagnation, with an average annual growth rate in aggregate real income of only 0.2 percent. Hence, the analysis of income responses during the period is more one of differential abilities of coping with crisis than one of differential abilities of taking advantage of the dynamics of growth. Overall, the ejido sector was saved from the aggregate crisis in per capita incomes by the direct income transfers made through the PROCAMPO program that allowed a rise in household income (equal to 7 percent) roughly equal to the transfers (equal to 8 percent of total income).

The realignment of sources of income away from agriculture and toward self-employment, remittances from abroad, and government transfers had an often paradoxical effect on poverty and inequality. The fall in agricultural incomes was progressive on the distribution of income as it hurt most the better off among ejidatarios, namely those most vested in agriculture. This can be seen as follows (Table 2):²

1. *Change in income by farm size.* Small and medium holders gained in income while large holders lost out. Hence, the income change was progressive on the distribution of income. However, inequality fell most among the largest holders since the best-off were hurt the most. The result is that P_0 fell more among the large holders than among the small, implying an unexpected regressive effect in terms of poverty reduction: poverty fell most among the large holders, even though their real income fell the most.
2. *Changes in income by human assets.* Households with low human assets had a gain in income of 20 percent compared to 0 percent for the high human asset households. Percentage reduction in P_0 was the same in the two classes, leaving those with low human asset

² Because some households have negative incomes, we cannot use the Gini coefficient as a measure of inequality. Instead we use two indicators: the coefficient of dispersion (the ratio of the variance to the square of the mean) and the mean absolute deviation (measured as $\text{mean}[x - \text{mean}(x)]/\text{mean}(x)$).

- endowments with a P_0 of 60 compared to 41 for the high asset households in 1997.
3. *Change in income by migration assets.* Households with remittances in 1994 and with migration assets gained more income during the period, and their incidence of poverty fell most. With remittances the most dynamic source of income over the period, the effect was regressive, with better-off households gaining most.
 4. *Change in income by social assets (ethnicity).* Indigenous households had a real income gain of 20 percent compared to a 5 percent gain for non-indigenous. However, again inequality fell by more among the non-ethnic (who have access to significantly more land), with the result that P_0 fell more among non-ethnic than ethnic populations.
 5. *Change in income by region.* Here also there were progressive effects. The success story is the Gulf region which was by far the poorest region in 1994. The very strong income gains and poverty reduction effects are associated with livestock, self-employment, the beginning of migration, and, very importantly, government transfers. In the South, the next poorest region, aggregate income change was almost nil, but there was a lot of compensatory action by sources of income: agricultural income declined, livestock income rose, wage income fell, migration income rose, and income from government programs increased.
 6. *Change in income by poverty status.* While households in poverty in 1994 experienced a 423 percent increase in income between 1994 and 1997, the non-poor saw their income drop on average by 30 percent. Part of these income movements are due to climate fluctuations, with those suffering bad weather in one period randomly different from those affected by bad weather in the subsequent period.

What is clear is that the more diversified households with less land assets were able to protect themselves better from the unfavorable terms of trade effects for agriculture. The Gulf in particular was able to gain most because of its low reliance on agriculture and diversified sources of income. The same applies to ethnic households and to the poor in general.

Different sources of income contribute differently to income inequality across households. Measures of inequality for total household income and by source are given in Table 3. They show that agricultural income is highly unequally distributed, with the result that the 1997 shock to agricultural income did hurt the richest most in 1994. Other sources of income that are unequally distributed across households are remittance income and self-employment income. Because sources of income are quite diverse across households, total income inequality is significantly less than income

inequality from any single source. The possibility of relying on such a diverse set of income sources is thus an important equalizing factor across ejido households.

An important feature of the period was rapid progress of PROCEDURE, the program for individual land registration. An unexpected effect of this program was the uneven appropriation of lands held in common property resources. Overall, land held in individual plots increased by 22 percent. This gain was largest where individual plots were the smallest: 95 percent in small farms, 59 percent in medium farms, and 5 percent in the large farms. Hence, appropriation of CPR had a compensatory role for low initial allocations or for the eroding role of population pressure. Quite likely, much of this land was individually cultivated before PROCEDURE even though it was located in the ejido's common property lands. Therefore, what the increase reflects may be largely the ratification of ownership rights over land that was individually cultivated in the commons more than a net increase in access to land.

Table 3: Income Inequality by Source, 1997

	Measures of Income Inequality	
	Coefficient of Variation	Mean Absolute Deviation
Total Household Income	2.0	1.1
Sources of Income		
Agriculture	12.6	1.7
Livestock	6.1	1.3
Wage	8.5	1.4
Remittances	24.7	1.7
Self-employment	10.8	1.6
Other Off-farm Activities	3.9	1.1

Source: Authors' calculations

Participation in off-farm activities rose sharply, with the share of households with at least one member engaging in off-farm activities rising from 41 to 57 percent. Increased off-farm involvement was permitted by greater flexibility of ejidatarios to freely allocate their time and land as a consequence of the ejido reforms, particularly renting land out so they can get more involved in income earning activities outside the farm.

Access to government transfer programs was remarkably egalitarian, even though these programs are tied to land. The PROCAMPO transfers were important as they represented, on average, 8 percent of household income in 1997. In dollar terms, this corresponds to \$270 per household and \$63 per hectare.

Finally, we should note that there had been a sharp decline in access to credit and technical assistance between 1990 and 1994 (de Janvry, Gordillo, and Sadoulet, 1997). This decline continued in 1994-97. The share of households with access to formal credit fell from 31 percent to 18 percent, and the share with access to technical assistance fell from 10 percent to a minimal 7 percent. Participation of ejidatario

households in Alianza Para el Campo, the main program in support of rural development, was only 13 percent. Hence, support of the competitiveness of ejidatarios in a period when they were expected to adjust to NAFTA and the economic reforms by modernizing and diversifying their farm operations is still lacking. Indeed, there was no recorded expansion in area planted in fruits and vegetables across categories of households. By contrast, land in corn continued to expand quickly, showing continued extensive use of the land.

DETERMINANTS OF OVERALL INCOME IN 1997, BY SOURCE

We now turn to an analysis of the determinants of income and poverty among ejido households in 1997. The objective is to identify the role of heterogeneous assets positions across households. This in turn will provide policy guidelines for the design of anti-poverty programs for that sector.

Total Household Income

Household income positions are explained by their asset endowments and by the regional and institutional context where they are located. Table 4 contains the results of econometric analysis of the determinants of total household income in 1997. We use median regressions instead of ordinary least squares (OLS) as estimated coefficients are less sensitive to outliers. This is because the estimated coefficients in median regressions minimize the sum of the absolute residuals rather than the sum of the squares of the residuals in OLS. The variables that affect positively the income levels achieved are as follows.

1. *Land assets.* In the ejido sector, land owned is exogenous since there are almost no land transactions. Land used is endogenous since the land rental market is active, particularly in ejidos where the PROCEDE program has been completed (Olinto, 1998). For this reason, we use land owned as an exogenous determinant of household income. Ownership of irrigated land is a powerful determinant of income, while other forms of land endowments have no significant effects. Every additional hectare of irrigated land increases household income by 819 pesos, representing a 7 percent increment in total income and a 24 percent increment in agricultural income.
2. *Productive capital assets.* Ownership of one additional head of livestock in 1994 adds 160 pesos to household income.
3. *Human assets.*
 - Education matters in explaining total household income. Increasing the average number of years of education among adults by one raises household income by 741 pesos.

Table 4: Determinants of Household Income and of Probability of Being in Poverty, 1997

	Median Regression Household Income		Probit Pr(Poor = 1)	
	Coefficient	P-value	Marginal effect	P-value
Land assets				
Irrigated area owned in 1997	819	0.000	-0.020	0.002
Rainfed area owned in 1997	51	0.326	-0.003	0.162
Pasture area owned in 1997	20	0.465	-0.002	0.137
Forest area owned in 1997	35	0.162	-0.003	0.172
Productive capital assets				
Number of heads of cattle in 1994	160	0.000	-0.010	0.000
Human assets				
Gender of household head (man = 1)	463	0.820	-0.070	0.507
Age of household head	-27	0.427	-0.001	0.848
Average years of education among adults	741	0.000	-0.040	0.000
Number of adults	527	0.000	-0.046	0.000
No of members with ag wage labor experience in '94	-257	0.541	0.023	0.404
No of members with non-ag wage labor experience in '94	1296	0.083	-0.062	0.011
No of members with self-employed activities in '94	726	0.422	-0.038	0.421
Per capita Mexico migration assets	-3	0.948	0.005	0.186
Per capita US migration assets	456	0.003	-0.011	0.057
Used high yielding varieties in 1994 (dummy)	-766	0.466	0.004	0.931
Used chemicals in 1994 (dummy)	935	0.285	-0.068	0.080
Used advanced technological package in 1994 (dummy)	6104	0.078	-0.210	0.066
Institutional assets				
Used technical assistance in 1994 (dummy)	-495	0.755	0.057	0.474
Used formal credit in 1994 (dummy)	-790	0.262	0.075	0.066
Social assets				
Indigenous (at least one member speaks an indigenous language)	62	0.919	0.078	0.131
Regional effects (base = North)				
North Pacific	-935	0.641	0.022	0.773
Center	-1167	0.218	0.105	0.047
Gulf	-49	0.972	0.055	0.406
South	-1181	0.280	0.148	0.014
Infrastructure assets				
Ejido has paved road (dummy)	1065	0.002	-0.065	0.078
Social welfare assets				
PROCAMPO transfer (pesos)	1.2	0.005	0.000	0.010
Constant term	-2416	0.304		
Number of observations	992		992	
Pseudo-R squared	0.16		0.18	

Source: Authors' calculations

- The number of adults in the household is an important asset, with every additional adult contributing 527 pesos to household income.
- The number of family members with non-agricultural labor market experience in 1994 is even more important. Every member with this type of experience contributes 1296 pesos of household income.
- U.S. migration assets is defined as the number of permanent and temporary migrants in the household, where the household includes both that of the household head and his/her siblings. Every additional member in that network contributes 456 pesos to household income.

Finally, use of an advanced technological package, measured as the interaction between use of high yielding varieties (HYV), use of chemicals in production, and access to technical assistance in 1994 is important. Hence, there is an income premium to use of modern practices in agriculture.

4. *Region*. Regional effects are not significant on income after controlling for the role of all other assets.
5. *Infrastructure assets*. Ejido with a paved road have an income advantage of 1065 pesos per households. This indicates that rural development efforts investing in better roads have a payoff in raising rural incomes.
6. *PROCAMPO*. An additional one peso transfer through PROCAMPO generates 1.20 pesos of household income. Hence, households are able to use the cash transferred to generate an additional 20 centavos of income for every one peso received.

Probability Of Being In Poverty

The same determinants of income can be used to predict the probability of being on one side or the other of the poverty line in 1997. Results of a probit analysis are given in Table 4. They show that the significant determinants of income are also significant determinants of being poor. Additional variables that are significant on poverty are:

1. *Human assets*. Having made use of chemicals in 1994 reduces the likelihood of being in poverty in 1997.
2. *Institutional assets*. Having had access to formal credit in 1994 reduces the likelihood of being in poverty in 1997.
3. *Social assets*. The role of ethnicity on the likelihood of being poor is significant at the 87 percent significance level.
4. *Regional effect*. With the North as the base, the likelihood of being in poverty is significantly higher in the Gulf and in the South.

These results confirm the robustness of the results obtained with the income equation.

Household Income By Source

The role of asset endowments and of the geographical/institutional context where households are located is used to explain income levels by source of income in Table 5. We use median regressions for agricultural and livestock incomes since all households are engaged in these activities. Since many households do not derive income from wages, self-employment, and remittances, we use Tobits (a particular form of econometric model) for these other sources of income.

1. *Agricultural income.* Irrigated and rainfed area owned and technological indicators (except use of chemicals) have no predictive power on agricultural income. This distressing result suggests that ejidatarios have a hard time differentiating their agricultural income performances, in spite of observed differences in the levels of land endowments and technification. Undoubtedly, this reflects the relatively low profitability of the agricultural activity in that year, with better endowed and more technified farmers achieving income results not significantly better than those of others. The scope for income differentiation is thus not in agriculture, but in the other activities, principally wage income, self-employment, and migration.
2. *Livestock income.* For livestock income, the lagged (1994) livestock endowment is quite important. However, no other variable, besides PROCAMPO transfers, help explain livestock income. PROCAMPO transfers have contributed to the acquisition of livestock by recipient households and this livestock added 10 centavos of income for every 1 peso spent for their acquisition.
3. *Wage income.* The main result is that education and the number of adults in the household (human assets) are very important determinants of labor market earnings. Each one year increase in the household's average level of education contributes an extra 1,075 pesos while each additional adult adds 2,087 pesos. Rainfed land endowments and livestock play negatively since better endowed households are more vested in agriculture and livestock and participate less in the labor market. This is reinforced by the level of technification of these households in agriculture in 1994 (use of high yielding varieties and of technical assistance). The number of members with agricultural wage experience and with non-agricultural wage experience play positively on labor market earnings, reflecting the role of entry costs and experience in deriving income from these markets.

Table 5: Determinants of Household Income by Source, 1997

	Agricultural Income/Median Regression		Livestock Income/Median Regression		Wage Income/ Tobit		Self- employment Income/Tobit		Remittance Income/Tobit	
	Coef't	P-value	Coef't	P-value	Coef't	P-value	Coef't	P-value	Coef't	P-value
Land Assets										
Irrigated area owned in 1997	29	0.883	2.0	0.695	-115	0.484	209	0.037	256	0.089
Rainfed area owned in 1997	-5	0.768	1.4	0.751	-161	0.032	44	0.302	177	0.006
Pasture area owned in 1997	-10	0.003	11.2	0.184	-14	0.724	-23	0.460	-21	0.661
Forest area owned in 1997	-13	0.525	9.9	0.729	26	0.620	26	0.216	-200	0.493
Productive capital assets										
Number of heads of cattle in 1994	23	0.011	151.5	0.000	-128	0.011	20	0.489	-68	0.150
Human assets										
Gender of household head (man = 1)	-279	0.579	-1.0	0.986	-1924	0.543	1586	0.459	-550	0.874
Age of household head	-2	0.955	1.4	0.841	-24	0.824	27	0.690	-282	0.333
Average years of education among adults	71	0.299	1.5	0.879	1075	0.000	469	0.005	-1195	0.001
Number of adults	23	0.666	-0.2	0.987	2087	0.000	423	0.042	564	0.142
No of members with ag wage labor experience in 94	19	0.898	-9.8	0.679	2366	0.002	-921	0.161	1496	0.070
No of members with non-ag wage labor experience in 94	-51	0.716	-1.4	0.916	2382	0.000	304	0.522	-433	0.621
No of members with self-employed activities in 94	-278	0.213	-9.2	0.835	391	0.780	5386	0.000	-1178	0.518
Per capita Mexico migration assets	-3	0.824	3.2	0.344	-79	0.505	35	0.653	70	0.593
Per capita US migration assets	19	0.705	2.1	0.833	152	0.389	72	0.537	1661	0.000
Used high yielding varieties in 94 (dummy)	196	0.547	-1.6	0.973	-4201	0.010	-1102	0.299	402	0.807
Used chemicals in 1994 (dummy)	306	0.033	32.1	0.386	1893	0.112	-788	0.326	823	0.516
Used advanced technological package in 1994 (dummy)	3,153	0.326	-61.3	0.672	3720	0.317	2535	0.311	-2104	0.581
Institutional assets										
Used technical assistance in 1994 (dummy)	446	0.567	69.4	0.664	-4350	0.080	-1265	0.475	2728	0.273
Used formal credit in 1994 (dummy)	-16	0.944	10.9	0.824	659	0.588	-245	0.765	-1414	0.307
Social assets										
Indigenous (at least one member speaks an indigenous language)	-107	0.528	42.1	0.244	-349	0.821	-166	0.873	-5186	0.021

Table 5: Determinants of Household Income by Source, 1997 (Continued)

	Agricultural Income/Median Regression		Livestock Income/Median Regression		Wage Income/ Tobit		Self- employment Income/Tobit		Remittance Income/Tobit	
	Coef't	P-value	Coef't	P-value	Coef't	P-value	Coef't	P-value	Coef't	P-value
Regional effects (base = North)										
North Pacific	-249	0.688	-80.7	0.286	-8328	0.001	-833	0.604	-3300	0.190
Center	10	0.969	41.1	0.373	-5824	0.000	1109	0.315	189	0.907
Gulf	569	0.013	-23.1	0.818	-3113	0.114	3106	0.022	-1468	0.533
South	527	0.027	11.2	0.857	-8065	0.000	317	0.804	183	0.927
Infrastructure assets										
Ejido has paved road (dummy)	270	0.092	-3.1	0.909	2354	0.038	723	0.346	-3331	0.005
Social Welfare Assets										
PROCAMPO transfer (pesos)	0.0	0.774	0.1	0.087	-0.7	0.223	-0.3	0.316	0.7	0.170
Constant term	-175	0.788	-76	0.384	-10963	0.004	-12942	0.000	-11675	0.005
Number of observations	992		992		992		992		992	
Pseudo-R Squared	0.02		0.24		0.02		0.01		0.06	

Source: Authors' calculations.

Region is extremely important for the income contribution of labor market activities. Using the North as the benchmark, all regions offer lower labor market earnings, particularly the North Pacific and the South. The North has evidently the most active labor markets to which rural households are able to participate. Finally, availability of good infrastructure, as represented by ejidos accessible by a paved road, is an important factor in participating in wage earning activities.

4. *Self-employment income.* It is principally explained by human assets, namely educational levels and number of adults in the household. The history of past self-employment evidently matters. Regionally, with the North as the benchmark region, it is the Gulf that is outstanding. Analyzing in detail how successful self-employment occurred in the Gulf should deserve special attention.
5. *Remittance income.* There are a number of surprises here. First, it is the households with relatively more irrigated and rainfed land endowments that have more involvement in migration. Hence, migration is not for the least endowed in natural resources, and consequently not an equalizer of opportunities relative to agricultural assets. Second, migration is not for the most educated since those tend to migrate less to the United States. Hence, migration is an equalizer of opportunities as far as human capital is concerned. This is also reflected in the observation that households with more agricultural wage labor experience receive more remittances. Hence, it is the households most vested in agriculture and in the agricultural labor market that migrate most. Finally, past migration history to the United States, measured by the size of the migration network to which a household has access, is fundamental in explaining migration, success in migration, and hence the level of remittances received. Importantly for rural development initiatives, public investment in local infrastructure reduces migration and the receipt of remittances, which might be expected because it promotes better opportunities in earning income locally.

The Role Of Education

There has been considerable controversy about the role of education in raising farm household incomes. Lopez and Valdés (1997) concluded a study of the determinants of household income in six Latin American countries by observing that education has no, or very little, impact on farm output and rural incomes. The results show that the role of education is different across sources of income and that it, indeed, has no role in traditional agriculture and livestock activities. However, it is an important determinant of wage and self-employment income, and of total household income. Hence, the return from investing in education in rural areas, for as long as opportunities to modernize and differentiate in agriculture are absent, is to be

captured in off-farm and non-agricultural activities. When farm households have diversified sources of income as they have in Mexico, investing in education has positive income effects because of the existence of pluriactivity.

If, following the reforms, agriculture offers profitable opportunities to modernize and diversify, then education could play a positive role on agricultural and livestock incomes as well. For the moment, lack of contribution of education to income derived from agriculture and livestock reflects lack of profitability in these sectors. Educational levels reduce migration to the United States as the educated find better options in domestic migration. These results are, however, not a good justification for neglecting educational investments in the Mexican rural sector. These investments have immediate payoffs in off-farm incomes and will have pay-off in agriculture when it faces more attractive price incentives, creating returns to the modernization and diversification in agriculture for which education is important.

Determinants Of Change In Income Between 1994 and 1997

Analyzing the determinants of change in income for each household between 1994 and 1997 allows control for unobservable household assets (e.g., land quality and entrepreneurial talent) and unobservable contextual variables that affect income. This cannot be done through cross-household analysis as in Tables 4 and 5 using the 1997 income data. Recall that the activities that did poorly in the period analyzed are agriculture, agricultural and non-agricultural wages, and migration to Mexico, while activities that did well are livestock and remittances. We present two alternative regressions to check on the robustness of the determinants of change in income: a median regression and a robust regression. Like median regression, robust regression gives estimates that are less sensitive to outliers than ordinary least squares analysis (OLS). Robust regression eliminates the most extreme outliers and proceeds iteratively to weight the other observations inversely proportionately to the absolute magnitude of the residuals. It has the advantage of giving smaller standard errors on the estimated coefficients than median regression. Hence, more explanatory variables are significant under robust than median regression.

Using the results from both regressions, we find in Table 6 that variables that affect the change in income negatively are variables associated with a greater commitment to agriculture and to the wage labor market, i.e., to the activities that fared poorly during the period analyzed, namely:

- Households which owned more irrigated and rainfed land in 1994.
- Households which owned more livestock in 1994.
- Households with more agricultural and non-agricultural wage experience in 1994.

Variables that affected income change positively are:

- The number of adults in the household.
- Educational levels.
- The endowment in U.S. migration capital.

Table 6: Determinants of Change in Household Income, 1994-97

	Median Regression		Robust Regression	
	Coef't	P-value	Coef't	P-value
Land assets				
Irrigated area owned in 1997	819	0.000	-0.020	0.002
Rainfed area owned in 1997	51	0.326	-0.003	0.162
Pasture area owned in 1997	20	0.465	-0.002	0.137
Forest area owned in 1997	35	0.162	-0.003	0.172
Productive capital assets				
Number of heads of cattle in 1994	160	0.000	-0.010	0.000
Human assets				
Gender of household head (man = 1)	463	0.820	-0.070	0.507
Age of household head	-27	0.427	-0.001	0.848
Average years of education among adults	741	0.000	-0.040	0.000
Number of adults	527	0.000	-0.046	0.000
No of members with ag wage labor experience in 94	-257	0.541	0.023	0.404
No of members with non-ag wage labor experience in 94	1296	0.083	-0.062	0.011
No of members with self-employed activities in 94	726	0.422	-0.038	0.421
Per capita Mexico migration assets	-3	0.948	0.005	0.186
Per capita US migration assets	456	0.003	-0.011	0.057
Used high yielding varieties in 94 (dummy)	-766	0.466	0.004	0.931
Used chemicals in 1994 (dummy)	935	0.285	-0.068	0.080
Used advanced technological package in 1994 (dummy)	6104	0.078	-0.210	0.066
Institutional assets				
Used technical assistance in 1994 (dummy)	-495	0.755	0.057	0.474
Used formal credit in 1994 (dummy)	-790	0.262	0.075	0.066
Social assets				
Indigenous (at least one member speaks an indigenous language)	62	0.919	0.078	0.131
Regional effects (base = North)				
North Pacific	-935	0.641	0.022	0.773
Center	-1167	0.218	0.105	0.047
Gulf	-49	0.972	0.055	0.406
South	-1181	0.280	0.148	0.014
Infrastructure assets				
Ejido has paved road (dummy)	1065	0.002	-0.065	0.078
Social welfare assets				
PROCAMPO transfer (pesos)	1.2	0.005	0.000	0.010
Constant term	-2416	0.304		
Number of observations	992		992	
Pseudo-R squared	0.16		0.18	

Source: Authors' calculations.

Regionally, using the North as the base region, all regions except the Gulf fared worse than the base. This indicates that the two regions that gained most during the period are the North and the Gulf. The Gulf did as well as the North in terms of rural household income gains during the period, despite high levels of poverty.

PROCAMPO cash transfers create positive externalities on income change. The marginal income effect of a one peso income transfer through PROCAMPO on beneficiary households is 1.7 pesos. This is a large multiplier, but not unexpected. Ejido households are endowed in productive resources that they received through the land reform of 1917. At the same time, they have been severely constrained from accessing credit due to lack of alienable ownership rights over the land they use, preventing them from taking full advantage of these assets for income generation. We saw that only 18 percent of these households have access to formal credit and 13 percent are serviced by Alianza para el Campo. The result is that the shadow value of capital is very high to them. This is what is captured by the multipliers. When asked what they did with PROCAMPO transfers, 69 percent of the households who received transfers declared having used them to purchase inputs.

An indication that PROCAMPO was relatively more favorable to the poor can be inferred from the contrasted roles of the PROCAMPO transfer variable in the 1997 income equation (where it has a coefficient of 1.2) and in the income change equation (where it has a coefficient of 1.7). The lower coefficient in the income equation indicates that there are unobserved household assets that are negatively correlated with PROCAMPO payments. Hence, this reveals that PROCAMPO transferred cash to households with lower levels of unobservable assets (particularly land quality, technological levels, and entrepreneurial skills) for a given level of observable assets. The selectivity bias in targeting households and in determining how much was transferred to each was hence progressive, disproportionately favoring the less well endowed households. This does not come as a surprise since PROCAMPO transfers do not discriminate by yield level. As a result, households with lower quality land, lower technological levels, and lower farming skills were more generously compensated on a per hectare basis for the expected loss in income associated with a falling price of staple crops.

CHANGES IN ASSETS AND CHANGES IN BEHAVIOR

To better understand the origin of the changes in income (y) between 1994 and 1997, the observed changes can be decomposed between what is due to changes in asset position and what is due to changes in prices and behavior. We have estimated the following equations:³

³ These equations are estimated by ordinary least squares since, to do the proposed decomposition, we need fits with zero expected residuals, which would not be the case with robust and median regressions.

$$\text{For 1994: } y_{94} = \hat{\beta}'_{94}X_{94}$$

$$\text{For 1997: } y_{97} = \hat{\beta}'_{97}X_{97}$$

Hence, the predicted change in income ($\Delta y = y_{97} - y_{94}$) can be decomposed into: $\Delta y = \hat{\beta}'_{97}\Delta X + \Delta\hat{\beta}'X_{94}$.

The first term represents that part of Δy which is due to a change in access to assets ($\Delta X = X_{97} - X_{94}$), for a given marginal income contribution of assets measured in 1997 by $\hat{\beta}'_{97}$. The second term represents that part of which is due to a change in the marginal income contribution of assets ($\Delta\hat{\beta}' = \hat{\beta}'_{97} - \hat{\beta}'_{94}$), for a given level of assets measured in 1994 by X_{94} . The marginal income contribution of assets is due to prices and behavior. Hence, $\Delta\hat{\beta}'$ captures both the fact that the incentive context has changed and that behavior may have changed as well, in this particular case as a consequence of liberalization of individual decision making for ejidatarios and devolution of community decision making to the ejido. The results we obtain are given in Table 7.

Results show that the positive change in income (P\$763) observed during the period was due to an improved control over assets (P\$1,690), including PROCAMPO transfers (a social welfare asset), while the context and behavior overall played negatively (-P\$927). Among changes in assets that helped sustain an increase in income, the most important are increased land owned (which as we have seen came through appropriation of common property land in individual plots), an increase in migration networks to the United States, and very importantly the income transfer from PROCAMPO. Hence, we see again the fundamental role that PROCAMPO transfers played in sustaining incomes. Had there been no PROCAMPO transfers, the change in income due to changing control over assets would have only been P\$745, and the overall change in household income would have been negative, equal to -P\$182 instead of the observed positive income change of P\$763.

Changes in income due to $\Delta\hat{\beta}'X_{94}$ derive from changes in context (i.e., prices) and changes in behavior. The marginal income contribution of land assets fell by P\$2,151, reflecting the unfavorable change in incentives for agriculture. By contrast, the marginal contribution of U.S. migration networks increased markedly as the peso depreciated strongly against the dollar, giving increased value to remittances sent back to ejidatario households. Finally, the income generation value of human capital, principally the number of adults in the household, increased sharply. Since wages in effect fell during the period, this increase should principally reflect change in behavior, with more efficient use made of available adult labor as ejidatarios had increased freedom to allocate labor as they pleased, in particular to migration and off-farm activities. As in China under shift to the individual responsibility system, but not in Mexico in agriculture, increased freedoms for ejido households and devolution of control over community affairs to the ejido seem to have led to improved incentives and to increased efficiency in using available assets to derive income. The behavioral changes induced by the granting of greater freedoms on

decision-making resulted in ejidatarios deriving greater advantage from participation to off-farm activities.

Table 7: Income Changes Due to Asset and to Context and Behavior Effects (Pesos)

	Total income change	Income change due to changes in control over assets $\hat{\beta}'_{97}\Delta X$	Income change due to changes in context and behavior $\Delta\hat{\beta}'X_{94}$
Income change 1994-97	763	1690	-927
Sources of income change			
Land owned		608	-2151
Human assets*		0	4827
Mexico migration assets		-11	349
U.S. migration assets		106	1180
PROCAMPO		945	0
Other assets		31	4205

*Includes age of the household head, education, and number of adults.

Source: Authors' calculations.

CONCLUSIONS

During the period analyzed, the ejido sector went through important property rights reforms, and in the ability of ejidatarios to develop more autonomously complex idiosyncratic income earning strategies. In the short run, however, these reforms have been only very selectively beneficial to agricultural incomes. This is because incentives for agriculture were unfavorable, and because support to agricultural productivity continued to decline or remained minimal. For example, ejidatarios with access to any source of credit declined from 34 to 30 percent and those with access to technical assistance from 10 to 7 percent during the period; only 13 percent of the ejidatarios were reached by the Alianza para el Campo program. The result has been a continuing shift to low productivity crops (corn, in particular on irrigated land) and minimal adoption of high value crops and technological change.

Liberalization of individual initiative in the ejido sector and adverse economic shocks to agriculture during the period have thus promoted household income strategies with increasing reliance on off-farm sources of income, particularly self-employment in non-agricultural activities and migration to the United States, as opposed to the expected modernization and diversification of agriculture. These adjustments have been helped by increased freedoms in resource allocation, allowing ejidatarios to make more efficient use of assets, particularly human assets (number of adults in the family and education). Ejido households have thus been highly responsive to changes in the incentive system. However, for liberalized behavior to result in the desired diversification and modernization of agriculture, there is an urgent need to repair the institutional gaps in credit, marketing, and technical

assistance that emerged from the reforms, adjust and stabilize the incentive system, and extend the reach of government programs in support of productivity gains in agriculture.

The PROCAMPO program has been effective in protecting household incomes from the decline in agricultural income. Cash transfers appear to be used productively and to generate significant multipliers on household incomes. The multipliers effects are large, reflecting the paradox of households with asset endowments that have been starved for access to credit due to incomplete property rights and institutional gaps for their access to capital markets. The multipliers could be further enhanced if transfers were accompanied by vigorous intervention in support of the modernization and diversification of agriculture, if they were better timed with the agricultural cycle, and if reliability of the transfers could make their use as pledges to access credit more attractive to lenders. While most of the benefits of the program were inevitably captured by those with larger areas planted in the designated crops, the program was progressive on the distribution of income in the ejido because of the way benefits are targeted toward lands historically in traditional (as opposed to high value) crops, and independently of yields achieved.

Participation in off-farm activities has been the main source of income gains during the period analyzed. However, very low educational levels (an average of only 4.6 years of schooling among adults) limit participation in non-agricultural labor markets and in self-employment activities where education has a high premium. Decentralization of non-agricultural employment opportunities is also important for rural household incomes, as demonstrated by the importance of wage income and successful income gains in the Gulf. Education and decentralization are consequently two important lines of action for poverty reduction among ejido households.

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SAGAR

José Antonio Mendoza-Zazueta

The Government of Mexico is pleased with the increasing realization that the problem of poverty in Mexico is not unidimensional or agency-specific. This is important because, previously, government policies toward poverty alleviation were mainly centered on agricultural supports. In the last four decades, the rural population has widely diversified its income strategies. That is why, currently, the Government of Mexico is trying to differentiate agricultural policies. Obviously, PROCAMPO¹ and Progres² are very good examples.

There is need to clarify some of the assertions in the Davis *et al* paper:

- 93 percent of the beneficiaries of PROCAMPO have less than 10 hectares. They have a little more than half of the land supported by PROCAMPO.
- The paper does not consider the income that agricultural crops such as coffee and sugar provide to small producers. In fact, between 1993 and 1996, coffee producers had an increase in income of approximately U.S. \$1.5 billion, mostly among very small producers located in the central and southern parts of Mexico.

There are also larger producers. In the case of corn, there has been an increase in yields. Irrigated lands have been doubled (especially in the northwest part of the country). During 1989-90, the support price policy in Mexico made the price of corn above U.S. \$200/t. From 1990-95, the price of corn declined and it increased again in 1995-96, mainly because of market forces and low inventory. The peso devaluation also helped the income of these producers. We do not know yet how the ejidatario³ households (husband, wife and children) consolidate into a production unit where the entire family has a plot. According to PROCAMPO data, in the irrigated districts and among corn producers, land leasing reaches up to 80 percent of the Ejido land.

I agree with the estimated effect of PROCAMPO presented in the paper.

- In a different survey done by SAGAR, the impact of PROCAMPO was measured on the input value of the production units of

¹ A government program which provides direct payments to farmers of eight crops.

² A Zedillo Administration program with nutrition, education and health components.

³ A farmer who farms an ejido (previously it was common land, owned by the government, but managed by local communities).

producer's irrigated land. The survey reported that PROCAMPO support comprises about 8.2 percent of their total income. For dryland producers, the level of support reached about 21 percent. For dryland producers with less than 10 hectares, the support from PROCAMPO was about 30 percent of their income.

- Three out of four producers indicated that they have used income from PROCAMPO to increase productivity in their farms. One out of ten used PROCAMPO support for their household consumption. Three million producers have benefitted from PROCAMPO. Approximately, half of these producers prefer to use PROCAMPO income for household and food consumption.
- The Davis *et al* paper shows the progressive effect of PROCAMPO for rural families, and the increases in yields and productivity. We estimate that two out of five producers use more improved seeds and fertilizers. Eighty percent of these producers indicated that they had an increase in crop yields.

The SAGAR survey disagrees in some respects with the findings of this paper. The explanation may lie in the fact that the survey asked the head of the household if PROCAMPO will help him to stay in agriculture or if he will have to look for income elsewhere. Ninety percent indicated that PROCAMPO had influenced them to make a decision to stay in agriculture. The type of question, though, can bias the results. Perhaps, the proper question should have been asked in terms of if some member of the family had migrated to urban areas in need of additional income.

- Another program is Alianza para el campo⁴. This program began in the second half of 1996. It includes a government subsidy toward aiding agricultural productivity through private technical assistance and agricultural extension. It is focused on small farmers and very poor regions.
- Farm loans have been reduced in the period the Davis *et al* paper covers. In fact, they did not increase from 1993 to 1996. But from 1996 to 1998, coverage has been increased to 80 percent of the land.
- The Davis *et al* paper agrees with a paper that Antonio Yunez wrote which indicates that the level of education does not have a strong effect on traditional agriculture. Education does have a strong effect on off-farm activities.

We are trying to convince the other ministries of the Mexican government that rural development is much more than crops and livestock. My final observation is that the Undersecretary for Rural Development has to have something to say and do for rural development in Mexico.

⁴ Alliance for Agriculture.

Section 4

Harmonizing Transportation Systems Under NAFTA

The objective of this session is to review recent developments in truck and rail transportation, and identify further needs.

RAIL HARMONIZATION IN MEXICO AND NORTH AMERICA: IMPLICATIONS FOR AGRICULTURE

Barry E. Prentice, Wade Derkson and Arnold Maltz

INTRODUCTION

The North American railway landscape has changed significantly and irreversibly in the last few years. A “NAFTA railroad” has emerged with the acquisition of the Illinois Central (IC) by Canadian National (CN) and the subsequent marketing agreement with the Kansas City Southern (KCS). The largest Canadian railway, itself privatized only a few years ago, now offers single-line access to the Mexican market with the privatized *Transportación Ferroviario Mexicano* (TFM).

From a shipper’s perspective, the new map of North America increasingly resembles a hyperlinked web page, “with the shipper able to start anywhere and end up in places he or she never imagined.” (Possehl, 1998). Few North American shippers would have imagined a railway system that could include the much-maligned Mexican rail links. However, the once disparate parts of the North American rail network have re-emerged under private control with the promise of integrating NAFTA trade, and in particular, the trade of agricultural products.

This paper examines the implications of the Mexican rail concessions for NAFTA trade of agricultural products. Specifically the paper focuses on whether or not privatization, particularly of the rail links in the Northeast (TFM) and the Pacific North (Ferromex), are likely to support overland movement of agricultural products within the three NAFTA signatories. The effect of rail privatization on freight rates is especially important because the geographic flow patterns of low-valued bulky agricultural commodities such as grains are sensitive to transport and logistics costs. In the new market environment, railway costs and demands, and intramodal/intermodal competition will determine freight rates in Mexico.

Figure 1: NAFTA Railroad System, 1999

Source: Authors' calculations.

The potential for change is also significant in non-grain agricultural markets, such as northbound perishables from Sinaloa. Currently Sinaloan winter fresh fruits and vegetables move almost entirely by truck to warehouses at Nogales, Arizona. Privatization of the Pacific-Northern links (Ferromex) should mean greater intermodal opportunities for Mexican shippers. However, this will require both investment in intermodal facilities and equipment, and the willingness of shippers to try the rail intermodal option or, stated another way, marketing the services.

THE ROLE OF RAILWAYS IN THE MEXICAN ECONOMY

The history of the Mexican railway closely parallels the overall history of the country. The network was originally financed and built by private interests – mainly foreign – in the 1890s before being ruined by decades of revolution¹, then nationalized and subsequently neglected as a state entity. During WW II the system flourished briefly before deteriorating rapidly in subsequent years. The network has grown by only 0.3 percent since 1950. In this period, the Mexican government served mainly to consolidate the network and is credited with creating a network with sufficient economies of scale (Ferrier and Ibarra, 1998).

¹ It is estimated that almost 50 percent of Mexico's rail infrastructure and equipment was destroyed during the period 1910-17 (Jimenez and Mendosa, 1996).

With the rapid rise of trucking in the 1950s and 1960s, rail's economic role was reduced essentially to carrying cargo that could not move by truck. Despite growing trade volumes and subsidies, the state-owned Ferrocarriles Nacionales de México (FNM) continued to lose market share to trucks, from almost 20 percent in 1980 to just 9 percent in 1996. In terms of the value of freight carried, the railway's market share fell to less than 6 percent by 1996 (Jimenez and Mendoza, 1996). However, the amount of tonnage carried by Mexican railways has increased in recent years. Current estimates put rail's overall market share at around 12 percent. (Table 1).

Table 1: Railway Cargo in Mexico, 1989-1997

1989	1990	1991	1992	1993	1994	1995	1996	1997
(Millions of tonnes)								
53.9	51.0	46.4	48.7	50.4	52.1	52.5	58.8	60.6

Source: SCT

Privatization of FNM became inevitable in the 1990s. The company's operating losses (U.S.\$460 million in 1995), poor productivity, underperforming assets, falling prices and, of course, continuously declining market share to trucks, left the Government of Mexico with few other alternatives. After reviewing the experiences of other countries (for example, New Zealand), the Mexican government decided on segmenting the FNM into three vertically-integrated linehaul concessions, a Mexican City Terminal concession and a number of light density shortlines, along the North American model. The government's concession scenario sought to preserve economies of scale, attract private investment and foster intramodal as well as intermodal competition (Secretaría de Comunicaciones y Transportes, 1995). The Mexican government was motivated by the need to promote private-sector operating efficiencies in the railway industry (Mercer Management Consultants, 1998).

In this spirit, the government took steps to encourage labour productivity. Table 2 presents an account of the downsizing of the FNM labour force. Between 1988 and 1996 the number of employees was halved, with most leaving since 1991. However, the impact on rail costs has taken longer to emerge because of the increase in the number of pensioned employees. Spurred on by the peso crisis of 1994, privatization of Mexico's rail system proceeded faster than the government had originally planned. The Mexican government was originally reticent to proceed with privatization even though the inefficiencies and problems of the FNM had long been recognized, because it was felt that competition with trucking was not feasible on a large scale given inadequate railway-supporting infrastructure. Indeed, rail's inability to compete intermodally was implicitly recognized in the deregulation of the Mexican motor carrier industry in 1989. (Texas-Mexico Transborder Transportation System, 1991). In the end, the Mexican government opted for a rapid transition toward privatization, wishing to avoid the problems experienced in New Zealand, and in the Conrail case in the U.S.² (Ruiz, 1998).

² In New Zealand, privatization took many years, while in the Conrail case the state government invested \$5 billion to restructure it before later selling it for \$3 billion.

Table 2: Evolution of FNM Labor Force, 1988-96

Year	Active Employees	Pensioned Employees
1988	81248	37142
1989	82928	39807
1990	83290	41921
1991	78114	42669
1992	58626	49154
1993	55664	50449
1994	49323	52681
1995	46283	50764
1996	44139	51972

Source: FNM Serie Estadística, 1996

The manner in which the FNM was concessioned into three main lines (along with several shortlines – some of which have yet to be privatized), was designed to ensure strong intramodal competition. At the same time, extensive private sector investment combined with rail economies of scale is expected to improve rail's competitive position versus trucking (Secretaría de Comunicaciones y Transportes, 1995).

For our purposes the two mainlines in the north, the TFM and Ferromex, are of most interest, but the general thrust of the concession program is as follows.

Northeast Railway. The “crown jewel” of the Mexican system was won by the consortium of TMM (37.7 percent), KCS (37 percent), FNM (the Mexican government, 24.5 percent) and Grupo Servia, TMM's parent company (0.8 percent). The winning bid of U.S.\$1.4 billion represented 7.7 times current revenue, a vote of confidence for rail's enormous potential in a growing Mexican market. Seventy percent of TFM's revenues are linked to foreign trade and, while accounting for only 19 percent of total track, the TFM carries more than 40 percent of Mexico's rail cargo (FNM, 1996). About 20 percent of the TFM's total traffic of almost 600,000 carloads in 1996 was agricultural products (FNM Series Estadísticas, 1996). Nevertheless, as Table 3 shows, TFM has made little headway in improving its share of the northbound business through Laredo.

Ferrocarril Mexicano (Ferromex). After failing in its bid for the Northeast concession, Union Pacific joined with the mining company Grupo México to purchase 100 percent of the FNM's remaining northern and Pacific lines for U.S. \$527 million.³ In contrast to the Northeast line, almost 70 percent of Ferromex's traffic is domestic. Historically its biggest traffic segment has been minerals, but agricultural products (in particular, corn) constituted 25 percent of its 550,000 carloads in 1996 (FNM, 1996) and is currently the driving force. The other big growth opportunity for Ferromex is intermodal traffic in the Hermosilla-Nogales and Eagle Pass/Piedras Negras-Salttillo corridors (See Table 3). Ferromex is investing in

³ UP recently doubled its stake in Ferromex to 26 percent from 13 percent.

containers and expanding service in both lanes, improving its terminal in Guadalajara and planning an intermodal terminal outside Mexico City to supplement the Pantaco facility (Vantuono, 1998).

Table 3: Weight and Value of Exports from Mexico through Laredo and Nogales

	Laredo				Nogales			
	Truck		Rail		Truck		Rail	
	Kg	US \$	Kg	US \$	Kg	US \$	Kg	US \$
Jan '96	344.6	857	174.3	676	254.2	290	50.2	124
Feb '96	377.3	923	168.4	677	276.9	321	47.4	122
Mar '96	388.4	955	184.6	720	311.6	341	54.3	112
Apr '96	411.8	985	176.9	688	300.8	413	50.4	90
May '96	428.8	1,100	180.9	753	167	323	54.3	133
Jun '96	387.2	1,050	220.7	767	166.9	259	47.9	154
Total	2338.1	5870	1105.8	4281	1477.4	1947	304.5	735
Jan '98	454.1	1,250	168.9	550	265.1	434	53.7	95
Feb '98	675.1	2,150	164.3	585	265.6	403	37.2	48
Mar '98	522	1,687	217	764	330	492	67.9	181
Apr '98	518	1,525	168	552	331	445	75	167
May '98	520	1537	205	661	264	415	79.7	171
Jun '98	532	1640	204	622	198	430	85	152
Total	3221.2	9,789	1127.2	3734	1653.7	2619	398.5	814

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, www.bts.gov/transborder/prod.html, monthly file D11.

Southeastern Railway (FerroSur). The third main line privatization, FerroSur, was completed at the end of 1998. FerroSur is owned by a holding company made up of a construction company (Grupo Tribasa) and a bank (Banco Imbursa).⁴ FerroSur operates the 900-mile main trunk lines to the ports of Veracruz and Coatzacoalcos. These ports have had the largest share of grain imports and account for significant volumes of coffee, banana and other tropical food exports. Service reliability and equipment shortages have handicapped grain movements by rail from these ports (Prentice and Guzman, *TRF*, 1994). Of the 350,000 containers handled by the Port of Veracruz, trucks deliver 99 percent. (Vantuono, 1998).

Shortline. Some rail segments were considered too critical and others too doubtful to become part of the three main concessions. A terminal railway to serve interchange functions at Mexico City was concessioned separately as the Terminal Ferroviario del Valle de México (TFVM). The rail link across the Isthmus of Tehuantepec was not included in the FerroSur concession because of the long held vision of a high-speed Atlantic-Pacific container corridor. The future of the 500-mile link between Coatzacoalcos and Metida is yet to be decided. This route to the Yucatan has some of the weakest rail infrastructure and traffic volumes in Mexico.

⁴ Canadian Pacific Railways had contemplated the purchase of Ferrosur but pulled out at the last minute.

MEXICO'S RAILROADS AND EXPORT TRADE

Of particular interest is how much of Mexico's rail traffic is tied to foreign trade. Table 3 shows the northbound shipments received at the U.S. border through Laredo and Nogales. These two ports were chosen because of their well-documented role in agricultural trade. Some interesting observations can be made. First, it appears that rail traffic is gaining some ground through Nogales. The first six months of 1998 shows a 30 percent tonnage increase over the similar 1996 period. There is considerable seasonality, as expected. On the other hand, rail tonnage through Laredo did not grow between 1996 and 1998, although truck traffic increased considerably. One explanation for this difference is that TFM has experienced greater-than-anticipated growth in the domestic market (Vantuono, 1998).

As expected, the unit value of rail exports decreased between 1996 and 1998, suggesting that rail is penetrating lower valued agricultural shipping markets. It should be noted, however, that rail unit values are higher than truck at both ports, probably reflecting the huge share controlled by the automotive assembly factories.

OVERALL RAIL MARKET SHARE

At between 10 and 12 percent, Mexican rail's overall market share is significantly lower than in the United States and Canada where the corresponding figure is 35-40 percent (WESTAC, 1997). In the case of Mexico, however, it has been noted that rail only competes directly with trucking for only 250 million tonnes of the approximately 500 million tonnes moved overland in Mexico due to the railways's more limited geographic reach. This was tested in a model developed by Rico et al (1995). The authors estimate that 50-60 percent of the amount of freight *currently moving by truck* (i.e. 450 million tonnes) could *potentially move by rail* (based on a network size of that in 1995), or almost 200 million additional tonnes. A modal shift on that order would bring the Mexican rail industry more in line with its North American counterparts in terms of market share. However, this is unlikely. A more pragmatic estimate suggests that rail has good opportunities to increase its total tonnage carried to 125 million tonnes by 2003, or 25 percent of the total market share (Rico et al, 1996).

The FNM's main limitations were neither track and other rail infrastructure,⁵ nor rail tariffs. However, the Secretaría de Comunicaciones y Transportes (SCT) determined that the FNM's distance-based tariff structure made the railway uncompetitive and unprofitable in many markets (Prentice and Guzman, 1994).

The cross subsidy implicit in FNM rates creates a bias towards marine shipments of grain. The Port of Veracruz is only 424 (rail) kms. from Mexico City, while Laredo, Texas is approximately 1,200 kms. away. The 424 km. route from Veracruz climbs over 10,000 feet, and entails many tight curves and steep grades.

⁵ In fact, track conditions were better than most imagined. See "The Great Railway Sale," *U.S./Mexico Business*, November, 1997.

Unit trains on this route are restricted to 36 cars. In contrast, the route from Laredo has more gradual grades and long sections of straight track that permit 90 car trains (these trains may be broken in sections of 45 cars out of Monterrey where steep grades are encountered). If FNM rates were based on true costs, grain movements across the U.S.-Mexico border would be much more competitive with the gulf ports. (Prentice and Guzman, 1994: 821)

In an Origin-Destination analysis for 118 city pairs, comparing tonnage, distances, tariffs and transit times for both rail and truck, Rico et al conclude that tariff structures between the two modes “played a relatively small role in determining the overall market share, compared to time of service.” (Rico et al, 1995). In the Mexico City-Nuevo Laredo corridor, for example, rail’s transit times were 67 hours in 1994 compared to just 20 hours for truck. This time difference helps explain trucking’s near-dominance even in Mexico’s long haul markets. Perhaps more important, but less quantifiable, are the myriad of issues related to overall service quality that made shippers loathe to try the FNM.

Service times have improved dramatically since the TFM took over the northeast line. According to a recent article in *Railway Age*, the same Mexico City-Nuevo Laredo move is down to less than 50 hours and operators are targeting a 33 hour journey once improvements to the northeast line are completed (Vantuono, 1998). Moreover, TFM-owned back-order cars have dropped from 40 percent to 20 percent. The year-end goal is 6 percent from combined foreign and domestic back-order cars (Vantuono, 1998). New management of the Mexican rail lines is also moving to improve service. For instance, the catenary of the 156-mile Queretaro-Mexico City “electrified” railway is being removed to accommodate double-stacks and tri-level auto-racks. Similarly, the electric locomotives inherited from the FNM are being traded in or stored. A new Sanchez rail yard is being constructed 11 miles south of Nuevo Laredo to handle all customs clearance. This will eliminate stopping on the Tex-Mex Rio Grande bridge and double the bridge capacity to 40 trains per day (Vantuono, 1998). However, the results in Table 3 suggest that winning back northbound traffic will likely take time, even with these improvements.

AGRICULTURAL TRANSPORT WITHIN NAFTA

Agriculture is the most sensitive sector of Mexico’s economy when it comes to NAFTA. Mexico has reduced tariffs and non-tariff barriers to agricultural trade, but the use of contingency measures (primarily anti-dumping) has increased and mandatory standards (labelling and marking requirements) are more enforced. NAFTA does not account for some of the changes that have taken place in agricultural markets, particularly between Mexico and the United States. Disputes have occurred over sugar, grains (corn), and fruits and vegetables (apples and tomatoes).

Essentially two overland agricultural markets are affected by Mexican rail privatization. One is southbound grain shipments, which have mainly entered Mexico through the Laredo/Nuevo Laredo gateway. The other is winter vegetables

and fruits from Sinaloa that enter the United States predominately through Nogales (Klindworth and Martinsen, 1995). These two markets are addressed individually below, although weight data are only available on northbound traffic.

Grain Transport To Mexico

Mexico is an unique export market for grains because of the many transport options available to shippers (Klindworth and Martinsen, 1995). Grain transport is also a good example of how transportation problems impact upon agricultural markets across borders. When faced with severe rail delays caused by the UP crisis in the spring of 1998⁶, soybean crushers in the United States were forced to trim production and raise prices.

Mexican agriculture has fared poorly under NAFTA. Consequently, Mexico has become an important importer of U.S. grains and oilseeds in the 1990s (principally corn, sorghum, wheat and soybeans), almost half of which enter via overland crossings on the U.S./Mexico border. The main gateway, by far, is Laredo. Historically, U.S. railroads transported grains originating in the United States to the border where they were transferred to the FNM for distribution to Mexican markets, mainly in the center and south of the country.

Recent developments in the Mexican grain handling and storage system also impact upon trade flows. In recent years Mexico embarked on a gradual process of privatization of the grain storage system and reduced price support (indirect subsidies) to the agriculture sector. Aserca, the government institution that provides funds and technical support for agricultural marketing, cut funding by 66 percent in 1998.

Mexico has privatized two-thirds of its national grain warehouse company, ANDSA, which comprised about 70 percent of the country's total warehouse space. Previously used to store mainly grain, the new businesses are integrating logistics, transportation, marketing and financial services. This development is expected to impact favorably on grain prices as well as transportation rates and services (Cardenas, 1998). For example, the construction firm ICA paid 621 million pesos for 100 percent of southern warehouse group, Alsur, and plans to develop better transport/logistics between Veracruz and Mexico City, while using its Ferromex rail concession to bring grain to Alsur facilities (El Financiero Weekly International, February, 1998). The latter is a good example of the kind of integrated approach to grain handling and transportation that was previously lacking in Mexico, and which still remains a problem. In many cases the system as a whole is caught in the intractable position where the railways need better grain handling facilities, while the grain warehouses need better transportation (rail) services (Cardenas, 1998).

⁶ In March 1998 UP was forced to embargo all southbound shipments to Mexico because of a year's worth of backlog of over 5,500 cars stretching from Laredo to Kansas City. The embargo most seriously affected bulk grains and other low-valued commodities; auto parts and containerized freight still moved, albeit more slowly.

A recent study suggests that privatization and subsequent improvement of Mexico's railways will increase U. S. overland grain exports to Mexico by 3 million tonnes. Three quarters of this volume will move through the Laredo gateway and onto the TFM system. The anticipated volume increases reflect the significant reductions in transportation costs under private operations and the concomitant increase in intermodal competition which will keep rates only modestly above variable costs (Fellin and Fuller, 1998). For this to happen, however, TFM must move more northbound traffic. Otherwise the cost of moving empty cars back to Laredo may mean that the rates envisioned above will not even cover variable costs. In comparing pre-and post- privatization scenarios, Fellin and Fuller calculate that the difference in rates from the U.S. border to Central Mexico will fall from approximately \$24-\$27/tonne to \$19/tonne.

Perishables Trade And Logistics

The poor state of Mexican highways (or the high cost of Mexico's toll roads) ought to constitute a "window of opportunity" for rail to compete for northbound perishables from the Pacific North regions (mainly Sinaloa) via Nogales but hinges on the ability of the railways to offer a viable intermodal service option (Beilock et al, 1995). This is a large challenge for the new Mexican concessions, particularly Ferromex. It should be noted that in the United States rail's market share (in terms of ton-miles) of perishables was only 4.2 percent in 1993 and is obviously a difficult market (USDA, 1998).

The vast majority of Sinaloan agricultural produce is transported by truck to U.S. border states and beyond through Nogales (Tables 2, 3). In the past, the Nogales gateway was preferred as an efficient handoff point to U.S. rail system (UP/SP). Notwithstanding the problems with UP in 1997/98, one would expect that Nogales should continue to be a preferred option for shippers. And, in fact, there already has been an increase in rail traffic through the Nogales gateway (Table 3).

During the 1980s significant volumes of Sinaloan winter vegetables were shipped to Nogales via trailers on flat cars (TOFC). However, FNM's inability to deliver consistent quality service and poor maintenance of equipment brought an end to the TOFC service. This intermodal service could be using doublestack containers instead of trailers (Beilock et al, 1995). Ferromex recently claimed to handle 6,000 containers per year but has the lofty goal of moving as many as 30,000 by the end of 1999 (Vantuono, 1998). Such volumes of northbound perishables would contribute significantly to easing the north-south freight imbalance that exists in Mexico. The trade lane imbalances particularly hurt the rail industry's cost structure compared to trucking, because of the charges for repositioning empty units (Rico et al, 1995).

At this point there is little evidence of increased rail involvement in fresh fruits and vegetables. Over 99 percent of all Mexican fruits and vegetables (TSUSA Classifications 07 and 08) continue to arrive at Nogales by truck (Table 4). Even if one assumes that the Ferromex container traffic is counted as "truck" in U.S. customs

data, rail's share is quite small. Assuming an average weight of 20,000 kg per container or truckload, the data are consistent with over 240,000 trailers/containers per year moving perishables into the U.S. Ferromex's indicated share at that point might be 10 percent, if Vantuono's assumptions are consistent with our own.

Clearly, there is potential for increased rail share in the northbound fruit and vegetable traffic. But greater movement of perishables by rail requires improvements in intermodal terminals and equipment. These and other infrastructure/investment issues are treated below.

Table 4: Weight of Fruits/Vegetables Imported from Mexico (Million kg)

	Truck	Rail	Total	% Rail
Jan '96	352.0	13.5	365.5	
Feb '96	385.1	0.9	386.0	
Mar '96	485.9	1.1	487.0	
Apr '96	491.0	1.0	492.0	
May '96	299.3	0.9	300.2	
Jun '96	229.3	0.3	229.7	
Total '96	2242.7	17.7	2260.4	0.78
Jan '98	371.0	0.1	371.0	
Feb '98	381.9	0.1	382.0	
Mar '98	504.3	0.0	504.3	
Apr '98	497.1	0.0	497.1	
May '98	388.7	0.2	388.9	
Jun '98	332.7	0.2	332.8	
Total '98	2475.7	0.5	2476.1	0.02

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, www.bts.gov/transborder/prod.html, monthly file D9.

INTERMODAL INFRASTRUCTURE

The link between investment and economic liberalization is apparent in the rail sector. Without substantial infrastructure investment in intermodal and multitmodal transportation, the competitiveness of Mexican production will be limited in the more competitive trading conditions associated with NAFTA. In the short term, the new rail concessionaires are focused on capturing market share from trucks, but intermodal partnerships are an obvious future necessity. Among the capital improvements made by the TFM and Ferromex are the following:

- TFM has committed investments of U.S.\$ 1 billion. To date most of the improvements have been in railroad cars, rather than track, although TFM has already adopted Conrail tracking standards. In addition, longer siding, turnout panels and curves have been introduced, meaning that the old problem of trains having to back-up to the nearest station in order to pass each other, has been addressed (*El Financiero Weekly International*, May 1998).

- Ferromex has been less ambitious in its capital spending than TFM, committing \$130 million of a five year spending plan of \$500 million on capital improvements, mostly for motive power and car overhauls (Vantuono, 1998).

NORTH AMERICAN INTEGRATION AND STANDARDS

The new operators of the Mexican concessions will need to be fully compliant with the American Association of Railroads (AAR) and Federal Railroad Administration (FRA) rules before true North American rail integration can occur (Vantuono, 1998). Toward that end the following developments have taken place in Mexico:

- The Mexican government is establishing a similar entity to the FRA (currently railroad standards are the responsibility of SCT).
- As of June 1, 1998 the TFM is a full car-hire participant with U.S. carriers, ensuring protection for private car owners and for other railway's equipment.
- TFM is upgrading cars (gondolas and flat cars) to FRA specifications, but is 50 percent behind schedule as a result of growth in the domestic market.
- The three mainline concessionaires are in the process of creating a trade association equivalent to the AAR, which should positively affect car-hire rules and interchange/billing practices.
- TFM has recently finalized agreements with five U.S. railroad companies, including UP, BNSF and the Texas Mexican Railway, to facilitate cargo transfer arrangements between the United States and Mexico.

CANADIAN- MEXICAN AGRICULTURAL TRADE

Given the distances involved and climatic differences, Canada and Mexico should be logical partners in agricultural trade that can be carried by rail. Canada is a protein-rich country with a single harvest period, while Mexico has a large deficit in livestock and grain products, but an abundance of tropical and temperate horticultural produce that can be supplied year round. The advances in refrigerated containers and double-stack trains will ultimately see regular two-way trade north and south. At the moment, however, not even storable grains have moved in large quantities between Canada and Mexico by rail.

Political and commercial barriers to trade impede progress as much as the inability of the connecting rail lines to get their house in order. Canada is beginning to emerge from an over-regulated grain industry that encouraged/forced grain to move to Canadian ports for marine transport. Opening up the grain industry to competition and the CN-IC-KCS/TFM rail linkage could initiate the first tentative

steps toward north/south unit trains of Canadian grain to Mexico. A far more likely scenario however, is the so-called “knock-on” trade, whereby U.S. grain will likely move south to Mexico in increasing quantities, and Canadian grain will move south to back fill U.S. domestic demand.

Double-stacked “orange-blossom specials” from Mexico may seem fanciful at this time. Shippers are still suspicious of the reliability of reefer boxes on double-stack trains, and U.S. phytosanitary barriers to Mexican produce are unlikely to be overcome quickly. Meanwhile the political power of Florida tomato growers stands as a monument to “rent seeking” activity that has slowed the progress of NAFTA trade.

In addition to agricultural commodities, general freight commodities which are suitable for containerization and carriage by a wide range of intermodal options, are most likely to experience enhanced exports to Mexico. With the changes to the North American transportation landscape this means new opportunities for intermodal transport and possible new intermodal route offerings. One recent study finds that transit times for intermodal options from some Canada-Mexico O-D pairs are only 1.5 - 3 days longer than the fastest possible driving time with, of course, significantly lower transport costs (Bookbinder and Fox, 1998).

SUMMARY AND CONCLUSIONS

Privatization will almost certainly improve the competitive position of Mexican railroads vis-à-vis trucks. Since the FNM had already made some progress in labour productivity and substantial investment is expected in both the TFM and Ferromex systems, costs and service should continue to improve. 1998 export data indicate an increase in northbound rail share at Nogales, but not at Laredo. However, commodity level data suggest that rail is not carrying more fruits and vegetables through Nogales, which is puzzling. Perhaps other agricultural exports are being routed through Nogales, or perhaps the increase in Nogales rail traffic is not agricultural in nature.

The limited data available suggest that rail has an enormous opportunity because of its relatively small share of the freight market and its rapidly improving capabilities. Presumably, one of the best possibilities is increased fruit and vegetable export traffic. As noted above, there is still considerable skepticism about the reliability of rail transportation for perishable items. Judging by the data in Table 4, neither TFM nor Ferromex has turned the skepticism around in any major fashion. Once that is done, it appears that huge amounts of traffic are available to a properly-run Ferromex or TFM.

As for grains, U. S. overland grain exports to Mexico will jump by an estimated 3 million tonnes in coming years, reflecting Mexico’s growing import dependency – even for corn – something many would have thought inconceivable. Three quarters of this grain will move through the Laredo gateway and onto the TFM system. The anticipated volume increases also reflect the significant reductions in

transportation costs expected under private operations; growing intermodal competition should keep freight rates only modestly above variable costs (Fellin and Fuller, 1998). For this to happen, however, TFM must move more northbound traffic. Otherwise the cost of moving empty cars back to Laredo may mean that the rates envisioned above will not even cover variable costs.

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HARMONIZING TRUCK TRANSPORTATION

Rob Harrison

INTRODUCTION

Canada and Mexico are now the leading trading partners with the United States, accounting for a total trade value of around \$480 billion in 1998. This is a testimony to the success of efforts to liberalize trade, reduce tariffs, and build integrated industrial sectors, which culminated in the NAFTA which took effect in January 1994. Trade has continued to grow despite some problems in the Canadian and Mexican economies including the abrupt currency devaluation in Mexico and prolonged devaluation in Canada.

Trucking moved over 70 percent of the \$480 billion trade between Mexico, Canada and the United States. In spite of the importance of this mode, there is little trucking standardization within NAFTA. The need for harmonization in this sector was recognized during the NAFTA negotiations and a Land Transportation Standards Sub-Committee (LTSS) on trucking was established to address driver, vehicle, operations, infrastructure, and safety issues. Progress has been delayed by the postponement of the border states access stage of the NAFTA. This paper details progress made on trucking harmonization and identifies key current issues remaining to be addressed.

NAFTA TRADE

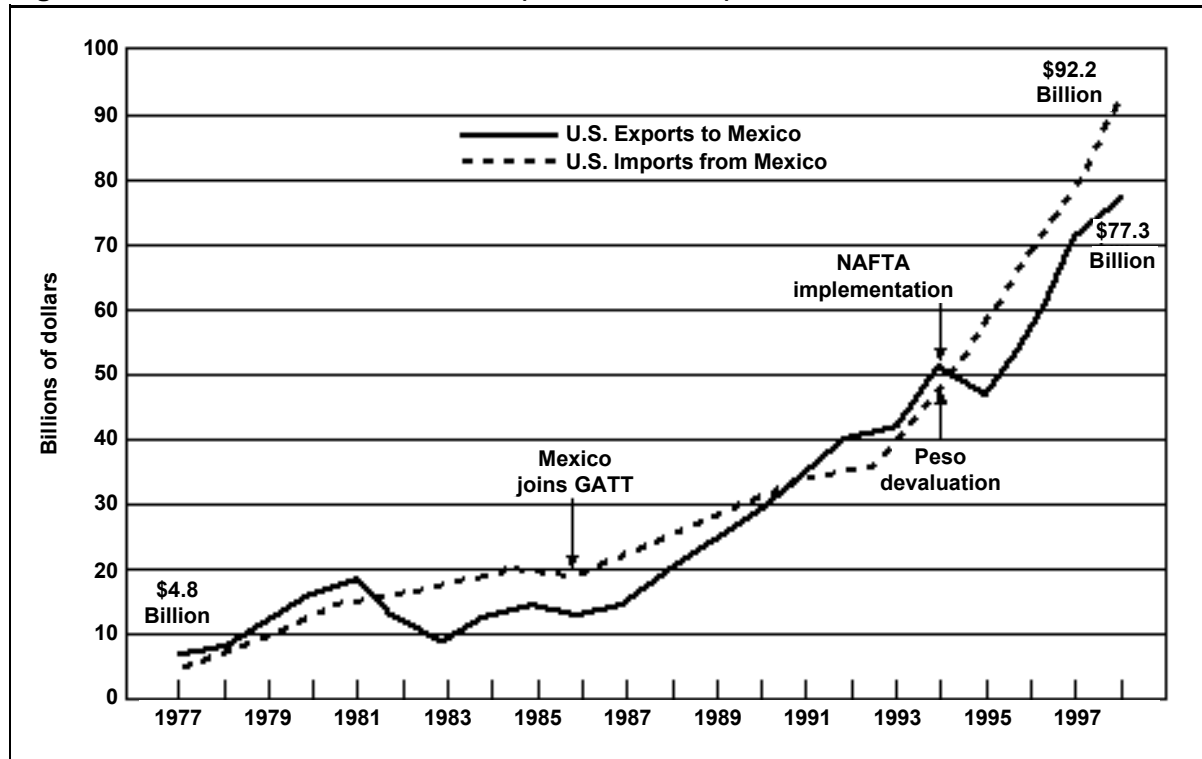
Canada and the United States, along with other signatories, joined the General Agreement on Tariffs and Trade (GATT) in 1946. Canada has been the largest trading partner of the United States for many years. Similarities in economic policies that stimulated industrial integration and the growth of regional trade, particularly in the motor vehicle industries, have underpinned this economic success. The closeness of Canadian and U.S. economic policies resulted in the U.S.-Canada free trade agreement, which was signed in 1988 and which established the basis for the enlarged NAFTA. Trade between the United States and Canada grew from \$77 billion of exports and \$88 billion of imports in 1986, to \$133 billion of exports and \$157 billion of imports in 1996. The dramatic trade growth was primarily a result of the integration of manufacturing operations, the impetus of the U.S.-Canada free trade agreement, and implementation of the NAFTA (McCray and Harrison, 1999).

Mexico, on the other hand, did not join GATT until 1986 and its economic policy prior to that date was characterized by import substitution and high tariff barriers, which made it difficult to obtain import permits and placed severe restrictions on foreign investment. Figure 1 shows the growth in U.S.-Mexico trade over the past two decades.

After peso devaluation in 1981 and an approximate two-year period of readjustment, trade (both exports and imports) has grown steadily. When Mexico made the decision to join GATT, it also instituted a series of far-ranging economic policies including liberalization of industrial activity, removal of entry restrictions, deregulation in many sectors (including trucking), and a program of privatization of state assets. This, combined with the growing strength of the U.S. economy, powered U.S.-Mexico trade growth well before the signing of NAFTA.

In 1980, maquiladora employment was around 120,000 and had grown to around 860,000 by the end of 1997. It should be noted that such trade is relatively independent of the Mexican economy. Rather, it reflects the strength of the U.S. economy to which most of its products are exported. This mitigated the impact of the peso devaluation in 1995 because maquiladora trade was, if anything, stimulated by lower Mexican prices whereas the traditional continental trade was severely constrained in terms of its import capacity.

Figure 1: U.S.-Mexico Trade 1977-98 (Actual Dollars)



Source: Bureau of Transportation Statistics, *Transborder Surface Freight Data*. U.S.D.T. 1998.

TRANSPORTATION MODES

On a dollar-value basis, trade between Canada and the United States is dominated by truck transport. In 1996, trucks transported an estimated \$102 billion of exports to Canada and \$103 billion of imports from Canada. Rail, the second most dominant mode, transported \$16 billion of U.S. exports and \$42 billion of U.S. imports. Air trade was the third most dominant mode, and transported \$12 billion of

U.S. exports and \$6 billion of U.S. imports. There were also \$2 billion of exports and \$5 billion of imports carried by sea. While truck imports and exports are relatively balanced, there is nearly three times the value of U.S. imports by rail as exports by rail. Air trade between the United States and Canada has twice the value of exports than imports, while sea trade has twice the value of imports than exports (McCray and Harrison, 1999).

Trucks also dominate U.S.-Mexico trade flows. Table 1 gives a breakdown of the key commodity groups carried by surface mode for both imports and exports. In 1996, trucks transported an estimated \$44 billion of exports to Mexico and over \$48 billion of imports from Mexico. Rail was the second most dominant mode, transporting \$5 billion of U.S. exports and over \$12 billion of U.S. imports. Sea trade was the third most dominant mode, transporting \$3 billion of U.S. exports and \$9 billion of U.S. imports (mostly crude oil). There were also \$2 billion of exports and \$2 billion of imports carried by air. Truck and air transportation dominate the southbound shipments, while for rail and sea shipments there is a northbound dominance.

Table 1: 1996 U.S. – Mexico Surface Trade by Mode – Key Commodity Groups (\$ million)

Commodity	U.S. Imports				U.S. Exports			
	Truck	Rail	Other	% Truck	Truck	Rail	Other	% Truck
Agricultural	2,893	63	0	98	1,252	574	8	68
Food	872	280	31	74	882	778	96	50
Minerals/Metals	3,322	554	82	84	4,914	750	28	86
Chemicals/Plastics	1,509	227	4	87	6,246	504	26	92
Wood/Pulp	2,540	53	1	98	2,597	300	2	90
Textiles/Apparel	4,801	4	11	100	3,053	149	7	95
Ind machinery	6,288	652	660	83	6,260	216	7	97
Electrical machinery	17,796	37	882	95	12,644	129	5	99
Transport equipment	2,946	10,408	64	22	3,957	1,683	357	66
Instruments	1,957	0	382	84	1,262	24	16	97
Miscellaneous	3,427	18	607	85	1,024	12	1,990	34
Totals	48,351	12,296	2,724		44,091	5,119	2,542	

Source: Bureau of Transportation Statistics, *Transborder Surface Freight Data*. U.S.D.T. 1998.

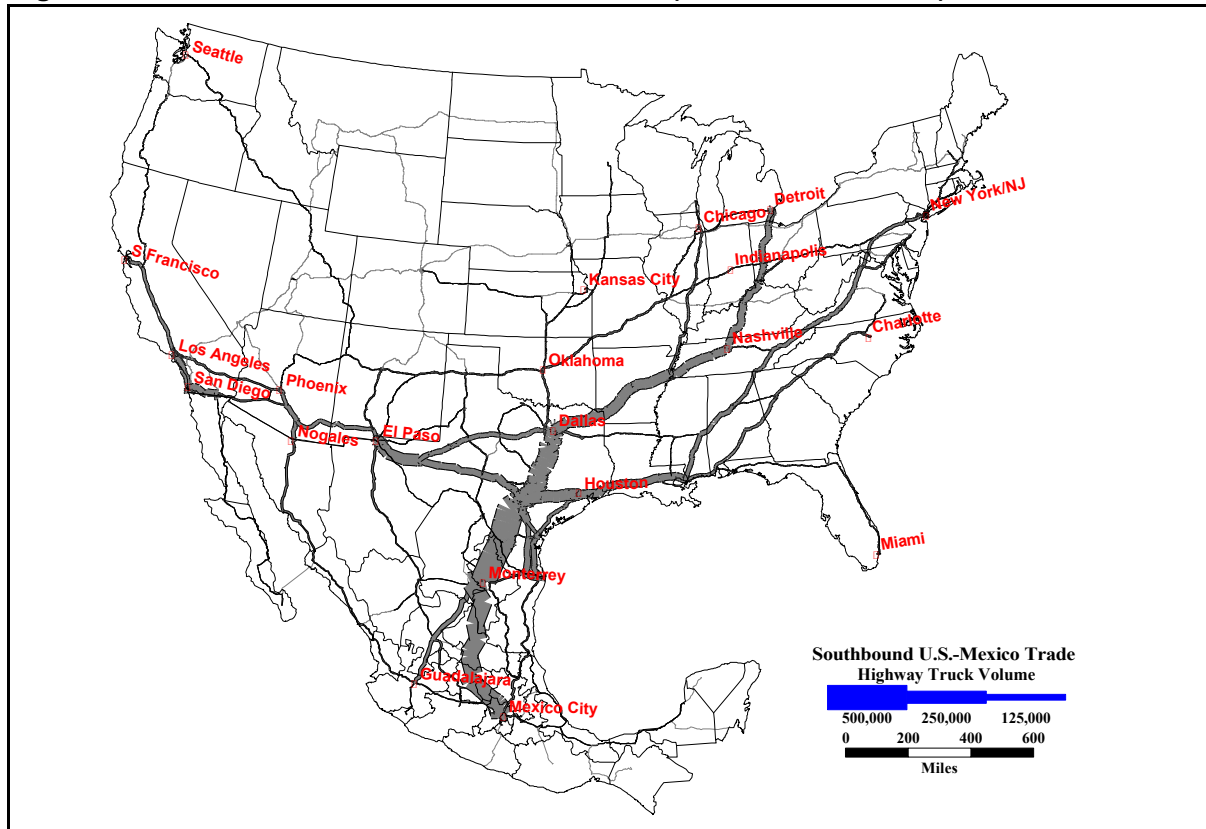
TRANSPORTATION CORRIDORS

For the surface transportation modes, where does the NAFTA trade flow? John McCray of the University of Texas at San Antonio has developed ways of reading various trade data bases – not structured for transportation planning purposes – and plotting the likely routes for the different modes. From the previous section it is clear that the two key surface transportation modes are trucks and rail, both of which move on fixed infrastructure. From different data sources, it is possible to allocate both northbound and southbound shipments between the three countries in terms of broad origins and destinations. This allows calculations to be made estimating the least cost routing for the origin and destination pairs, which in the

case of trucks, uses the U.S. interstate system. There is a substantial body of research addressing a variety of routing and mapping for truck modes. (McCray, 1995; Boske and Harrison, 1995; McCray, 1998; Rico, Mendoza and Mayoral, 1998).

In Canada, much of the industry lies close to the United States border, and the trade highway network is small. In Mexico, there are two types of trade. Maquiladoras are situated close to the border and only use local routes to reach Mexican locations. For the deeper trade, the Mexican highway network is constrained by the physical topography of the country, which produces a relatively simple highway network for NAFTA trucks. Within the United States, a majority of truck movements are made across the U.S. interstate system, a fact repeatedly confirmed by discussions with shippers and trucking companies. An example of the interaction of the Mexican and U.S. truck trade flows is given in Figure 2. For transportation planning purposes, trade flow analysis is extremely helpful because it identifies distinct international trade corridors that can be designed, built and managed in ways that improve the passage of trade vehicles.

Figure 2: U.S. – Mexico NAFTA Truck Corridors (Southbound Trade)



Source: Fluidizing, *Truck Corridors Between the United States and Mexico*. 1999.

HARMONIZATION

Loss of sovereignty is not an issue in the NAFTA as it is in other trading arrangements such as the European Union (EU). In the EU, there are areas of

legislation enacted out of Brussels that impose common standards on all EU member countries. Some of these include transportation directives and issues. In the NAFTA, there are no such actions and accordingly, the three countries must negotiate agreements in order to resolve differences in critical areas that impact international trade. Trucking is one such area. In the trucking sector, there are important differences between the three nations in terms of industry structure, types of operations, access to capital, and vehicle size and weights, which in part affect profitability, productivity, infrastructure investment and safety.

Trucking harmonization was addressed under the NAFTA Land Transportation Standards Subcommittee (LTSS), which draws membership from the three nations. The LTSS meetings on trucking harmonization were held regularly after signing, but have taken place with less urgency after the U.S. government unilaterally postponed the second phase of the NAFTA trucking legislation. The various stages of this legislation are now presented.

NAFTA TRUCKING LEGISLATION

In Article 102 in the General Part of the NAFTA treaty, the transportation objective is stated as:

Eliminate barriers to trade in, and facilitate the cross-border movement of, goods and services between the territories of the Parties. (Canada, Mexico, United States. Description of North American Free trade Agreement. 1992).

Land transportation is an integral part of liberalized trade, and under the NAFTA it was intended that previous restrictions on motor carriers would be gradually phased out over several years. Prior to signing, U.S. carriers were not allowed to operate in Mexico. Under the agreement, three years after signature U.S. motor carriers were to be allowed access to Mexican border states, with reciprocal Mexican access to U.S. border states, for international shipments. At the same time, Mexico was to allow foreign investment of up to 49 percent in Mexican truck companies that deliver international cargo. Six years after the agreement went into affect all signatories were to be allowed full cross-border access for international shipments. And seven years following the enactment of the agreement, foreign investment in Mexican motor carriers could reach 51 percent controlling interest. A decade after the agreement went into affect, foreign interests were allowed to have full control. Even so, no party was required to lift ownership restrictions on companies transporting domestic cargo. The agreement did allow negotiations to take place within seven years concerning increased concessions for overland carriers. The United States could use this position to seek rights for U.S. trucking companies wanting to carry purely domestic cargo in Mexico. The LTSS schedule for completing compatibility on a number of key trucking issues is shown in Table 2 and formed the basis for harmonization meetings and discussions before 1995.

As we now know, the second phase did not take place. In early December 1995, the U.S. Secretary for Transportation, Federico Peca announced that the U.S. was unilaterally postponing the second phase due to a lack of preparedness, particularly in the area of vehicle safety. It was broadly understood to be a political move, encouraged in part by the U.S. trucking unions who were fearful that Mexican companies and labor would have competitive advantages in the movement of international trade. The action of the U.S. government was doubly surprising in that it chose not to follow a dispute resolution process (Chapter XX) that was embedded in NAFTA. For their part, the Mexican government officials were dismayed that the United States had chosen to break a critical treaty clause so early in the life of the NAFTA.

Table 2: LTSS Dates for Completing Compatibility Efforts Scheduled After U.S. Border was to Open

Dates	7/95	12/95	7/96	1/97	Jan 2000
Efforts					
Non-medical driver standards					
NAFTA allows border states access					
Medical driver standards					
Vehicle e-related standards					
Vehicle size/weight					
Traffic control devices/pavement markings					
Hazardous materials regulations					
NAFTA allows full access					
<div> <div></div> Key NAFTA dates </div>					

No doubt distrustful of future U.S. government actions, Mexico was not encouraged to review, harmonize, or change any legislation regarding the trucking industry while the second phase of NAFTA was postponed. Trucking therefore remained largely as it was prior to the signing of the NAFTA, particularly at the southern border. U.S. trucks interlined with Mexican over-the-highway companies to deliver continental trade and a variety of arrangements remained in force for the delivery of goods to the maquiladoras. The postponement in turn stymied much of the work undertaken by the earlier LTSS process with respect to truck harmonization and slowed momentum. This persists to the present and many critical areas remain to be addressed. Although a wide range of issues was addressed by the LTSS on trucking harmonization, three critical areas emerged. These relate to vehicle size and weight legislation, driver and operational characteristics, and the general issue of highway safety. These are now detailed.

TRUCK SIZE AND WEIGHT ISSUES

In the last 50 years, trucking in the United States, Canada and Mexico has grown in importance to the point where it is now the prime mode for domestic trade. The combination of improved highway infrastructure, deregulation, and more productive vehicles has underpinned the growth of truck market share. And productivity needs continue to drive the standards upwards, either for vehicles that are capable of carrying more volume or more weight. International trade can be categorized into commodities that fill the trailer before reaching the legal weight limit (termed “cubing out”), or commodities that cause the vehicle to reach its axle and gross weight limits before it fills the trailer (termed “weigh out”). Efficiency and productivity have been the driving force behind truckers demands for larger vehicles and underpins the debate over size and weight issues among the three nations, since there are wide differences in the permitted truck sizes and weights in the three signatory countries.

Canada. Canada’s size and weight legislation is primarily the responsibility of provincial governments. In many provinces, the population centers are sparse and there is a lack of alternative modes to trucking. In this instance, we would expect (as in Australia) to see the use of larger and more productive vehicles to move agricultural and industrial products. Canadian provincial laws permit a variety of configurations including semi-trailers with lift axles, tridem, double trailers which when normally coupled are called A-trains, and double articulated trailers called B-trains. The limits for these configurations vary across provinces. With regard to NAFTA trade entering the U.S., although some larger vehicles are permitted entry on the permit to border states, the majority of trade passes on five-axle semi-trailer (3S2) vehicles loaded to U.S. limits. The preferred vehicle for NAFTA operations from a Canadian perspective is the B-train which, in Canada, can be loaded to a maximum weight of around 137,000 pounds (NAFTA, 1995).

United States. In the United States there was a continuing and often bitter battle in the 1980s over the desire of the trucking industry to use larger trucks, particularly longer combination vehicles (LCVs). Under 1982 federal legislation, doubles were limited to 28 feet for each trailer, five-axle semi-trailers were limited to 80,000 pounds on the interstate system, and no advantages were offered to six-axle semi-trailer vehicles under normal use (NAFTA, 1995). In about 6 mid-west states, heavier vehicles were “grandfathered” and allowed to operate because they were in existence at the time of the 1982 legislation.

The trucking industry had grown to become the key U.S. mode in the previous 20 years and, by the 1980s, spurred by deregulation, had invested in 28-foot and 48-foot semi-trailers. The trucking industry wished to use this capital investment to best effect by operating triple 28s and double 48s over the interstate system, therefore permitting gross volumes and gross weights in excess of current legislation. These vehicles were called long combination vehicles (LCVs) and were strenuously resisted by the railroad companies, the American Automobile Association, and citizen action groups. Railroads argued that trucks were already cross subsidized and to permit

trucks further productivity advantages would be ruinous to U.S. railroad profitability. Studies indicated that shares of various commodity markets would be lost to the more productive LCVs if they were permitted to compete over railroad corridors (NAFTA, 1995; Association of American Railroads, 1994).

This debate culminated in the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1992, which froze truck configurations at their 1982 levels. This effectively restricted both debate and the potential operation of heavier vehicles on the U.S. interstate although there have been moves in some states to allow the regular operation of heavier vehicles. The story does not end there, however, and while U.S. operators have been restricted to 1982 gross vehicle weight limits, they have taken advantage of the opportunity to operate longer trailers. These trailers were first limited to 53 feet, but have now been extended to 55 and 57, and even 59 feet in length, thus offering enormous advantages in moving commodities that cube out.

Mexico. Mexico has undergone substantial changes to its trucking industry since 1986. First, it embraced deregulation of the industry, particularly with respect to entry and competition. Initially, the Mexican truck fleet was relatively old and unsophisticated but this has changed in the 1990s. Mexican legislation permits a wide range of vehicle types, some of them heavy. The nine-axle A-train double, for example, can operate at over 146,000-pound gross vehicle weight (NAFTA, 1995). Because of constraints in the geometry and design of much of its highways, the length of such vehicles and the roads upon which they operate is restricted. The fleet is largely dominated by five-axle semi-trailers running at a limit of around 97,000 pounds and a smaller number of six-axle semi-trailers permitted to operate at around 107,000 pounds.

There are also some extremely heavy short doubles that can operate at over 140,000 pounds gross vehicle weight. In addition to the higher limits of its vehicles, when compared with the United States, the issue is compounded by a general lack of enforcement by state and federal police. This allows truckers to determine their own load levels, which are generally higher than those that are legally permitted. Evidence collected at the Mexican Institute of Transport (1992) clearly demonstrates the scale of this problem and indicates some of the consequences, much of which relate to accelerated pavement consumption and vehicle safety.

The effect of NAFTA trade has been remarkable on Mexican trucking operations. Interlining with U.S. and Canadian companies has brought about higher vehicle standards and operating practices. Currently, many Mexican trucking companies linked to over-the-highway movement of international trade are indistinguishable from their Canadian and U.S. counterparts in terms of the equipment and driver competence. There is also strong evidence that the flagrant overloading seen in continental Mexico is not transferring to the movement of international trade at the border (Harrison, Boske and McCray, 1997). However, the postponement of the NAFTA Phase 2 trucking laws means that no Mexican trucks

have yet begun widespread regular operations in the contiguous U.S. states, so its effect is unknown.

WHAT DOES THE TRUCKING INDUSTRY WANT?

From what can be determined from the various literature, Canadian truckers would prefer to operate a B-train double at a fairly heavy limit, perhaps exceeding 115,000 pounds. U.S. truckers would first like to operate longer trailers into Mexico since they already have heavily invested in this equipment. They would prefer to have permits for 53- and 55-foot trailers, particularly productive in the movement of high volume commodities. And in terms of gross weight, the U.S. trucking industry has shown interest in a six-axle semi-trailer tridem design with a gross limit of around 96,000 pounds, in line with EU truck limits. The Mexican trucking companies would also support a six-axle semi-trailer tridem, but operating at a slightly higher weight.

Efforts in the early LTSS meetings⁷ focused on developing a single vehicle specification that would comprise a NAFTA “envelope” vehicle, but increased productivity is only half the picture. Also important is the impact that these larger vehicles would have on the corridor infrastructure over which they travel, and the safety of the users who share these highways. The acrimonious debate on LCVs in the United States during the 1980s and early 1990s centered on productivity gains versus the costs of strengthening pavements and bridges while ensuring that these corridors remained open and safe to regular traffic. Not only would there be direct engineering costs associated with this program of strengthening but there would also be unavoidable congestion through the work zones so created (Weissmann and Harrison, 1991). As well, the vague and unresolved feeling that sharing the highway in congested sectors with these large trucks would essentially be unsafe remains a powerful force among those objecting to the use of such vehicles.

On all agendas of the LTSS committees on truck harmonization, size and weight considerations have been near the top, yet they remain broadly stalled and appear to remain unresolved in the near future. The sovereignty arrangements in the NAFTA suggest that Canadian and Mexican trucks entering the United States in the future will simply have to meet the U.S. domestic limits currently in force.

TRUCK DRIVER, OPERATIONS, AND SAFETY ISSUES

Driver Issues. While driver regulations in Canada and the U.S. are relatively similar, there are wide differences in Mexico (American Truckers Association, 1992). Mexican drivers carry more responsibility in terms of the consequences of their actions in the event of an accident. Should any injury occur in an accident involving a truck, it is likely that the truck driver will be taken away for questioning and possibly incarcerated for a period of time until preliminary investigations are complete. And

⁷ Personal communication with Robert Cuellar, LTSS member 1994-97. February, 1999.

unlike their northern counterparts, Mexican drivers do not complete a daily record log of their activities to ensure that they stay within the driving laws for hours of operation and periods of rest. Drivers in Mexico pass more stringent medical tests in order to qualify for a commercial driver license and they must face a more challenging operational environment in terms of supporting infrastructure.

There are two broad classes of Mexican drivers in terms of their operating requirements. One class is similar to the over-the-highway drivers in the United States and Canada. These drivers take loads from interlining points at the U.S. border to delivery points in continental Mexico using the various classes of Mexican highways. A second class also collects trailers at the border but this time delivers them to maquiladoras and other consolidation points within the old ICC commercial zone (approximately a 20km bandwidth along the border). In Baja California, Mexican truckers operate vehicles that are registered in both countries and provide the service between points of production like Los Angeles and the assembly plants in the Mexican border state.

As already indicated, the belief that not enough had been done to insure that Mexican drivers were able to meet the U.S. regulations was the main reason given by the U.S. government for the postponement of the enactment of the second phase of the NAFTA trucking legislation. It is therefore not surprising that the LTSS harmonization agenda continually addressed issues related to drivers and how best to prepare them for operating equipment in the three signatory countries.

Language also plays an important part in constraining the interchange of drivers between Mexico and its northern counterparts. And some effort was undertaken by U.S. DOTs to develop signs that were able to convey, either in terms of dual language or pictorial design, the appropriate information to the driver. However, although pronounced NAFTA corridors have been established, there is little dual language signage to facilitate international drivers. Captain Lester Mills of the Texas Department of Public Safety indicated that in recent checking of Mexican commercial drivers away from the border in Texas, over half of the drivers issued with tickets were for reasons *not* associated with equipment safety. Rather, they were for failure to understand the driver regulations currently in place in the United States, particularly those related to the daily completion of log books and record sheets⁸.

Operations. The highway industry "support" infrastructure between Mexico and its northern counterparts is also vastly different. In Mexico, there are few large truck stops. As a result, accommodation, safe parking for equipment, and other matters taken for granted in the north are entirely absent. Diesel fuel is different and in the past the high sulfur content has given rise to costly engine failures. Communications are only now beginning to improve, not in terms of the general infrastructure, but in terms of individual Mexican companies. The ability to visit a U.S. or Canadian truck stop and telex material, receive faxes, use computers, or use

⁸ Personal communication, February 1999.

inexpensive telephone systems, is not generally possible in Mexico. Finally, there is the whole issue of crossing vehicles at the border.

Of course, the border is not homogenous and arrangements at different ports of entry vary widely depending of the characteristics of the commodities and whether the trade is maquila or continental (Weissmann et al., 1993). In California, there is a relatively straightforward interlining arrangement that works smoothly, aided by substantial investments by the State of California in border infrastructure and inspection facilities. In Texas, the other large NAFTA state, border crossings differ substantially and there has been criticism of the antiquated and costly processes required to cross equipment. Giernanski (1997) of Texas A&M International University at Laredo has been critical of this process, which he regards as quasi-monopolistic, particularly in the role played by the Mexican brokers. The requirement of Customs, federal agency compliance, and drug interdiction, overlaid with the infrastructure needs, which in Texas includes bridges, have resulted in a whole range of different processes. Table 3 shows the different U.S. federal agencies involved in clearing agricultural imports at the border, hinting at the complexity faced by shippers.

Table 3: Multiple U.S. Federal Agencies at Border Impact Truck Shipments of Imported Agricultural Produce.

Federal Agency	Responsibilities
Food and Drug Administration (FDA)	Food safety, safe to eat
Environmental Protection Agency (EPA)	Tolerance levels for any pesticides
Animal and Plant Health Inspection Service (APHIS)	Food not infested with pests
Agricultural Marketing Service	Issuing Perishable Agricultural Commodities Act (PACA) licenses
Federal Highway Administration	Administering credentials for trucking company, truck and driver
Immigration and Naturalization Service (INS)	Enforcement of nationality and citizenship regulations for vehicle operator
U.S. Customs Service (USCS)	Collecting duties, conducting enforcement of trade agreement with respect to tariffs.

Source: Linn, 1999.

In many ports of entry, a drayage company moves the trailer between trucking company depots in the two nations. While this makes sense in terms of meeting the challenges currently presented by the complex bi-national regulations, there are agreements at certain gateways that result in a lack of competition between drayage companies located on either side of the border. This results in large numbers (sometimes exceeding 40 percent) of empty trailers and single tractors moving across the infrastructure, adding to congestion and raising the costs of movement. While there is certainly debate about the value that is added by many of these processes, it would seem that there is room for harmonization in the system that would lead to lower costs and higher efficiencies.

Safety. This has been a critical concern to NAFTA, federal and state agencies, the trucking industries in both countries, and the general public. The LTSS

harmonization committee always included safety as a critical component in its various efforts to harmonize processes, yet it remains unclear how to implement and finance new strategies. A recent U.S. DOT study is highly critical of safety mechanisms on the U.S. side of the border (Hall, 1999) and follows on a series of earlier GAO reports on the same subject (U.S.GAO, 1996 and 1997). The failure of Mexican authorities to adequately enforce safety programs, particularly overweight trucks, lends credence to these findings. However, some of the findings and data cited may be exaggerated. In many safety checks, whether conducted by state agencies like Texas DPS or U.S. DOT officials, the vehicles inspected are not done randomly. They are selected primarily because either there is visual evidence of an infraction (such as a load incorrectly roped) or other behavior such as slow acceleration indicating heavy load. If it is the case that safety inspectors choose vehicles that they believe are breaking the law, then taking the numbers for infractions and expressing them as a percentage of the total trucks traveling through the port of entry is statistically flawed. Yet this is what seems to be occurring in the treatment of some of the safety statistics. And it should also be remembered that many of the trucks that are coming through ports of entry are drayage vehicles moving within the old commercial zones. They are not going deep into the border states, nor would they ever even if permission were granted. If longer routes were being contemplated, Mexican truckers would use equipment of a higher quality. However, safety is such a sensitive concern in all three countries that it remains a critical issue that must be addressed in any debate associated with harmonizing trucking operations.

CURRENT STATUS OF KEY TRUCKING HARMONIZATION ISSUES

Vehicle Productivity. This continues to be a central element in any discussions on lowering costs for the trucking of international trade. There is currently no likelihood of an “envelope” truck being accepted for use within the three signatory countries. The current environment of safety and congestion in the United States simply does not favor the introduction of larger combination trucks. A six-axle tridem semi-trailer truck might find favor with some parties but its operation in the United States would require new federal legislation. Border U.S. states may allow larger trucks on the non-federal roads and Mexican truckers will be able to apply for 2060 permits⁹. Finally, LTSS efforts may focus on developing clearly understood, and enforceable, vehicle standards in each nation.

Infrastructure Impacts. The growth of truck volumes associated with NAFTA trade has accelerated the consumption of the highway infrastructure in the three NAFTA countries, particularly the United States. This consumption is primarily on pavements and bridge decks and associated cost is the impact that these truck volumes have on other users, both in terms of congestion and vehicular safety. Although there is great debate as to the type of costs, most studies have recognized

⁹ In Texas, truckers can apply for an annual permit (\$120) under House Bill 2060 to operate at ten percent over axle load and five percent over gross load on non-federal highways.

that the scale of the problem is daunting (Barnhart, 1996). An interesting development is the recognition that the full range of costs associated with infrastructure use should be used in economic evaluations. Cost items traditionally regarded as externalities (accidents, air quality, and noise) are now being considered, along with vehicle operating costs, time delays and congestion (Louis Berger and Associates, 1998; Delucchi, 1996).

Financing Infrastructure. In most countries, highways are financed out of general revenues, assisted by a range of direct taxes and fees levied on the trucking industry. In the United States, a trust fund mechanism funded principally by fuel taxes paid by vehicle owners, including truckers, provides the financing for highway infrastructure. This fund is reallocated back to the states, which then support the federal and state highway systems within their borders. For over 50 years, the guiding principle of highway investment in the United States has been one of joint use. Efforts have been made to identify which component of the infrastructure funding is most fairly associated with the class of vehicle (e.g., pavement strength with trucks and capacity with automobiles) and this cost allocation is periodically reviewed and calibrated. The last two reviews were undertaken in 1997 and 1982.

There is evidence that costs may not be accurately allocated among classes. In many states, the heavy vehicle (i.e. the international trade truck) does not pay its full share of highway costs (like Texas) and is subsidized by other road users (Euritt, 1994). Clearly, a mechanism is needed that insures that all vehicle configurations pay their share in order for the system to be efficient and in equilibrium. And if heavy trucks already do not pay their full share, then the consequences of permitting larger vehicles to operate without adjustments in the cost allocation process could give rise to further imbalances and subsidization.

Safety. This continues to be a key issue in the LTSS process and has recently attracted the attention of U.S. federal entities. Earlier, the General Accounting Office (GAO) undertook several studies on vehicular safety and recommended several policies, including weigh-in-motion sites near the border. Recently, the U.S. DOT has conducted a further study and issued several recommendations, summarized in Table 4. Though the statistics on truck non-compliance may be flawed, the subject is of great concern to all parties and calls for distinct actions of the type identified by the U.S. DOT study. Finally, the safety aspects related to the movement of hazardous materials have always been discussed at LTSS meetings, though little has been done at the border areas where the problem is most serious. Routing and compliance with the various U.S./Mexican bi-national agreements on hazardous materials remain currently under review.

Table 4: U.S. DOT Recommendations on Insuring Mexican Safety Compliance on U.S. Highways.

1. Establish partnerships between U.S. federal and state agencies to ensure consistent enforcement.
2. Work with Mexican carriers to obtain more information on trucks and drivers when operating authority applications are filed.
3. Develop DOT identification numbers to differentiate between border zone and interior U.S. operations.
4. Establish a NAFTA program director for transport-related issues to promote border-wide enforcement and safety efforts.
5. Establish a federal interagency group to coordinate border issues with state and federal agencies.
6. Develop a program to supplement state inspectors at the border with federal inspectors.

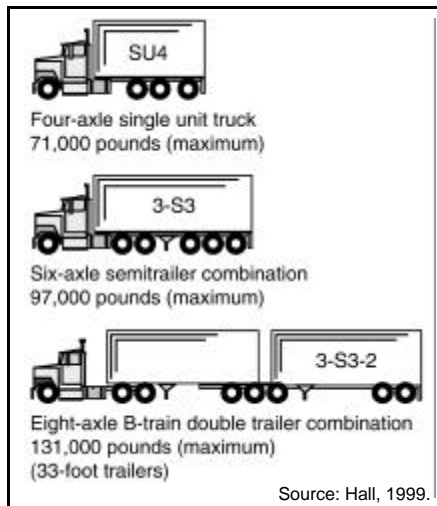
Source: Linn, 1999.

CONCLUSION

The key aspects of truck harmonization in NAFTA have remained remarkably consistent since the enactment of the treaty. Truckers want more productive vehicles, the community wants vehicles to be safer, and the federal and industrial sectors want the system to be more efficient and cost-effective. The key current points are now identified.

Truck Size and Weight. The consensus approach to the problem of common vehicle types with higher productivity is still being sought at different levels of federal and state government and within the industry. Although an “envelope” vehicle seems now to be less likely, there is substantial interest in adopting the European standard of a 96,000-pound six-axle semi-trailer truck, which would provide both additional weight and volume for shipping purposes. The debate on standardization has been spirited and long, yet no real progress has been made since 1992. NAFTA international trade is still largely moved in 48-foot containers into Mexico with slightly longer vehicles permitted into Canada based on the standards that are set in each of the three countries. The emphasis therefore has been on developing a clearly comprehensible set of standards that truckers can follow if and when trucking beyond the border zones becomes permitted. Recently, the U.S. DOT looked at the impact of larger vehicles in a substantial study on truck size and weight (U.S. DOT, 1998).

Various scenarios were examined including one purporting to be a NAFTA vehicle. The various configurations are shown in Figure 3 for a 51,000-pound tridem, and the results show that the major impact of such vehicle types on the U.S. system will be in terms of extensive and expensive bridge strengthening costs. How these would be funded is, of course, a critical issue and may well take away any competitive advantage provided by the more productive configurations.

Figure 3: U.S. FHWA Truck Size and Weight Study: 51,000 Pound Tridem-Axle.

Truck Safety. The current solution to this appears to be more enforcement manpower and a higher number of inspection sites, some of them installed with permanent weigh-in-motion equipment. This is an interesting development since research suggests it is not the most cost effective safety program. Evidence by Savage and Moses 1995 indicates that a better program is one that has more direct contact with truck operators rather than drivers. They evaluated two programs, one based on the current U.S. state DPS systems where vehicles are pulled over, inspected, and citations issued to the driver. The other is where the U.S. DOT visits the premises of the companies, evaluates their records, and

inspects the whole fleet. The paper shows clearly that a superior cost-benefit impact is reached by dealing directly with the companies, which has important implications for cross-border NAFTA trucking. It is highly likely that owner-operators will not dominate this trade. Currently, a few large trucking companies dominate the trade and we would expect that the requirements for capital financial guarantees and other matters would mean that medium and large companies hold NAFTA trade. If DOT inspections by Mexican, U.S., or Canadian federal authorities can concentrate on changing company policies with respect to safety, they will be more successful than dealing on a case-by-case basis where individual trucks in the fleet are pulled over randomly for inspection.

Border Crossings. There is clearly a momentum building to improve border crossings in terms of both their infrastructure and their processes. An attempt was made to address the issue with the North American Trade Automation Prototype (NATAP), which recently concluded its pre-pilot stage. Data concerning the manifest, vehicle, driver, tractor, are encoded and given electronically to the Customs authorities in both countries to facilitate processing. This has not worked well on the southern border where the situation is complicated by interlining between two major trucking companies using a drayage company, but it does seem that it is inevitable that improvements will be forthcoming, which will facilitate and harmonize the trucking process more effectively. Recent research has indicated that the technologies appropriate for these border operations are complex and currently inadequate (Attala, 1999). However, since technology is changing so rapidly, it might only be implemented in the next century.

Trade Corridors. The clear identification of corridors allows thought to be given to how best to plan the various types of services to facilitate the movement of trade. Inland ports are beginning to provide new levels of intermodal service away from the border and if the problems of drug interdiction can be addressed, it seems that trade in bond may be able to pass more rapidly through border positions to be handled at these inland ports. This may well also be important for the movement of

hazardous materials which has been an agenda item on the LTSS for many years. The current process for hazardous materials is spotty and imprecise. Although hazardous materials imported from the U.S. to Mexico are supposed to be returned, the records clearly show that this is not taking place. And hazardous materials are being moved through heavily populated areas along the border, which is a clear safety issue. The recognition of distinct international trade corridors with appropriate technical support to expedite trade movements and connected to more efficient border ports of entry will allow more accurate tracking of transportation of hazardous materials.

NAFTA Trade Transportation Planning. Finally, it should be remembered that while trucking is the key surface transportation mode, there are other important complimentary surface modes including rail and pipeline services. It is important to integrate *all* surface modes into an overall NAFTA transportation plan. The critical element in planning is to recognize that goods are being taken from producers to consumers and the whole chain needs to be evaluated to ensure that the process remains efficient. And for federal and state investment purposes, all modes need to be considered to ensure that the best decisions, both modal and intermodal, are being made on a tri-national basis.

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Section 5

Reducing Trade Tension Through Transnational Interest Group Coordination and Dialogue

The objective of this section is to review and explore alternative means to achieving policy and trade harmony through private sector initiatives.

U.S. EMBASSY – MEXICO

(Senior Agricultural Attaché)

Lewis Stockard

Mexico is the United State's second largest single-country market for agricultural exports. Mexico is also our fastest growing market. However, the United States has probably more market access issues with Mexico than with any other country.

Factors Affecting Trade

Some of the factors which affect trade are exchange rates, income volatility, market orientation, tariff and non-tariff barriers. Concerning currency systems, George Soros said, "Currency systems are like marriage....whichever one you find yourself in, you think another one might be better." I see this a lot with the current talk about "dollarization." The theme of the day seems to be, "let's dollarize." I saw a quote from the Argentine Minister of Finance.... "Yes, we will accept the dollar as our national currency as soon as the United States puts Evita as the picture on the bill." I do not think that dollarization is going to happen anytime soon, but it is a dialogue that needs to go on.

Another factor people need to think about is comparative advantage. In the case of Mexico-U.S. trade, I think that you can see very clearly where the advantages are. When looking at the trade numbers from the last seven years, one notices that Mexican exports to the United States were composed of 70 percent high-value consumer-oriented products. The total was about 5.5 billion dollars, with consumer-oriented products being 3.8 billion of that total. About 2.0 billion dollars were fresh fruits and vegetables. I believe that this tells the story of where Mexico's comparative advantage is.

If you look at the U.S. exports to Mexico, the lion's share is held by bulk commodities such as grains and oilseeds. In these commodities, water resources and climate are important. The U.S. is able to produce higher yields at lower prices. Many people try to make the argument that we subsidize agriculture and that is why we overproduce. I do not agree with that.

The United States also produces a lot of consumer products which are exported to Mexico. This is the fastest growing area of exports from the United States. Here, the U.S. strength is in processed foods. The United States and Mexico are very balanced in agricultural trade. One year either country might have a slight surplus, but both are growing at about the same rate and the gap is generally narrow.

Information and Analysis

Renée Schwartz mentioned that there is a project ongoing through the Emerging Markets Office of USDA/Foreign Agricultural Service (FAS). This is a program designed to help emerging markets develop. Our desire is to work with Mexican Agriculture Under Secretary Casco's office to enhance and further develop Mexico's system for market information, analysis and dissemination. As a result of this project, we have focused on Mexico's most sensitive commodities – corn, sorghum, wheat, cattle, hogs, poultry, dry edible beans and apples. The purpose of the project is to help Mexico's farm sector make the transition to a more market-oriented system. We want to get information to Mexican producers which they can use to make their planting decisions. We want to be able to give them an idea where the market will be in the upcoming season, look at prices and generally have the information needed to make production decisions. With those reports, this year we intend to take them out to the respective production areas prior to planting season.

We intend to have a traveling road show composed of an analyst from SAGAR (Secretariat of Agriculture), an analyst from USDA/Economic Research Service (ERS), and a U.S. end-user of situation and outlook reports. An example would be a Michigan bean producer going to Sinaloa and explaining to the producers there how he uses USDA's situation and outlook reports to make his decisions for the upcoming year.

We also intend this year to help Mexico with its first situation and outlook conference. We will bring in experts from the United States and work with our counterparts in SAGAR to try to present a picture to the world of what we expect to see in Mexico in the upcoming year. We think that is very important with the relationship between the United States and Mexico. We believe that this type of project will work to reduce the types of trade tensions we are experiencing during this NAFTA transition.

The most important factor in the resolution of disputes and misunderstandings is relationships. In Mexico, it is especially important to develop the relationship between both sides of the table so that there is a trust, understanding and familiarity, and both sides can communicate honestly and openly. I believe that we are working toward that very well with our counterparts at SAGAR and SECOFI (Secretariat of Trade).

Harmonization of Standards

Another important area is harmonization of standards. U.S. market access issues have to do with differences in standards. Particularly, we have tensions over differences in understanding, implementation, and application of standards. We have several fora that we use to resolve those issues as outlined below.

- **The Annual Bi-National Commission (BNC) meeting between the United States and Mexico** has several working groups, such as the one for agriculture.

Historically, the BNC agricultural working group focused on technical cooperation and assistance. Both sides believed they were making progress and there was meaningful work going on. However, in 1997, we started bringing into the discussion particularly difficult and important trade policy issues, such as market access. Mexico and the United States each identified two or three of the most important issues which were not being resolved otherwise. We had a meeting of the minds. We started at the working level with the minister counselor for agricultural affairs at the U.S. Embassy and the director generals of Mexico's plant and animal health agencies. When there was an opportunity to make progress, which would take a high level decision, we would bump it up. Typically that would go to Under Secretary Casco in Mexico and Under Secretary Schumacher in the United States who would sit down and hammer out a pre-agreement. Finally, we would give it to our Secretaries of Agriculture at the Bi-National meeting and finalize the agreement. We have followed this model from 1997 until today. Some of our successes are: recognizing Mexico's Mexicali Valley as being free of Karnal bunt disease in wheat; recognizing the state of Sonora as being hog cholera-free (which qualified Mexico to export pork to the United States); recognizing Michoacan for the export of avocados to the United States; and recognizing fruit fly-free zones in Mexico (allowing export of fresh fruit without the expensive pre-clearance programs). Mexico has recognized California sweet cherries as being free of pests and has eliminated the phytosanitary import permit system which interfered with U.S. grain access to Mexico during sensitive Mexican harvest seasons. The United States just recently published the proposed rule recognizing Yucatan state as being free of hog cholera. In the very near future, we expect to be publishing a proposed rule recognizing the states of Sonora and Sinaloa as being free of Newcastle's Disease (advancing access of Mexican poultry to the United States). We may soon publish a final rule recognizing Mexico's poultry inspection system. Combining this final rule with the recognition of Sonora and Sinaloa as being free of Newcastle's disease will make it easier for Mexico to export poultry to the United States.

- **The NAFTA SPS Committee** has several working groups, such as the meat and poultry working group.

This trilateral working group has been very effective in resolving harmonization issues. They are currently addressing harmonization of toxic residue tolerances and have recognized each others meat and poultry inspection systems. Additionally, animal health issues have been addressed.

- **The Bilateral Animal Health Working Group** invited FAS for the first time this last year.

Typically, this is a group of scientists and technicians from both sides trying to work out the details of standards and harmonization. They were having problems resolving the differences, so they invited FAS as an agency more accustomed to negotiating. This year, we were able to work out a mutually acceptable solution to Mexico's final rule on avian influenza. The United States initially was going to lose its market access to Mexico, but as a result of the working group and the FAS

involvement, the U.S. animal health agency was able to recognize Mexico's needs and came up with a proposed rule that will ensure U.S. access to Mexico. At the same time, the U.S. and Mexican poultry industries were working together at the industry level. This provided the support which was needed at the working group level to get the job done.

- There is also the **Bilateral Plant Health Working Group**.

Most of the market access issues between the United States and Mexico involve the plant health area and the recognition of disease and pest-free zones. This forum works very similarly to the Bilateral Animal Health Working Group. Once again, FAS was invited for the first time this year to sit in and observe how the negotiations were going for such issues as the Mexican pre-clearance program for U.S. apples, the U.S. pre-clearance program for Mexican avocados, and mutual recognition of Karnal bunt free areas. As a result, we were able to give both sides advice on issues.

- **The NAFTA Agricultural Trade Committee** had good success in the 1997 meeting where Mexico and the United States agreed to a more favorable administration of the tariff rate quota for dry edible beans.

It worked very smoothly until the demise of CONASUPO this year and an oversupply of beans in the Mexican market. However, we have had a good dialogue and, with the nature of our relationship, we have been able to understand both sides. The U.S. industry has recognized that Mexico has a unique situation this year and Mexico has recognized the importance of having a predictable and reliable administration system for the tariff rate quota.

- **Monthly meetings** between our office and SAGAR's National Agricultural Sanitary Commission (CONASAG) and monthly meetings with the SECOFI (Secretariat of Trade) Director General's Office for Agricultural and Industrial Negotiations.

These are a new development to try to advance all of the ongoing issues we have. We sit down on a monthly basis at the working level with CONASAG on animal and plant health issues and with SECOFI on other trade issues. We update each other and try to make plans to advance those issues. We believe that we have been very successful so far.

- Within USDA/FAS we have producers advising us as to what their interests are through two committees: the **International Trade Advisory Committee** and the **International Policy Advisory Committee**.

These committees are made up of different sectors of U.S. agriculture advising our administrator as to where their concerns lie and where their priorities are both commodity-wise and country-wise. We in the field work toward achieving those goals.

Issues for the Future

I am not going to say that everything has gone well. Some of the issues which very well may end up on this year's Bi-National Commission agenda for the U.S. include: the TCK disease issue for U.S. wheat; allegations of heavy metals residues in meat; and the dumping cases against U.S. hogs and U.S. cattle and beef.

In conclusion, the level of communication and cooperation that USDA has with our counterparts in Mexico has made a noticeable difference in the quantity and quality of trade which the U.S. has with Mexico.

AGRICULTURE AND AGRI-FOOD CANADA

Ken Ash and Glyn Chancey

There are four basic assumptions which underlie our view concerning informal approaches to dispute resolution:

- The most effective way to resolve disputes is to avoid them.
- Most disputes are a result of misinformation and misunderstanding.
- Even with perfect information, disputes inevitably arise.
- When disputes do occur, pre-established third party processes are essential to dispute resolution.

The Role of Information

As a government agency, much of the data and information that we have available sometimes conflict with established government policy. The first reality of being an information generator in a government bureaucracy is that there exists an institutional disincentive to being transparent. This disincentive can be minimized. In Canada, we have clear rules established with our Minister about what is produced and what is released. The Minister is quite comfortable with the facts of a situation being available, as long as the facts are correct. This includes forecasts and any other anticipatory information. Two simple examples illustrate the importance of information to achieve collaboration and avoid conflict.

We have found that simply telling people what is happening is a prerequisite to effective collaboration. Two years ago, AAFC produced a multi-year research work program. We wrote down what analysis we intended to do for the next two years, described it very briefly, and noted when we thought that the resulting information would be available. AAFC published this work plan and put it on the internet. This simple action is based on common sense, but not enough of this form of

communication occurs. The result was creation of demand for information on our work that far exceeded any of our expectations. We have dramatically increased the amount of collaboration we were able to accomplish with other government and non-government researchers, we have generated very early interest across the sector in some of our analysis, and we have demystified our analytical priorities and interests inside and outside the department.

The second example involves relations among the provinces, and between the federal government and the provinces. Agriculture is a constitutionally shared jurisdiction in Canada. In the mid-1980s, there was ongoing debate about the nature and level of support to the red meats industry provided by the 11 governments. After considerable difficulty, rules of the game with respect to program design were established, and an independent monitoring committee (of mainly academics) was set up whose job it was to take data from 11 governments, develop and apply appropriate methodologies, and estimate support levels and expected impacts of all of the various programs in the red meats industry. This information was regularly published. This effort went a considerable distance toward demystifying what had been largely misperceptions about who benefitted most from various government programs, and it contributed substantially to much more sensible policy than would have been the case without the process.

A Model for TriNational Dispute Resolution

As noted, information alone will not resolve or help avoid all disputes. Some recent efforts by Canada, the United States and Mexico have attempted to create a trilateral organization to facilitate the resolution of private commercial disputes in the fruit and vegetable sectors. It is an interesting case example.

While the United States has an apparently effective mandatory licensing and arbitration system for domestic fruit and vegetable commerce, Mexico has no such national system. Canada has a licensing and arbitration system but it appears deficient (relative to the U.S. system) in providing protection against non-payment.

In 1997, the NAFTA Committee on Agricultural Trade established an Advisory Committee on Private Commercial Disputes Regarding Agricultural Goods. The mandate given the Advisory Committee was to develop systems in all three countries that would facilitate efficient resolution of private commercial disputes involving trade in agricultural products. It was subsequently agreed that priority would be given to establishing a system for fresh fruit and vegetable trade.

From the outset of the Committee's work there was significant government and industry trepidation over the complexity of their task. But there was even more interest in improving the efficiency and integrity of the whole North American market, particularly given the scope for the parties to achieve their respective domestic institutional and market development objectives in the process. This shared commitment was a necessary first step towards establishing a new trilateral dispute resolution mechanism.

A highly iterative process of consultations with industry in each country was undertaken, on the basis of a set of broad principles for the development of a trinational model. In the process, draft discussion papers were prepared and reviewed with industry.

At present, a trinational corporation is proposed, with voluntary membership open to all interested individuals and organizations. The corporation would have two primary functions.

- Policy and standard setting – which would include setting standards for membership, de-listing and re-listing, for appropriate trading practices, and for inspection, mediation and arbitration. Actual inspection services would reside outside the corporation.
- Dispute resolution – which would include managing a mediation and binding arbitration service and facilitating enforcement of arbitration and arbitral decisions in contract disputes; through the inclusion of binding provisions in membership contracts ensuring linkages to the relevant international agreements (ex, the New York Convention) and national laws and regulations governing the use of arbitration in contract disputes.

The desired outcome, of course, is a tri-national system that strengthens and adds value to national systems, by providing the North American produce industry with the tri-national policies, standards and services necessary for resolving contractual and quality disputes in a timely and effective manner. Further consultations are planned, with a target start-up date of February 2000.

The benefits of this model could be significant. It could reduce the risk of non or incomplete payment to sellers of fruits and vegetables, as long as they deal with other members of the trinational organization. It could make possible mandatory mediation and arbitration of non-payment and other contractual disputes. It could address a growing problem of perception among foreign suppliers that, for example, the Canadian market is a risky “last resort market”. It could increase trade flows and returns to producers and shippers in all three countries. In the process it could build goodwill and mutual understanding and quite possibly contribute to dispute avoidance in other areas of fruit and vegetable trade.

Some important lessons on trinational cooperation and dispute resolution have been learned over the past two years.

- A strong vision of mutual goals and interests is needed.
- Participation of the relevant people, with the ability to deliver on commitments, is needed.
- National identities need to be de-emphasized, and a greater focus given to universally acceptable values and objectives. (In this case the desire of all business people to get paid for what they sell, irrespective of where they sell it).

In the absence of “global governments”, the role of information, mutual understanding and innovative transnational organizations that ensure fair and transparent “rules of the game” are important. They might become even more so.

SAGAR

Andrés Casco

Agricultural Policy

The bi-national commissions with the United States and Canada, have allowed Mexico to move forward with its agenda in agricultural policy. One issue which Mexico had with Canada was over potatoes. With communication and cooperation, we were able to move ahead.

My view is that we need to make the trade representatives more independent, autonomous and decentralized from central governments. Trade representatives respond to political pressures. If we move to make trade representatives more independent, the number of dumping cases will diminish. The barriers to making cases will be much higher because of the greater analytical basis.

I believe that there is much to do to improve trade laws. The trade laws in Mexico are like a mirror of the trade laws in the United States. Mexican trade laws need to be moved toward the WTO Plus standard. In the case of agricultural products, Mexican trade laws are useless. It is very hard to make a case using our standards, which basically reflect industry standards.

Third party international organizations have been very useful in reducing trade tensions. These organizations contributed to helping us identify rules and regulations based on scientific criteria. That has helped move forward the agenda.

Private Sector Issues

Mexico has not had an institutional framework to help the private sector settle disputes until recently. Unfortunately, we did not move in a comprehensive way, but tried to move to fill the spaces which were left after structural reforms. As the structural reforms have moved forward, SAGAR has begun mediating disputes. We formed COMPROMEX (The Commission for Protection of External Trade) a private corporation which is run by our import/export bank. It helps to design contracts and helps mediate disputes for commercial domestic contracts and in international situations as well. For example, if someone goes to COMPROMEX and brings a third party from another country, in the contract, they can designate COMPROMEX as the mediator.

We also began to analyze our sanitary, commercial and food safety standards. Currently, we have a proposal to change our sanitary law, which will include food safety issues. With the standards, SAGAR approves verification units which can be persons or corporations. Since SAGAR approves the verification units, the ministry is giving up to the verification units the verification of sanitary standards. SAGAR does not have to have an army of verifying bureaucrats in every processing plant.

The Ministry of Commerce approves verification and certification units. These certification units have to complete extensive training to be able to certify. Using avocados and mangos as examples, before the program of verification and certification units, producers were exporting without any standards. Very low quality avocados and mangos were exported. With the verification and certification unit programs begun this year, the quality standards as well as the sanitary standards will be met. Instead of looking at every farm, a private broker can discuss with the certification units all of the process from farming to processing. This reduces transaction costs and certifies that a sanitary and commercial standard process has been applied.

Only a small number of agents in Mexico have had the advantage of good economic information. They have collected economic rents from use of this information. We have been doing a lot of work to increase information by publishing papers and putting information on the Internet. Unfortunately, information is not moving to the producers as it is produced, and they are still without good current market information. We are trying to get new ideas about how to move information to the producers. One idea we are trying is to use television. As a separate signal on Channel 13, the national channel, we are putting market information for farmers. This is very cheap process with the signal receiver costing only 130 pesos or \$13.00 U.S. dollars. Producers can attach this to their television and receive the information for free.

We are encouraging contract farming by using programs which are subsidized by the governments. One of these programs is risk management. The program subsidizes a percentage of the cost of a put or call in a contract farming contract. With farmers contract loans, the subsidy is higher, but not more than 50 percent of the cost of an option at 90 percent of the market price of a contract or an option. The subsidy is provided through trust funds which producers put money into when they make use of the contract or option. So, the trust funds have two uses: hedging against the movement of price against the position of the producer and the premium goes to the trust fund which can be used as an income stabilizing fund.

Also, in risk management we have now included cattle in the insurance program. We subsidize about 20 percent of the value of the premium on the ten most important grains and oilseeds in Mexico.

LIVESTOCK ECONOMIST

David Anderson, Texas A&M University

Producer groups can work toward forestalling or avoiding trade disputes being elevated to court cases by building ties between industry groups in each country. These relationships require hard work and the ability to listen to a counterpart's opinion. There has been a strong working affiliation built up among cattle organizations in Canada, Mexico and the United States. Over the years, there has been a lot of contact among personnel from the three countries. It has been very helpful, overall, as they know their counterparts and where they stand on the issues. But, while helpful these relationships are difficult to maintain because producers in each country do take opposing positions on imports and exports. Unfortunately these relationships can break down as trade disputes heat up. My following comments are directed at one such case in point.

A VOCAL MINORITY

A U.S. organization, the Ranchers-Cattlemen Action Legal Foundation (R-CALF) filed suits in late 1998 before the Department of Commerce and the U.S. International Trade Commission (ITC) related to alleged subsidized cattle in Canada and dumping into the United States. R-CALF is comprised of a group of producers, mainly, in the Northern Plains states of Montana and the Dakotas. Since 1994, the cattle market has had large beef production with low prices. The members of R-CALF were looking for someone to blame for low prices and the easiest scapegoat was Canada and free trade. The issues of Mexico and Mexican cattle entering the United States was an afterthought, but attracted the attention of and appealed to producers in the Southwest.

This dispute wrecked two years of hard work and credibility that had been built up between the National Cattlemen's Beef Association (NCBA), CNG in Mexico, and the Canadian Cattlemen's Association. These organizations had been working towards forestalling and heading off even more heated disputes, such as U.S. beef exports to Mexico.

R-CALF is made up of cattle producers who are members of National Cattlemens Beef Association (NCBA) and other producer organizations, such as Farm Bureau. As a producer organization, NCBA has many producers who see free and more open trade as the answer to finding more markets and expanding beef consumption and demand. These producers see expanded trade as an avenue toward increased profitability for the industry. There are also members who are in difficult financial straits and have been hurt by low calf and cattle prices and see

foreign competition as the culprit. The R-CALF members have been able to raise the Canadian imports of live cattle issue to the level of a trade investigation (and a preliminary finding of dumping). NCBA found themselves in a situation where members of their group were initiating an action, but the board took the decision to ignore the R-CALF action and to provide no support for it. This position risked losing credibility as the producer organization representing the beef cattle industry in the United States. Ultimately, the vocal minority forced the organization (NCBA) to move in the direction of some partial support for the ITC suits.

It is important to remember that the producers involved in the R-CALF ITC suits have been impacted by difficult times and low prices in agriculture. They have actively looked for reasons for low cattle prices and believe live cattle and beef from Canada are the cause. However, they do not believe many of the economic reasons for trade between the U.S. and Canada. They also do not believe much of USDA's data, especially the parts that do not support their position, that we as economists use in analyzing trade issues. As a result, it has been very difficult to communicate and educate effectively on these economic issues.

THE NEED FOR CONTINUING EDUCATION

I believe that we have done a reasonably good job of educating producers and the general public about the benefits of free trade. There has probably not been a good enough education job and transition programs developed for those who will lose from free trade. We in university and industry are all convinced that free trade is a positive overall goal and are working toward a more free trade environment. There are, however, many people who do not appear to share this view and represent a large enough group to be able to affect what happens in trade disputes and in government policy. I would suggest that producer groups, extension educators, university people and government people need to continue those educational efforts with people that continue to oppose freer trade. I think that the difficulty of passing additional Fast Track legislation to continue to negotiate free trade has been a victory to those groups of people. In R-CALF, there is a minority group which is big and vocal enough to force that change. Also, the opportunity is available for groups to try to discourage or limit trade by the imposition of tariffs through the ITC. This process, even if not successful, requires considerable time and expense on the part of producers in other countries to defend themselves.

Regardless, NCBA and other producer groups must still continue to work toward fostering a dialogue among the national organizations in the hemisphere. To that end, there was a five-nation meeting of cattle producers held in Calgary Alberta in July 1999. There have also been several meetings between states and provincial representatives, including producers, throughout the last half of 1999. The hard work of maintaining the dialogue must still go on.

EPILOGUE

The ITC suits were made up of three parts: a dumping suit, request for countervailing duty vs. Canada to offset beef industry subsidies, and a dumping suit against Mexico. The dumping suit against Mexico was not deemed sufficient to pursue by the ITC. Canadian subsidies were ruled *de minimis* by the ITC and therefore no offsetting action was taken or deemed necessary. The ITC ruled that there was reasonable indication that imports of live cattle had materially injured the U.S. industry and that duties would be imposed.

CANADIAN PORK COUNCIL

Martin Rice

Pursuing a trade dispute offers industry associations a potentially high-return, low-risk means of demonstrating their own worth to their membership. If the action is successful, the association can point to this as evidence of its usefulness to members. If unsuccessful, it can point to the inadequacy of the country's trade legislation or the ineptitude of domestic bureaucrats or foreign review bodies. In fact, there is a much greater risk for the industry association to not pursue a trade dispute action. Rank-and-file members often are not responsive to leaders' suggestions that they need to respect trade rules, or to explanations of why imports are actually being fairly traded. Lack of action by associations can be interpreted as weakness, and elected leaders can be voted out when they come up for re-election.

Canadian Experience

The Canadian pork industry has been involved in many different trade disputes. The first major one was a U.S. countervailing duty investigation in 1985, against Canadian hogs and pork. Within the past ten years we have experienced another U.S. pork investigation as well as countervail proceedings initiated by New Zealand and Australia. The latter case also included dumping charges. We were among the first to have utilized the binational panel review provisions introduced in the Canada-United States Trade Agreement, later NAFTA, and have been party to several panels since. When one adds in a safeguard investigation recently completed by Australia, plus a variety of disputes over such technical issues as disease, labelling and veterinary products, it can be said with some authority that the Canadian hog and pork sectors have experienced trade tensions and actions.

Trade disputes almost always occur during periods of low prices, when the mood of industry in both the importing and exporting countries is best described as irritated and intolerant. This generally is the worst time to try to deal with a trade dispute through dialogue. Under these conditions associations are least able to

suggest and promote solutions because members attitudes become inflexible; the pressures they bring on their representatives are likely to be aggressive, even militant, such as taking action to prevent product crossing borders. Also, misinformation may become involved. For example, rumours and anecdotal information about some government program in the exporting country can become widely publicized 'proof' of unfair trade conditions.

Producers in the exporting country may be no less angry. Associations may be urged to examine countermeasure such as looking for evidence of subsidies or dumping by the other country, hoping to mute the noise level that emanates from competitors, to show that the playing field is more level than portrayed. This strategy is unlikely to be successful.

Experience indicates that elected politicians often wade in to the fray, particularly if their constituents are well represented among the complainants.

Dispute Resolution

Of all of the trade dispute types identified above, the countervail/dumping process has certain advantages. The exercise is more transparent, the rules are more clearly established, and there is much more opportunity for the industry of the exporting country to have its point of view heard and taken into account in decisions taken by the authorities to whom the complainants have taken their case. Formal appeal mechanisms are also available.

Technical measures can be much harder to deal with, and take far longer to resolve. We have found this to be particularly the case where health - plant, animal or human - is involved. It is extremely difficult for the industry in the (potentially) importing country to be convinced to accept any risk whatsoever of a disease being transmitted while also permitting additional import competition. This represents a lose-lose situation from the importers point of view. Ultimately, governments have little choice but to take steps which are domestically unpopular but which satisfy their international trade obligations to remove barriers which cannot be scientifically justified.

Formal dispute settlement processes now exist to deal with sanitary and phytosanitary issues. However, the results have been much less apparent because a 'science-based' process can become an exercise in selective interpretation, debating around and arguing for what is the politically desired conclusion. Decisions may not even be implemented as is the case with the beef hormone dispute between Canada and the United States with the European Union.

Communication

Although circumstances may work against resolution, there still can be substantial benefits, and disputes can sometimes be avoided entirely, by having communication channels opened among industry groups in the two countries. Such dialogue should, wherever possible, be initiated in times of better economic

conditions. If this is not possible, dialogue should occur in as private a setting as possible to avoid public gaze and unreasonable expectations for certain outcomes. Industry groups need to learn the political landscape and pressure points in the other country.

Joint communiqués following such sessions can be helpful, particularly as they encourage the two groups to agree on what has been discussed, and what follow-up will occur. Different interpretations by the two parties of what was said and agreed can be a major problem, and may more than offset any gains achieved by having the get together in the first place.

Expectations from bilateral industry sessions should be kept moderate, as the results from any single meeting are generally fairly modest. The cumulative impact after several such meetings, however, can be very substantial even if less apparent. Build-up of tensions can be identified, and remedial actions taken under less public scrutiny and with some industry political pressure, prior to an issue becoming a major bilateral dispute.

The Role Of Trade Officials

Even when there has been a solid and friendly bilateral industry relationship established, that may not be adequate when the 'grass roots' of the importing country trade association become angry. Cases in point include the U.S. national beef producer organization needing to respond to very localized hostility to beef cattle imports from Canada. Perceptions about imports can change, from being a means of assisting local plants running at efficient capacity throughput levels and even meeting export targets, to becoming unwelcome intruders in their domestic hog market. Embassy personnel can play a critical role in alerting the industry back home of rising tensions among producers in the importing country, and even facilitate meetings. This is particularly the case where the two countries are on opposite sides of the globe.

International bodies should be examined for their potential for assisting in dealing with bilateral disputes, in providing third party advice on technical issues for example. Codex Alimentarius and the Organisation internationale des épizooties (OIE) are ones which come to mind. The use of binational and even multinational panels to review disputes should be considered countervail and dumping cases, which could shield the process a bit more from political pressures within the importing country where currently the investigation is solely conducted.

Conclusion

The Canadian Pork Council has become alarmed at the growing use of cost of production as a benchmark in determining the existence of dumping. We view this as a de facto safeguard mechanism, one without any of the disciplines which exist within formal WTO safeguard provisions. The commitment to trade by both importers and exporters must exist in both good and bad times, and production adjustments to depressed world prices must be shared by all.

In the end, one needs to realize that trade remains primarily a private affair between buyers and sellers, and business associations can only go so far in responding to bilateral trade tensions. However, if dialogue and liaison are established before the tensions arise, the efforts of industry associations to respond in some manner, however modest that may be, can help avert one side having to take protectionist action.

CARGILL LIMITED

Jamie Dolynchuk

The Value Of Information In Reducing Trade Tension

How to address trade tension between countries is an issue government and industry leaders alike have struggled with for several years. This is particularly true this past year as many countries, including our own, stagger on the boundary between enhanced economic integration and increased domestic protection. My comments address the way multinational companies, such as Cargill, are attempting to deal with trade tension in an ever increasingly integrated food system.

For those that may not be familiar with our company, in the broadest sense Cargill is an international marketer, processor and distributor of agricultural, food, financial and industrial products. We employ over 80,000 people around the world in about 65 countries. My particular responsibilities include the management of government relations within Canada. My comments are directed toward offering insight into how the private sector views, and is reacting to, trade tension among our respective countries. Information, as conference coordinators have correctly identified, is a necessary element of handling trade tension.

I will leave the area of industry associations and transnational dialogue to other discussants as they represent these very groups and are therefore on the front lines when it comes to drawing interest groups together. The term – front lines – is used in the literal sense as I suspect many of them may compare the task of coordinating trade groups with varying interests (and even the task of coordinating varying interests within their own associations) to the task of going to battle.

The question for me then becomes....what is the role for the individual company in all of this? Our role, or more appropriately our responsibility, may be broken down into two broad categories, both of which are designed to reduce trade tension:

1. day-to-day commercial reactions, and
2. long-term macroeconomic reactions.

Before discussing these points and illustrating initiatives we have undertaken, it is useful to describe the Canadian industry landscape in which we operate. This is important because it outlines some of the challenges we face in relation to our own domestic interest groups and through those from other jurisdictions.

Canadian Background

The Canadian agricultural industry is distinctly factionalized. Canada has a broad range of agricultural interests, many of which are based upon long-standing philosophical and/or commercial foundations. At the most general level, these interests may be divided between those who favour open and liberalized trade, and those who favour support of their domestic advantages. These divisions are further complicated by government and industry disagreement surrounding the role of state trading entities such as our Canadian Wheat Board.

This lack of cohesion in Canadian agriculture may be a reasonable characterization of the environment in the other NAFTA countries. For this reason, I disagree with the comments by other presenters suggesting that politics has nothing to do with trade policy. In an ideal sense this may be our goal, but this is not achievable in the short term – politics has everything to do with trade policy. Without offering commentary on any of Canada's domestic interests or positions, the practical result is a country which as a whole does not see eye-to-eye on a number of important agricultural issues such as domestic policy, international trade and the role and interplay of government and the private sector. This is a weakness of our industry and one which, at times, influences our ability to make substantial steps in any specific direction.

Governments face enormous challenges in such an environment where issues, seemingly as simple as selecting producer representation on an industry working group, quickly turns into a veritable minefield to find “appropriate” candidates, and not leave out other agricultural interests.

Many times this results in a politically correct, albeit, ineffective group of industry participants which fail to reach consensus on the issue at hand. With these systemic weaknesses within our domestic industry, how can positive change be achieved or, stated another way, how can we minimize trade tension?

For a company such as ours, navigating through such an environment is not unlike working with a group of individuals sitting on a committee or around a boardroom table. Each individual may have his/her particular interest to promote but is there a broader interest of the group that may be identified? If a common interest cannot be identified, as we know, the process may become a war of wills among individuals, resulting in one party forcing their demands on another. When this occurs among interest groups or countries, the result is an increase in trade tension.

On the other hand, if common interest can be identified, groups can accomplish great things. This is true whether we are speaking about a group around

a boardroom table, a group of industry or interest associations or a group of countries. Many of us in the agricultural industry would acknowledge that, at times, we lose sight of larger-group purpose and take for granted the substantial, mutually beneficial trade that has been created between our countries. And we do not talk about it enough.

Day-to-day Activities

Trade tension between countries impacts our businesses each day. This year, we have been faced with trade challenges in our grain, beef, seed and processing divisions, to name a few. In many cases, these tensions arise quickly and have a direct and measurable financial impact on our company and our industries as a whole. Having a transnational identity, our company is often presented with the opportunity to address trade tension through cross-border dialogue between government and industry. In many cases, our company has a vested interest in minimizing trade tension from both sides of the border and this commercial reality is the primary impetus for our action. On a government -to- government basis, we are often engaged in dialogue concerning immediate trade issues between our countries. These opportunities allow us to address issues as one company with our respective Embassies and Government Ministries.

For example, Cargill elevator managers have engaged in lengthy discussions with the Canadian government concerning the recent wheat pilot project (Canadian elevators receiving U.S. grain) announced as a result of Canada/U.S. bilateral trade discussions. These same managers met with representatives of the United States Government and U.S. Embassy to discuss post-pilot issues in an effort to ensure the program every reasonable opportunity for success.

The same opportunity for transnational dialogue also exists on an industry-to-industry basis. A recent example in fact is in an area outside the scope of my topic – meat trade. In general terms, Cargill has worked within and between industry groups to reduce the impact of recent decisions taken by the U.S. government concerning meat labeling justified on the basis of the consumers’ need to know and anti-dump/countervail actions commenced by a U.S. meat trade association. We have worked on both sides of the U.S./Canadian border to help policy makers better understand perspectives of these two trading partners and the potentially harmful results of domestic policy and legal initiatives.

Our presence in both countries has enhanced our ability to understand the implications of trade policy choices as they develop in either the United States or Canada. It is this interplay which allows us to be proactive in our response to trade tension and allows us to play an active role in educating industry participants on the background for positions being taken and offering foundations for resolve.

In the short term, our involvement in these issues has added value by reducing trade tension and enhancing awareness by our domestic meat industries. At the very least, harmful U.S. domestic actions have been postponed, perhaps allowing

for cooler heads to prevail and a further examination of what the “consumer” really wants.

And there are more examples which illustrate the benefits of engaging in meaningful transnational dialogue between our industries. Recent border skirmishes between the United States and Canada in late 1998, arguably as much a function of political as economic motivation, resulted in numerous protest activities at our borders and the blockading of trucks and a railcar containing Canadian wheat to U.S. destinations. Canadian wheat exports to the United States account for about 8 percent of our total exports, and about 5 percent of the U.S. total domestic use. These wheat movement statistics, when compared to those in the oilseed complex, allow for an interesting comparison to be drawn. For example, in 1998 exports of seed, oil and meal for all oilseeds to the United States from Canada was approximately 2.5 million tonnes. Imports of oilseed commodities from the United States into Canada, however, were less than half this amount. If we were to categorize trade tensions on a commodity specific basis which primarily occurs, we may agree that oilseed movements would seem to present an equally strong case for trade tension between our countries. Yet they do not. In fact, oilseeds have enjoyed minimal trade tension within North America for some time now and we must ask ourselves what does this mean?

It may mean that government and industry participants in the oilseed sector have come to recognize, through education perhaps, the value of free flowing trade in these commodities. Cargill saw the benefits in early elimination of tariffs in the oilseed complex. We were very active in working with industry associations (COPA, NOPA) and government on both sides of the border to achieve free trade in this commodity and enhanced integration of our industries. The participants in this industry sector now understand and accept the value of open trade and, as a result, trade tension between the groups has essentially ended.

For Cargill, our activities on such day-to-day issues have underscored a common theme. Bilateral and multilateral commercial integration represents the most effective means to resolving trade tension. As our economies integrate, commercial reliance by industries on one another creates the necessary pressure on government to resolve trade tension or choose policies which avoid such tension in the first instance.

Recent government policy tension concerning magazine advertising in Canada, or our “culture fight” under our Bill C-55, illustrates this point. In an attempt by the Canadian government to impose restrictions on advertising dollars being diverted to American split-run magazines through legislation, trade sanctions were threatened against several Canadian industry sectors by the U.S. government. All of these sectors are highly integrated with the U.S. market.

The result? Four significant industry sectors in Canada – steel, wood, plastics, textiles and apparel – which have little to do with the direct implications of Bill C-55,

actively lobbied our own government to carefully consider the cost to their industry of proceeding with this policy.

To be sure, these actions were not as a result of some lofty aspiration to reduce tension between the governments for the sake of peaceful relations. These actions were as a direct result of commercial harm which could be occasioned on unrelated domestic industries as a result of government policy. We would likely all agree that these groups – steel, wood, plastics, textiles and apparel, represented the most illogical group to lobby government on policy concerning magazine subscription revenues. But this reality highlights the significance of commercial ties between our industries, and their role in reducing trade tensions.

Before discussing some of our global initiatives, I would like to highlight a critical flaw in the day-to-day commercial activities we undertake to reduce trade tension – organization. In a company of our size and as dispersed as we are, it is often difficult to organize the localized, grassroots efforts necessary to implement our activities. This may be equally true for our friends which represent sectors of our industry. Our answer to this situation has been to establish something we call the Cargill Community Network. This initiative was launched through our operations in the United States in 1992 and now has 900 members in 41 states. Members are linked by electronic database and are provided with current information and resources necessary to make representations to government and industry leaders on a wide variety of topics. This program is consistent, reliable and offers a broad tool which is used to circulate important information out to a large group of people in a short time frame.

Members' recent accomplishments include providing grassroots input to Congress to support passage of NAFTA, GATT and the 1996 federal Farm Bill. At the state level, members have helped enact a host of agricultural, environmental, health care, regulatory, tax, tort, transportation and workers' compensation reforms.

Long Term Activities

Day-to-day activities, by definition, are generally reactionary in nature. If conducted properly, these efforts can provide immediate and measurable benefit to our companies and industries. But they are not enough and are often conducted at a time which is too late to rescue parties from irreversible trade tension and its inevitable fallout. Cargill's activities designed to reduce trade tension over the long-term may represent more achievable goals. They are quite new to our company and are not influenced by localized or immediate trade tension issues. Rather, they focus on the long-term and the benefits, which are not immediately measurable but perceived to be significant. Much of the emphasis within Cargill is encompassed in long-term educational initiatives.

The role of information, as suggested by our conference coordinators, and the role of education are very important to avoiding and settling trade disputes over the long term. The two are not necessarily distinct, but my proposition is that when we talk about the use of information to address trade tension, what we are really talking

about is the value of education. It is also my proposition that industry, as well as government, have a responsibility to contribute to the process of education. A recent publication.... "Canada-US Wheat Trade" which was prepared and distributed by the Canadian Embassy in Washington, is a reflection of governments' reaction to this responsibility. It is precisely this kind of information that will start the process of clarifying some of the misconceptions concerning our trade relations.

But where governments have now stepped in, our industry has failed. Trade has always made good economic sense and many have assumed or enjoyed these benefits. But trade also often makes for difficult politics. Our industry has not done an adequate job of humanizing the billions of dollars in net benefits which are achieved by liberalized trade between our countries.

For example, the significant increase in trade under NAFTA does not hold up against the face of one displaced agricultural producer or garment worker. This imbalance contributes to trade tension. The imbalance may be attributed to our industry not adequately selling the benefits of trade post-NAFTA.

This is precisely where the opportunity for us in the private sector arises. To Cargill, education of the public (agricultural or otherwise) is the only thing standing between continued trade progress and reversion into protectionist policies. An indirect effect of the educational process is to expand the debate on trade from the political to the public arena. The workshop raised the question.... who determines trade policy? To private enterprise the answer is simple – the consumer. We simply have to be careful how we define who is the consumer. For anyone who suggests otherwise, I would be happy to discuss the movement of our genetically modified (GMO) products into the EU or the likelihood of substantial changes within our domestic transportation system and the impact consumers have had on these policy decisions.

Reaching these people, and the public in general, is the idea behind Cargill's TradeWorks initiative, which can be summed up in one word: education. Launched about a year and a half ago, the TradeWorks initiative is our global educational response to the lack of information, misinformation and fear which often underpin trade tension within people and industry sectors. This initiative has particular relevance to our NAFTA relations and we hope offers a long-term response to trade tension. TradeWorks has three key components.

- It is a formalized philosophy that open trade and deregulated markets are beneficial to the countries which adopt those policies.
- It represents a long-term commitment by our company to encourage removal of subsidies and barriers that distort production and trade.
- It is an educational initiative in both an internal and external sense.

The program is designed to describe the benefits of trade to our employees (all 80,000) and encourage these employees to take the message to friends, neighbors, customers, suppliers and public officials. To launch this ambitious initiative, our

company has designed a TradeWorks kit. Consisting of sample speeches, trade statistics, resource material and videos, these packages have been sent to over 600 Cargill locations around the world. That's about half of our worldwide locations. The majority of these have been distributed in North America and there are plans to continue the rollout of this program to many other locations.

Today, Cargill managers are being trained in the concepts underlying TradeWorks and are now taking this information out to their communities to emphasize why we should not fear trade. They describe how trade creates jobs for rural communities, how trade provides an avenue for agriculture to grow, how trade gives consumers a larger choice of goods and services at cheaper prices and how trade can improve the environment by preventing the further destruction of fragile ecosystems. In the past year, literally hundreds of presentations through our TradeWorks initiative have been given in various countries ranging from formal addresses to the Washington Agricultural Roundtable, to remarks prepared in response to a "thank you Cargill" rally staged by women in Chegutu, Zimbabwe outside our local headquarters. Our company has taken the value of trade education so seriously that our worldwide president agreed last year to chair the Emergency Committee for American Trade (ECAT) which is now launching a similar education effort patterned after our TradeWorks initiative.

Cargill believes in the value of education in mitigating trade tension. But it takes time, it takes patience and it takes the commitment of our industries as a whole if we're going to reach people and change their perceptions. And our industry needs to drum up more support at the grassroots level. The fact that every 1 billion dollars in increased trade is credited with creating 20,000 new jobs or that export jobs pay wages that average 13 to 18 percent more than those that are not tied to exports needs to be communicated – let me rephrase that, needs to be communicated, understood and accepted by our communities.

Compared to all of our daily activities, this educational responsibility is ongoing. It does not stop when trade tension has subsided within a particular industry or when our countries have finished developing their positions for World Trade Organization talks. In a nutshell, that is why we launched our TradeWorks initiative.

This discussion indicates very clearly that the conference organizers could have been more forceful in their characterization of the role of information in trade relations. It is not a question of whether information is a tool to address trade tension. Information is already being used as a tool and it is the collective responsibility of our industry to consider how we address this fact through education. Positive steps by government and publications such as the recent book *Globaphobia: Confronting Fears About Open Trade* (Burtless, Lawrence, Litan and Shapiro, 1998) must be built upon by us, the ultimate benefactors of a system free of trade tension, if we are to tackle this critical issue.

Conclusions

We have the power to change the tide of trade tension if we are organized. But facts and information alone are not enough. Canada learned this in the last round of multilateral trade negotiations, and the United States learned this in fast track debates. We need real industry participants – real people – educating others about these facts in a language they can understand. This educational process takes time but the rewards are significant and we need a common vision and acceptance of these long-term benefits. And education may be the only constant in our ever-changing industry.

A statement often used to close a TradeWorks address seems a fitting way to close these discussion comments – Trade works for all of us. We should now focus on working for trade.

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STARR PRODUCE CO.

Robert A. Peterson

Starr Produce was formed in the late 1940s. I represent the second generation of ownership. Starr Produce now has fourth generation ownership. We grow, package and ship cantaloupe, watermelons, sweet onions and potatoes in Texas. We also grow, package and ship seedless watermelon, honeydew melons and onions from the state of Colima, Mexico.

My father, who was one of the organizers of this operation and his partner, went down to Michoacan, Mexico in the mid 1950s. He was probably the second person to go into that area to grow and ship cantaloupe into the United States during the wintertime when cantaloupe cannot be produced in the United States. When they produced their first crop, they could not move it to the market because they did not have any railcars. The ex-president of Mexico, Lázaro Cárdenas (1934-40), lived down in that area. They went out to visit him and caught him out in the corral as he was working his cattle. They told him their problem. The next week, they had more railcars than they could fill. It does pay to know people in Mexico.

The Need for a Credit System

We produce in the lower Rio Grande valley, and we pack and ship our product all over the United States and Canada. Starr Produce is just 100 miles away from a population base of 5 million people—Monterrey, Mexico. Very little of our product goes to Mexico and there is a sizable market 100 miles away. Why is this? The citizens of Mexico love fresh fruit and vegetables and are willing to pay for them. The reason is that we do not have a credit system to be able to move our product south and have assurance that we are going to be able to collect for it.

The United States has a Perishable Agricultural Commodities Act (PACA). It defines the terms that we use over the telephone, because all of our products are sold over the phone. Everybody knows what we are talking about when we say, “a delivered sale, an F.O.B. sale, a consigned sale.” It also defines the standards for each commodity. We know what a “#1 onion” is. We know what a “fancy” pepper or “vine ripe” tomato is. These are defined in PACA. The inspection service can pick those definitions out and that gives us a level playing field.

As we ship our product into the United States, we have assurance that we will collect the bill because PACA defines the credit terms that we act on. The base credit term is 10 days. The Act instructs us as to how we can change that to 30 days. PACA provides another safety net in that it provides a trust on our product. If I were selling a load of produce to a buyer, and I ship it in good faith, if the bank comes down on the buyer and takes all of the assets including my produce, the law has created a trust on that produce. The bank or the buyer is obligated to pay for the produce before they can take out their money for the debt that is owed them. PACA also creates a license. So, if the buyer does not pay, the seller can go after the buyers license which will cut the buyer off doing business with other people.

Why is there not a counterpart of PACA in Mexico, and even in Canada? I have lost more money in Canada than I have in Mexico. These concepts are all available, if we could just get them instituted into law. The lack of a PACA-style credit system in Mexico and Canada is one of my biggest problems.

REDUCING TRADE TENSION THROUGH TRANSNATIONAL DIALOGUE AND INTEREST GROUP COORDINATION: INDUSTRY AND GOVERNMENT EXPERIENCE

Hal Harris

We were treated in this session to a wide range of ideas from seven different perspectives. The purpose of this note is to synthesize several key points from papers and discussion rather than to summarize it.

Trade tension derives from trade disputes. The formal dispute resolution processes set forth in NAFTA and WTO need improvement. This session gave some hints toward progress in reducing tensions and in offering alternatives to the current system.

One key to dispute resolution lies in alternative, less formalized processes to resolve problems – principled negotiation, facilitation, mediation and arbitration. The evidence suggests that these tools are not being used in trade dispute resolution as much as they could be. Speakers and discussants provided specific examples of situations that could be improved by alternative mechanisms.

Alternative Means Of Dispute Resolution And Prevention

The first alternative was the proposed Trinational Corporation identified in the Ash presentation which, though evolving very slowly, seems to be a potential means to progress in harmonizing policy, standards and payment issues for trade in fresh fruits and vegetables. The Trinational Corporation is the suggestion of an Advisory Committee on Private Commercial Disputes Regarding Agricultural Goods. The goal of the Committee is to create a multinational scheme to assure payment, which in the United States is provided by the Perishable Agricultural Commodities Act (PACA). This is the issue that Bob Peterson identified in his comments. If it were operational, this voluntary organization would set standards for membership, delisting, relisting, inspection, mediation and arbitration.

Another new institution was discussed by Undersecretary Casco. COMPROMEX is a private corporation formed by SAGAR and operated by the Mexican import-export bank. COMPROMEX helps design contracts and mediates disputes for international situations as well as domestic contracts.

David Anderson spoke about the progress that had been made in avoiding trade disputes and court action by an informal affiliation among cattle trade

organizations of Canada, Mexico and the United States. However, he then pointed out the fragility of the affiliation, with a splinter group of NCBA called R-CALF basically destroying much of the progress of trilateral cooperation over the past two years.

Lewis Stockard pointed out a number of areas of progress in reducing tensions in the area of standards through the working groups of the Bi-National Commission between the United States and Mexico. Some of the successes include recognizing Mexican areas free of pests and diseases for wheat, hogs, avocados and poultry, which allows them to be imported into the United States. Conversely, Mexico now allows the importation of California sweet cherries and eliminated phytosanitary restrictions thereby permitting entry of U.S.-exported grain.

Jamie Dolynchuk talked about the role multinational companies can play in resolving disputes by helping policymakers understand the differing perspectives of trading partners.

It seems very clear from our speakers that these dispute settlement processes are not magic bullets. These techniques are difficult, they require nurturing, they are often lengthy and they can fly apart. One issue not discussed was the need for oversight lest the parties decide upon a “win-win” solution that negates many of the benefits of freer trade. An example may well be the United States-Mexico tomato deal that was struck a couple of years ago. The solution was a floor price for tomatoes from both countries during certain periods of the season. Keep in mind that U.S. and Mexican tomato growers are sometimes the same people. Perhaps I am missing something, but the solution seems to me to be a government sanctioned, binational price fixing cartel, which robs some of the added consumer surplus that free trade is supposed to produce.

Education And Information

The common theme in each presentation is the need for better information and better education. This comes as good news to those of us in the university systems of our respective countries. It also speaks well for the goals of the organizers and sponsors of this series of workshops. However, it also means that there is a long road ahead for there is still an oversupply of misinformation and even disinformation about trade impacts.

Dolynchuk stated that education is critical for reducing trade tensions and spoke of the responsibility of governments and industry in fulfilling that role. I particularly enjoyed his statement that “our industry has not done an adequate job of humanizing the billions of dollars in net benefits we all achieve by liberalized trade between our countries.” Indeed, only the costs of trade are “humanized” in the headlines.

Stockard told us about joint efforts to improve Mexico’s market information, analysis and dissemination capability and Casco also mentioned these efforts. He

talked about using inexpensive television on the national channel to provide market information to farmers.

Anderson suggested that we place our primary educational efforts on the doubters, especially those among our elected officials. He pointed out the difficulties of achieving progress when affected parties exist who disparage official trade data.

Ken Ash led off with the statement that most trade disputes are the result of misinformation and misunderstanding but continued that disputes will occur even with perfect information, thus leading to the need for third party intervention.

Other Important Messages

- from Lew Stockard, progress in resolving trade disputes sometimes comes as a result of a series of small positive steps as illustrated by recent developments between the United States and Mexico in wheat, hogs, cherries and avocados.
- from Dave Anderson, mutual respect among affected parties is critical for success. Mutual respect must be based on long term human relationships.
- from Martin Rice, timing is often the key to resolving trade disputes. For example, when affected parties are under economic distress, amicable solutions are highly unlikely.

Concluding Comments

During this session and the entire workshop there was a great deal of optimism among some participants about prospects for improved trade flows within North America, the Western Hemisphere and throughout the world. Typical comments have included: "Trade is good, we just need to get the word out through educational programs," "Let's get on with it" "Industry recognizes the gains from trade and will ultimately drive governments' policies" "Free trade is the only concept that economists agree on." I find such optimism both ironic and increasingly unjustified. Just two years ago at our Tucson workshop, I chided the group for being overly pessimistic (Harris, 1997). We were blaming lawyers and vested interest groups for lack of progress. I stated that global structural change was occurring much faster than we realized and that government and university economists needed to rush to catch up.

Change is still occurring, but now some of it is in ways that are less compatible with freer trade. U.S. farm programs have been recoupled. Expenditures on farm programs in the United States in 1998-99 rival those of the 1980s farm crisis years. Livestock farmers have been subsidized directly for the first time in history. The U.S. Congress and the Administration are dragging their feet on passage of Fast Track legislation. Dan Sumner, a participant in several of our previous workshops, raises similar concerns in the current issue of *Choices* (1999).

On a broader global scope, the spreading Asian Financial crisis presents challenges for the future of global capitalism. Russia has folded as a viable player on the world trade scene. Less democratic governments that are not consistent with freer trade may arise from economic turmoil around the world.

I agree that we need to get the word out about the benefits of trade. But we have plenty of challenges ahead!

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Section 6

Economic Adjustment Under a Western Hemisphere Free Trade Agreement

The objective of this section is to consider alternative forms, and their effects, that might be applied to extending trade agreements across the Americas.

THE INSTITUTIONAL ENVIRONMENT FOR AGRICULTURAL TRADE IN THE FTAA

Mary E. Burfisher

INTRODUCTION

The Free Trade Area of the Americas (FTAA) is a free trade agreement that is under negotiation among 34 countries of the Western Hemisphere. The agreement, to be implemented in 2005, is expected to remove tariff and non tariff barriers to trade and investment among member countries, and to build more open, transparent and integrated markets. Negotiations are being conducted in nine separate groups, including agriculture, market access, investment, services, government procurement, dispute settlement, and intellectual property rights. An important role of the FTAA will be to reconcile the current proliferation of subregional trade pacts (Figure 1). Over 40 pacts are now in force, with at least a dozen more under negotiation (Stout and Ugaz, 1998).

An FTAA will advance the trend toward trade liberalization in the region that began in the 1980s. Over the past decade, many countries, including Mexico, Argentina, and Brazil, have implemented comprehensive policy reforms, which in general have made these economies more market-oriented. Their shift from import substitution toward outward-oriented trade regimes includes the adoption of significant tariff reductions, compliance with and entry into the GATT, and the negotiation of free trade pacts with neighboring countries.

An FTAA is expected to stimulate agricultural trade within the region (Figures 2 and 3). According to USDA (1998) estimates, the largest export value gains for agriculture would accrue to Brazil (\$830 million), the Andean countries (\$650 million), Canada (\$480 million) and Argentina (\$350 million). In percentage terms, the Andean countries would gain the most (10.2 percent), followed by Brazil (8.3 percent), Chile (6.5 percent), and Central American and the Caribbean (4.3 percent). The largest import value increases would be for the United States (\$830 million), Central America and the Caribbean (\$780 million), and the Andean

group (\$580 million). In percentage terms, the largest increases would be for Central America and the Caribbean (19 percent), and for the Andean Group (16 percent), followed by Brazil (10 percent) and Chile (8 percent). Trade liberalization is also likely to stimulate investment and productivity growth throughout the region, and these dynamic gains are expected to further increase the benefits of trade liberalization, beyond those directly related to tariff reduction (Diao, Somwaru, Raney, 1998).

Figure 1: Main RTA's in the Western Hemisphere

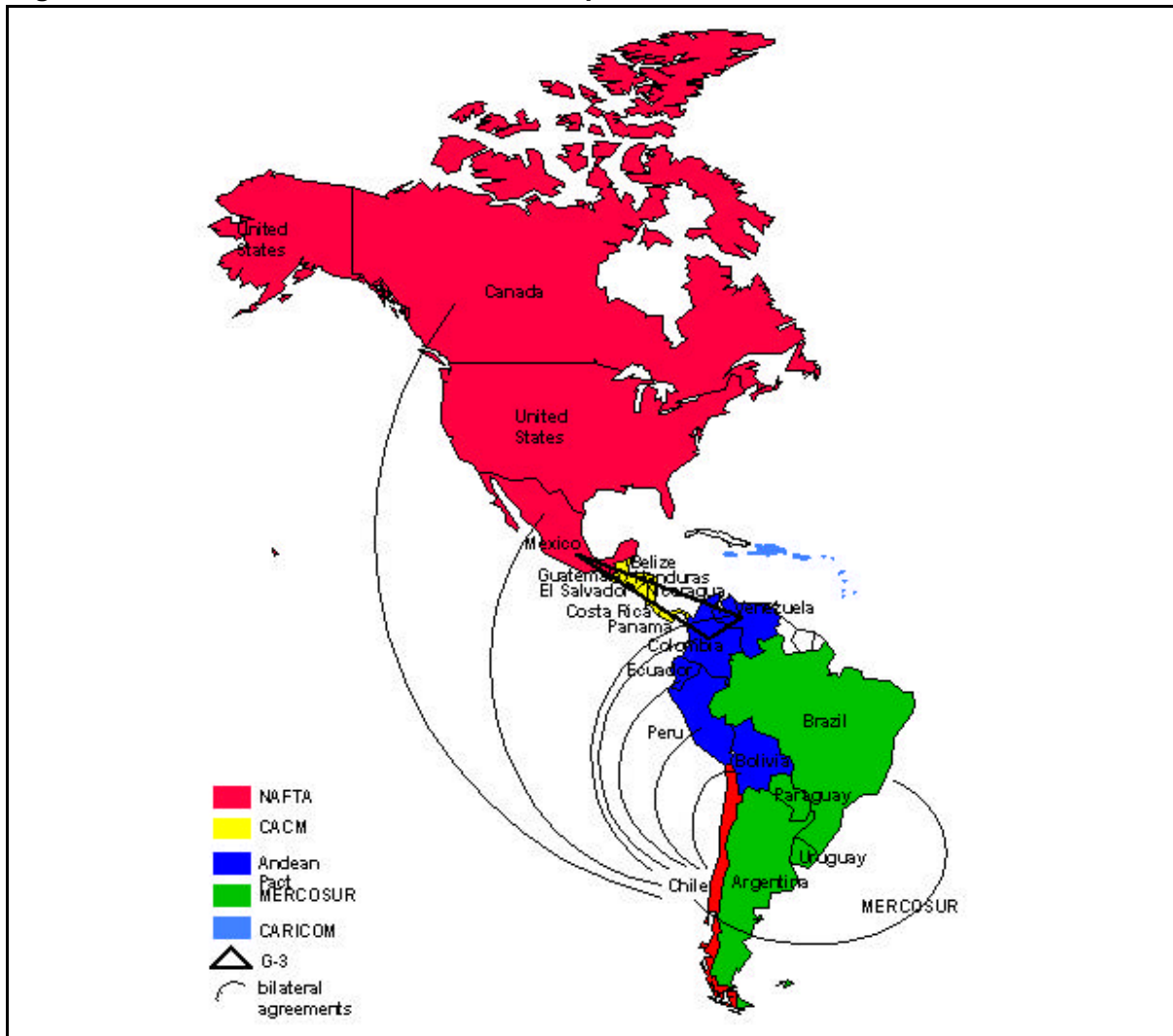
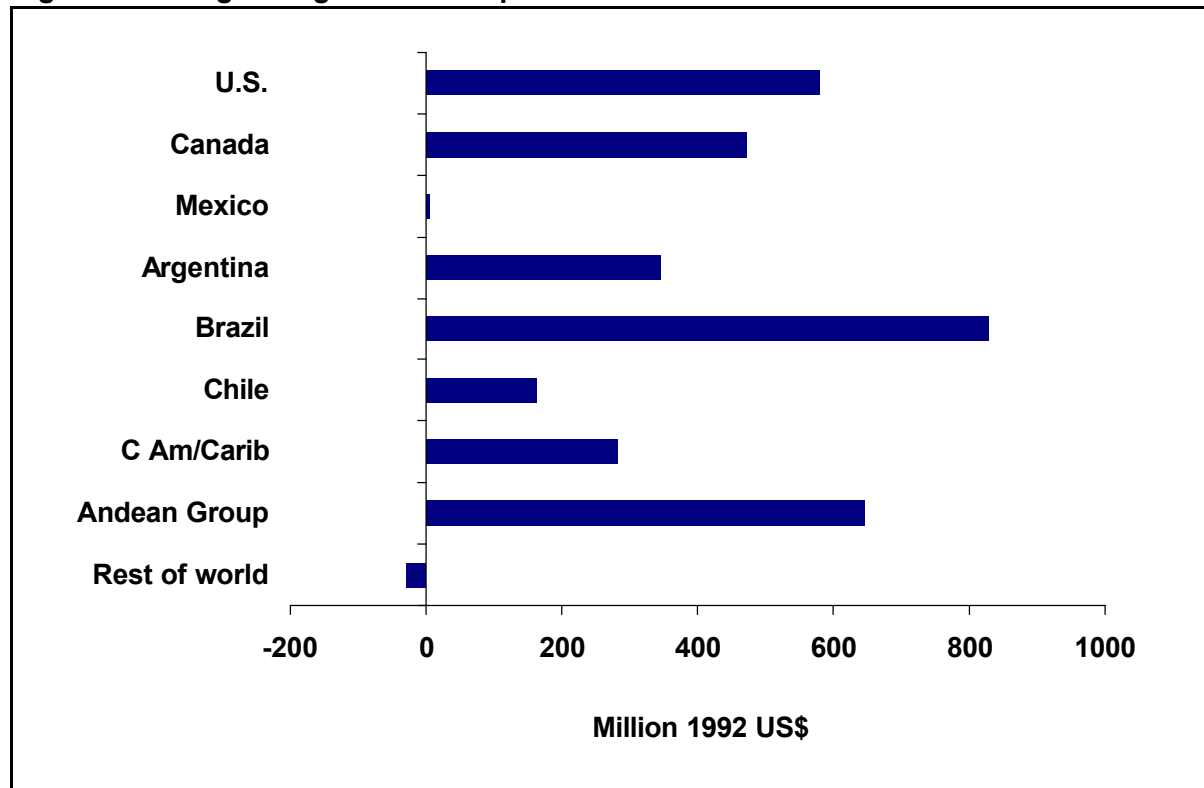
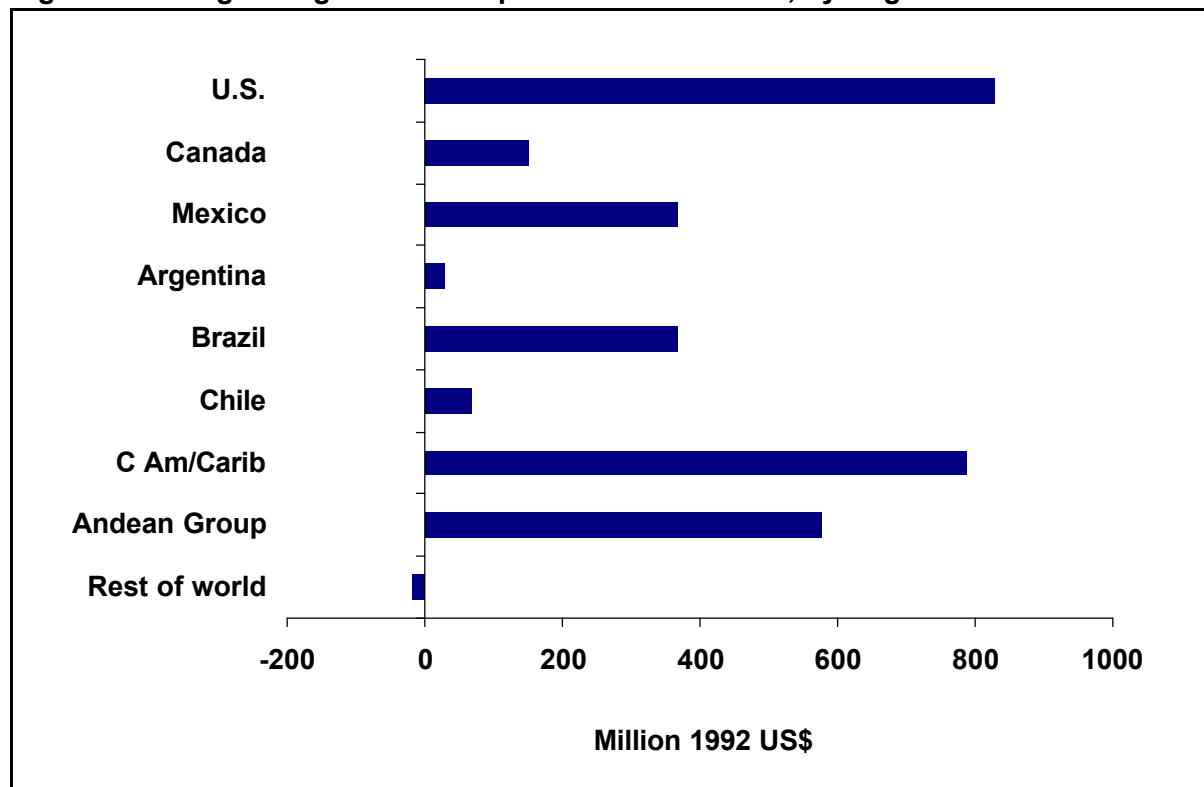


Figure 2: Change in Agricultural Exports under an FTAA**Figure 3: Change in Agricultural Imports under an FTAA, by Region**

These expected gains from an FTAA are derived from a standard, neoclassical trade model. Some of the important assumptions made in this framework are that markets are perfectly competitive and that economic agents behave “rationally” in maximizing firms’ profit or consumers’ utility. In real life, firms must make the decision to enter or expand in markets with a different language, preferences, and business practices, where information on local markets conditions and reputations may be imperfect, and where foreign regulations and laws may be different than those applicable in the home market, or poorly enforced. Before a firm decides to engage in trade, it must invest in information. And before it enters a foreign market, it will probably also need to invest in technology. Firms may need to expand their production, and are likely to need to adapt their products to be competitive in global markets. The firm’s decision to invest in information and technology will be influenced by its expectations regarding the security of property rights and contract enforcement in both home and foreign markets.

The effort and expense that a firm incurs to acquire information and to ensure enforcement of contracts are among its transaction costs. Institutions – the formal laws and informal social norms that constitute the “rules of the game” – largely determine the magnitude of these transaction costs. Transaction costs are likely to differ within the FTAA to the extent that institutions differ among countries in the Hemisphere. Transaction costs may change when a trade agreement changes the “rules of the game.” Furthermore, firms’ or agents’ changing calculations of their transaction costs due to a trade agreement can lead to pressures for more institutional change, and perhaps to the development of regional institutions. This paper is about institutions in the FTAA that affect transaction costs in agriculture. It provides a comparative description of institutions in FTAA, and asks how these institutions are evolving, and if they are likely to reduce transaction costs and create incentives for firms to realize the expected gains from free trade under an FTAA.

TRANSACTION COSTS, INSTITUTIONS, AND THE FORCES OF CHANGE

In the framework of new institutional economics, the transaction is the basic unit of analysis. Williamson (1993) describes transactions as the transfer of a good or service across a technologically separable interface. One stage of activity ends and another begins. An example is the manufacture of a car, in which the manufacture of its parts is technologically separable, and may take place within a single firm, or across several firms.

In this system, transaction costs are the friction that can occur as the several components of a process are brought together, and they can slow the process like sand thrown into meshing gears. There are three sources of transaction costs: (1) imperfect information, (2) fixity of assets or sunk costs, and (3) the bounded rationality of humans (Williamson, 1989). Information on which a transaction is based is generally imperfect. The quality or performance of inputs are often unobservable or difficult to monitor, and the quality of output may be difficult to identify or evaluate. Transactions can also require that sunk costs be made in an asset

or technology by one party that, once made, cannot be converted to other uses without further costs. Bounded rationality refers to our human inability to fully process and use information, and our limitations in foresight and judgment (Simon, 1961).

From the institutionalist perspective, humans are not dispassionate maximizers, but “opportunists” who are motivated to advance their own interests at the expense of others. In the presence of opportunism, imperfect information, sunk costs, and bounded rationality set up an inherent conflict in the interests which each party has in a transaction. When information is asymmetrically held, there is an incentive for the knowledgeable party to behave opportunistically, by shirking in performance or output, by not being candid in their objective risk attributes (adverse selection), or by not taking due care when the liability is held by another (moral hazard). Once fixed investments are made by the principal in a transaction, it becomes vulnerable to subsequent demands for changes in terms by the contracting agent. And, while agents develop contracts based on their best, albeit imperfect, judgement, unforeseen circumstances can alter, *ex poste*, the costs and benefits of a transaction.

The costs related to imperfect information, sunk costs, and bounded rationality are transaction costs for firms. Since transaction costs can result in inefficient outcomes, it is in the interest of agents to devise mechanisms that are designed to limit these costs. These mechanisms are institutions. *Ex ante*, they attempt to screen economic agents for reliability. *Ex post*, they rely on credible enforcement by courts or arbitrators to resolve disputes. Institutions might also be called the ‘rules of the game’ (North, 1997). They are formal rules (laws, constitutions, rules), informal constraints (conventions, codes of conduct, norms of behavior), and the effectiveness of their enforcement.

Why do institutions change? Williamson (1989, 1993) argues that institutional change is an innovation that reduces transaction costs. He defines institutions as transaction-cost-minimizing arrangements, that will evolve with changes in the nature and sources of the transaction costs. Because an institutional environment is associated with certain kinds of transactions, the change in environment should give rise to a change in the nature of transactions, and vice versa.

North (1993, 1997) emphasizes the competition for survival in a world of scarcity as the motivation for agents to try to modify the institutional framework to improve their competitive advantage. Changes in relative prices are a common external trigger for change. In response to price signals, entrepreneurs consider whether to pursue that opportunity within the existing institutional framework, or consider how the costs of changing that framework compare to the benefits. Formal changes are legal – changes in laws or regulations; informal changes are changes in norms, conventions or personal standards. North argues that we can expect to see changes at the margin because larger changes generate a greater number of losers, making opposition to change more likely.

North (1993) describes these key aspects of institutional change:

- there is continuous, two-way interaction between institutions and organizations (firms, agencies, schools), the latter competing in an economic environment of scarce resources;
- competition forces organizations to invest continually to survive. Organizations invest in skills and knowledge that enhance their survival possibilities in an environment of scarcity and competition;
- the institutional framework dictates the kind of knowledge perceived to have the greatest payoff. If the highest payoff accrues to productivity increases, organizations will invest in skills and knowledge to achieve that objective. If it accrues to the players of bureaucratic games, skills will be developed in those areas.

INSTITUTIONS AND AGRICULTURE IN THE FTAA

This paper takes an agricultural focus, and considers important institutions relating to agricultural trade in the Hemisphere. It describes institutional change in agricultural trade and domestic policies, the developing mechanisms for signaling firm reputation and product quality, and the increasing security that regulatory changes have provided for investment in the Hemisphere. It is argued that these institutions are changing in ways that make it more likely that Western Hemisphere countries will achieve the expected gains from an FTAA.

Changing Agricultural Trade Policies

The FTAA region has been characterized by significant trade liberalization over the past decade. Until the mid-1980's, most Western Hemisphere countries provided substantial import protection for their agricultural sectors. In recent years, most have implemented significant trade reforms that include the agricultural sector. Some unilateral trade liberalization has taken place, notably in Mexico and Chile. For most other countries, trade liberalization has been closely linked to the development or resuscitation of subregional trade pacts. Some of these pacts are customs unions, in which the parties remove internal trade barriers and adopt common external tariffs (CET's). These pacts have had the effect of liberalizing internal trade, and reducing the countries' remaining trade barriers against outside countries.

MERCOSUR, the Andean Pact, and the Central American Common Market (CACM) are the three major customs unions now in effect in Latin America. The MERCOSUR agreement among Argentina, Brazil, Uruguay and Paraguay was fully implemented on January 1, 1995. The agreement provided for a common external tariff of 0 to 20 percent, with a zero-tariff on most products traded within the union. MERCOSUR achieved both free internal trade and a substantial reduction in tariffs against nonmembers. Prior to MERCOSUR, Argentina imposed agricultural tariffs of 0 to 38 per cent ad valorem, with about half of the products facing a tariff above 20 percent. Brazil's agricultural tariffs were much higher than Argentina's, ranging from 0 to 105 percent, with most products facing a tariff above 40 percent (Stout and

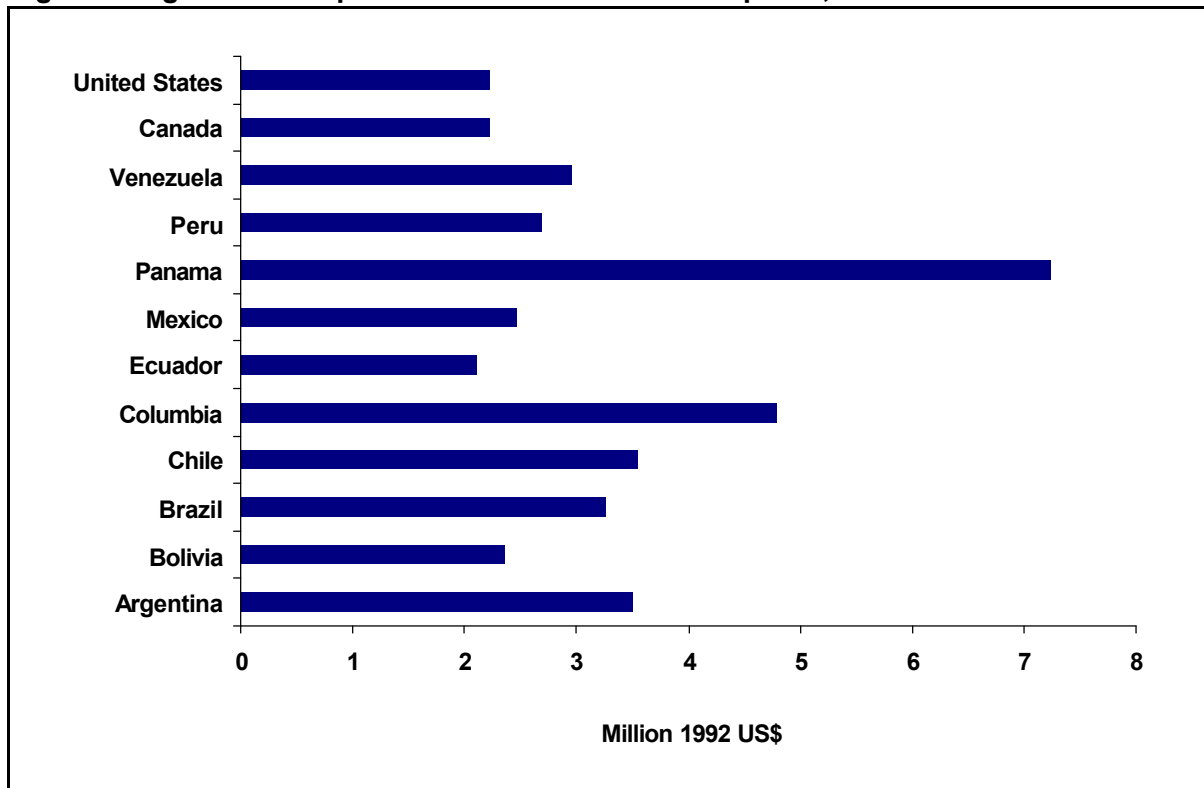
Ugaz-Pereda, 1998).

The Andean Pact, which includes Columbia, Ecuador, Venezuela, Peru and Bolivia, has been revived. Columbia, Ecuador and Venezuela implement a common external tariff (CET) that consists of four levels of tariffs: 5, 10, 15, and 25 percent. Peru is currently engaged in a dispute with the other Andean countries and is implementing a higher tariff rate, while Bolivia has a lower CET of 5 and 10 percent. The CACM, first organized in the early 1960's by El Salvador, Guatemala, Honduras, Nicaragua and Costa Rica, has also been revived. Under the negotiated CACM CET, most agricultural products are subject to tariffs of up to 20 percent, with about half of imported agricultural commodities subject to the highest 20 percent rate (Stout and Ugaz-Pereda, 1998).

The North American Free Trade Agreement (NAFTA), a free trade area in effect since 1994, has liberalized internal agricultural trade among the United States, Canada, and Mexico. The agreement addressed tariffs, nontariff barriers, safeguards, rules of origin and sanitary and phytosanitary barriers to trade (USDA, 1997). With few exceptions, the agreement provides for free agricultural trade within the region, although it permits a transitional period of up to 15 years for some sensitive products. Under NAFTA, each member's tariffs against other countries remain in place. The United States and Canada both have relatively low import barriers, and the United States provides preferential access for many Latin American and Caribbean agricultural products through the Caribbean Basin Initiative and the Generalized System of Preferences. Mexico unilaterally implemented a substantial reduction in its trade barriers. Tariff rates fell and licensing requirements were liberalized beginning in 1986, after Mexico's entry into the GATT. Subsequent to NAFTA, Mexico has initiated bilateral trade negotiations with other countries in the Hemisphere, including Costa Rica, Chile, Columbia, Venezuela, and Bolivia.

In addition to trade pacts, the Hemisphere has numerous bilateral trade agreements in place. Many of these have been negotiated by Chile. Because of Chile's low, 11 percent ad valorem import tariffs, it has sought out bilateral agreements rather than joining common markets with higher CET's.

A consequence of trade policy reforms has been significant increase in the openness of agricultural markets in the Western Hemisphere. Figure 4 describes the openness of the agricultural sectors of twelve Western Hemisphere countries. Openness is measured as the ratio of agricultural trade (exports plus imports) relative to agricultural production in 1996, compared to the 1989-91 base period ratio (indexed to one). Latin American agriculture has become significantly more open in less than a decade. In particular, Panama's agricultural trade relative to output has increased more than seven fold in less than a decade, while that of Columbia increased five fold, and Argentina's increased three fold. More trade openness means that greater export activity and import competition are exerting competitive pressures on domestic production. The gains from trade liberalization are based on the structural change and efficiency gains that occur as producers and consumers respond to changing relative prices in more open economies.

Figure 4: Agricultural Openness in the Western Hemisphere, 1996

Domestic Agricultural Policies

In many countries in the Hemisphere, trade policy reforms have been accompanied by domestic farm policy reforms. While trade reforms were an effort to get market signals right, domestic reforms were in many cases designed to strengthen market price signals. Fixed and guaranteed prices, price floors, and retail price controls were used widely in the region. With these in place, domestic producers and consumers would have been insulated to some degree from the relative prices changes due to trade liberalization.

The region has moved toward reduction or elimination of domestic farm support, and a decoupling of remaining support from producers' decision-making (Table 1). Commitments in the Uruguay Round of the GATT provided a framework for farm program reforms. Under the GATT, developed countries were required to reduce their "amber" (domestic policies deemed most distorting of agricultural trade) agricultural support by 20 percent from the 1986-88 base year level over a 6-year period. Developing countries agreed to a 13 percent reduction over ten years, and least developed countries agreed not to increase their support from base year levels. Many countries in the region have gone far beyond their GATT commitments. In 1995, farm support expenditures by Argentina, Brazil, Canada, the United States, and Venezuela were substantially below their GATT/WTO reduction commitments

Table 1: Domestic Agricultural Policy Reforms in Selected Western Hemisphere Countries

Country	Domestic Farm Policy Reform
Argentina	Privatized state owned enterprises, eliminated marketing boards for beef, grain, sugar and dairy, eliminated export taxes on most agric. products.
Bolivia	Eliminated domestic subsidies.
Brazil	Privatized agricultural marketing boards, eliminated agricultural subsidies, guaranteed prices, government owned stocks, and export taxes.
Chile	Eliminated domestic subsidies.
Canada	Eliminated grain export subsidies, established revenue insurance programs, maintains supply management for poultry, dairy and eggs.
Mexico	Eliminated government control of agricultural markets, except nonfat dry milk. Replaced guaranteed prices and subsidies with decoupled payments to farmers.
United States	Adopted the FAIR Act in 1996 which replaces coupled payments with direct income payments. Support provided for sugar, dairy, peanuts and tobacco.

Source: USDA, *Free Trade in the Americas* (1998).

The credibility of domestic reforms is an important signal for producers. In the case of Mexico, one motivation for its entry into NAFTA was to lock in its domestic policy reforms, including a dramatic reform of its farm support programs. More generally, the opening of borders through trade pacts with neighbors removes a country's autonomy to reinstate support. As Sumner and Hallstrom (1997) argue, open borders place disciplines on domestic support policies by making them too expensive or ineffective to maintain.

Ex Ante: Signals of Reputation

All agents entering transactions take on the risk that their partners will be not be reliable in fulfilling the contract. And in some cases, the quality of inputs, or the degree of effort that is expended on fulfilling a contract may be hard to observe. Before entering a transaction, agents must therefore look for signals or measurements of quality and reliability. Knowledge of a firm's reputation, if accurate and obtainable at reasonable cost, lowers the risk of a transaction.

When business is conducted locally, the local business community is typically a sufficient source of information and reputation. It can also provide informal pressures for performance because firms that choose to underperform tarnish their reputations and suffer a loss of business in the longer run. But as transactions extend out from the community, and into the national and foreign markets, more formal institutions that provide reliable signals of quality and reputation become increasingly important. In the Western Hemisphere, these institutions are developing rapidly, as demand for better information has led to both public and private sector responses.

Regulatory standards in agricultural trade have often been treated as non-tariff barriers, but they also have a crucial, positive role to play. Increasingly, countries are viewing agricultural product standards as signals of reputation and

quality that will help them to expand their market opportunities. Exporters have much to gain from the recent developments on agricultural product standards in multilateral and regional pacts because the health and safety qualities of raw farm products are frequently unobservable. Exporters' compliance with these standards and regulations can provide scientifically-based signals regarding the quality of their products. The consumer reactions in the United States following reports of tainted strawberry imports from Mexico and poisoned grapes from Chile provide dramatic examples of the stake that all exporters have in participating in the development of internationally recognized standards.

There are three important, international institutions involved in setting standards for agricultural products, two of them under the umbrella of the FAO. The CODEX Alimentarius Commission implements the joint FAO/WHO Food Standards Program, which is designed to protect the health of consumers and to ensure fair trade practices. CODEX, with 163 member countries, has adopted a set of international standards that include the establishment of definitions and requirements for foods. The International Plant Protection Convention (IPPC), in effect since 1952, is an international treaty administered by the FAO to control the global spread of plant pests. Currently, 105 signatory countries adhere to IPPC principles. The IPPC is now being revised to reflect and meet the changing needs of plant protection and international trade.

A third multilateral institution is the Agreement on the Application of Sanitary and Phytosanitary (SPS) Measures, established in the Uruguay Round of the WTO, as a new discipline regulating international trade in farm and food products. The purposes of the agreement are to protect the rights of countries to adopt trade restrictions to protect domestic animal and plant health and the environment, while ensuring that these measures are based on scientific assessment of potential risks. The agreement has proven to be a catalyst for a process of regulatory reform in importing and exporting countries (Roberts, 1998). In the Western Hemisphere, the United States, Canada, and Argentina have undertaken regulatory reviews that have led them to unilaterally modify their regulations to comply with the WTO agreement or as the result of bilateral technical exchanges.

Regional trade pacts have also contributed to the harmonization of agricultural regulations and standards. Under NAFTA, an SPS technical review committee was established to facilitate technical cooperation and to resolve disputes relating to SPS measures. The Committee has eight technical working groups, including animal health, horticulture and processed foods, food additives and contaminants, and inspection services. In addition to the work of the Committee, the three countries engage in technical cooperation to share information and engage in collaborative research relating to the establishment and implementation of standards. The SPS negotiating sub-group in the FTAA has the task of finding measures to facilitate trade that are in accordance with the WTO SPS framework.

As the share of processed products becomes more important in agricultural trade, the development of industrial standards becomes more relevant to the

agricultural sector (Table 2).

Table 2: Share of processed food in agricultural exports, 1996.

Country	Percent
Argentina	57
Brazil	66
Canada	43
Mexico	31
United States	41

Source: UN Trade Data

In industry, the level of development of national standards within the Hemisphere varies considerably (American Electronics Association, 1999). While the United States and Canada have well established systems for industrial product standards, Latin American countries are relatively recent entrants into this area. Mexico created an infrastructure for standards and measures in 1992 and, as its system develops, is planning to incorporate internationally recognized standards. Brazil is considered the Latin American leader in the development of standards, and the harmonization of these standards with those of the United States. The food processing industry is a key sector in the Brazilian effort to harmonize standards. Argentina's initiative, launched in 1994, has been undertaken jointly by the public and private sectors, and is being done in conformity with U.S. standards. The MERCOSUR trade pact between Brazil, Argentina, Uruguay and Paraguay as well as other subregional pacts in the Hemisphere include industrial standards-related provisions.

In international markets, an increasingly important signal of quality and reputation are the ISO standards for quality management, quality assurance, and environmental management. ISO is the International Organization for Standards, a voluntary, non-governmental organization established in 1947. The ISO 9000 series of standards (which includes the 9001, 9002, 9003, and 9004 quality assurance models) provide detailed procedures for ensuring quality at all stages of design, development, manufacturing, installation and servicing of products or services. The ISO 14000 series, introduced in 1996, addresses various aspects of environmental impacts. The standards apply uniformly to companies in any industry and of any size (ISO Easy, 1999).

The number of firms certified as ISO - compliant has grown rapidly in just a few years. In the United States, for example, the number of ISO 9000 firms increased from 220 in February 1992 to nearly 24,000 in January, 1999. In the Western Hemisphere, the United States, Canada and Mexico have the largest number of firms meeting ISO 9000 requirements (Table 3). At present, food processing firms represent just a small share of ISO 9000 firms.

Table 3: ISO 9000 companies in the Western Hemisphere, 1999

Country	Total number of firms	Food processing firms
Unites States	23,895	20
Canada	7,009	77
Mexico	1,015	12
Brazil	983	13
Argentina	66	2
Columbia	35	0
Chile	18	0
Venezuela	15	0
Peru	11	0
Panama	9	0
Costa Rica	2	0
Ecuador	2	0
Guatemala	2	0
Honduras	2	0

Sources: Quality Digest, 1999; Globus Registry, 1999.

Since many industrial companies now require ISO 9000 registration by their suppliers, this certification is rapidly becoming a requirement for firms seeking to do business in the international market. Certification as an ISO 9000 firm not only benefits the firm's customers, it also can impact the suppliers because of the firm's need for quality inputs. In this way, the ISO 9000 certification program for industries can have a significant impact on agricultural production. In Mexico, for example, an ISO 9000 corn milling firm found that ensuring a quality cornflour product depended on acquiring corn inputs of a reliable quality. The firm now works directly with farmers to ensure quality control for seeds, other inputs, and crop management.

Ex Post: The Protection of Investments

Once governments take credible steps to implement trade and domestic reforms, and the "right" prices are being more clearly signaled, firms face pressures to remain competitive in a more open economy. The key to survival is investment. Firms invest in human capital, and in new, improved, or expanded production activities. Firms' decisions about how to invest are governed by price signals; their decision on whether to invest is determined by their perceptions about the security of their investments, and the dependability of local institutions in protecting and enforcing their property and contractual rights.

Two approaches to measuring the institutional environment surrounding the investment decision are the *Intercountry Risk Guide* (ICRG) and the more narrow, *Institutional Investor Rating* (IIR). The ICRG provides a composite measure of the legal, economic, and political institutional setting. It includes measurements of creditors' rights, equity shareholders' rights, contract enforceability in both the private and public sectors, and corruption in government. In most categories,

countries are rated from 0 to 6, and the categories summed in the composite index. The IIR measures the probability of a country's default on external debt. It is based on information provided by leading international banks, and can reflect prevailing market perceptions of credit worthiness.

The two measures are on a scale of 0 to 100, with higher numbers indicating lower risk. Because they measure different institutional aspects, they characterize countries differently. For example, in May/June 1998, the two measures exhibited a fairly low (0.55) correlation with each other. Nevertheless, both measures show that the risk environment in Western Hemisphere countries varies widely (Figure 5). On the IIR, scores ranged between 92 for the United States to 14 in Nicaragua. On the ICRG, scores ranged between 52 for Haiti and 82 for the United States.

From the perspective of transaction costs economics, it would be expected that investment would be higher the stronger are the institutions that provide protection for property rights and ensure contract enforcement. Data for selected Western Hemisphere countries on private domestic investment as a share of GDP, and the ICRG rating provide some support for this (Figure 6). Countries with stronger institutional capacity for protecting investment tend to have higher relative levels of private domestic investment. Other factors, in addition to the institutional setting, are also likely have important effects on investment, particularly market demand conditions.

Figure 5: Investment Risk Ratings of Western Hemisphere Countries, 1998

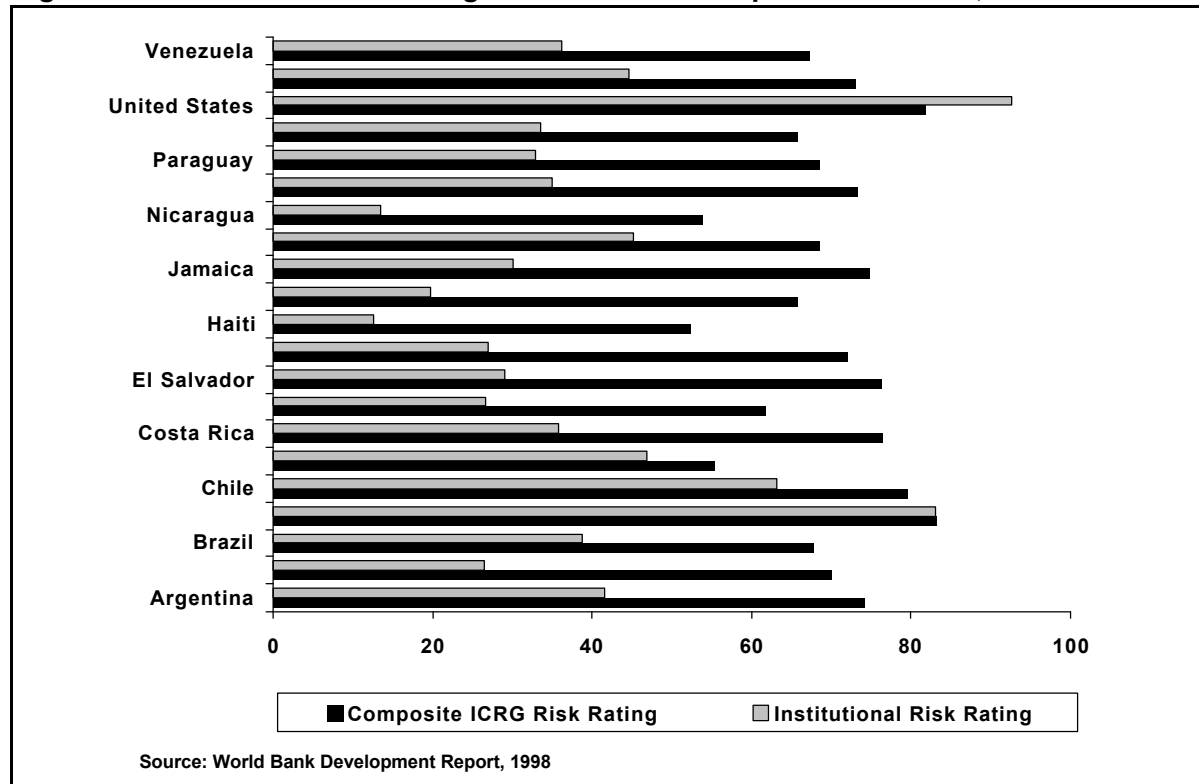
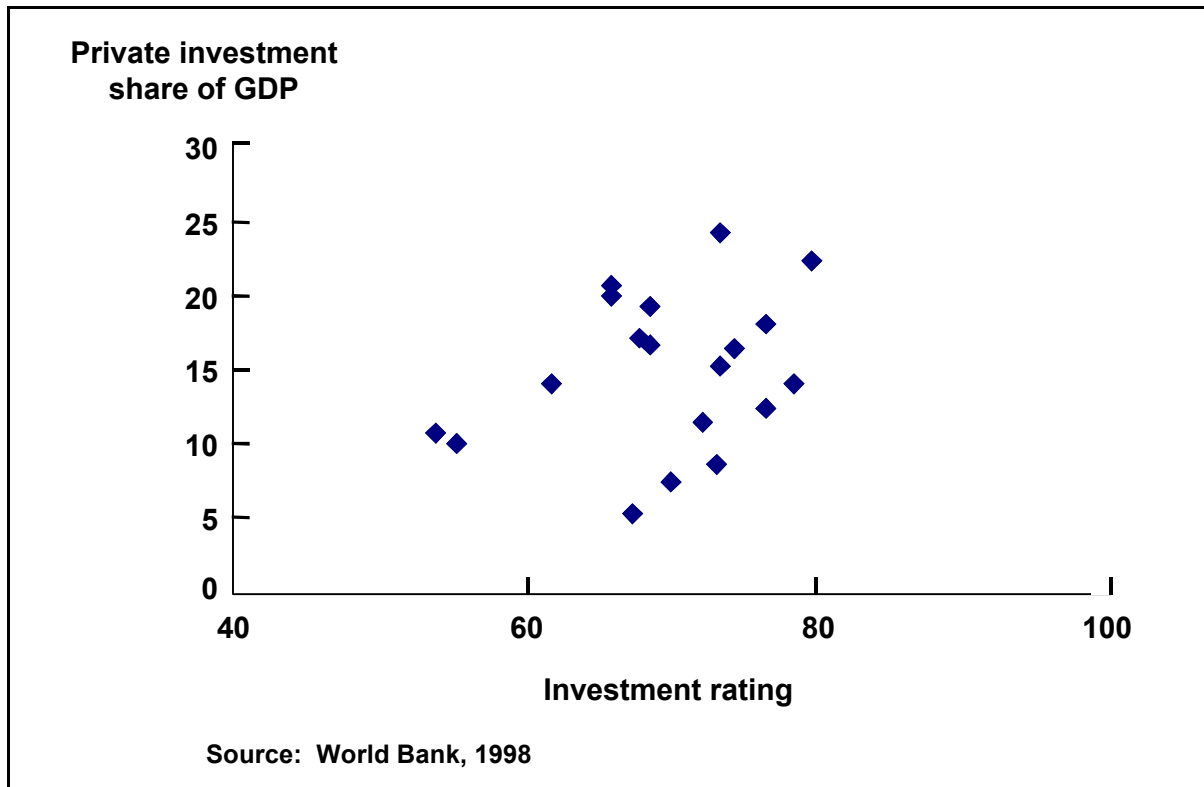


Figure 6: Private Domestic Investment Share of GDP and Composite ICRG Rating, 1997/98

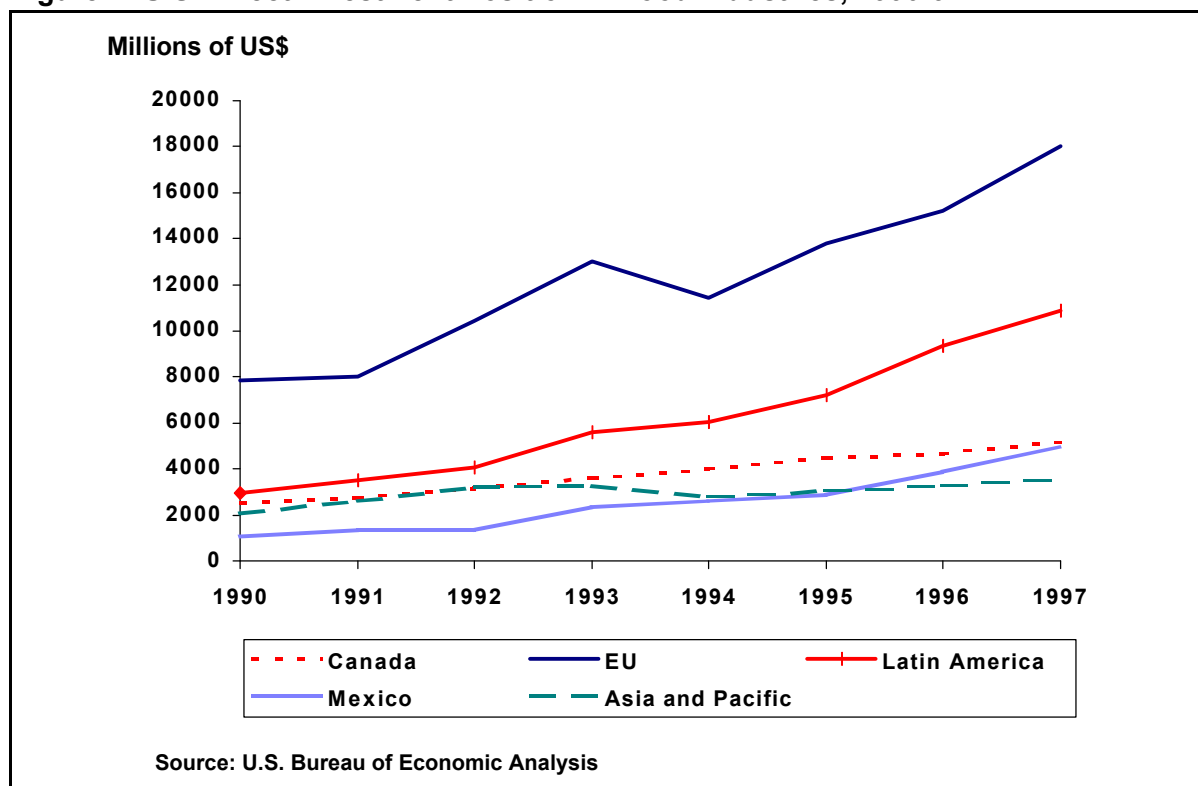


It might also be expected that, as market reforms increase business opportunities, there will be a demand for strengthening property rights and the enforcement of contracts, and that domestic institutions will tend to evolve to provide this. One example of this is the evolving treatment of foreign direct investment (FDI) in the Hemisphere. FDI has become an increasingly important channel for market integration and investment in the Hemisphere, and has certainly been stimulated by the action of several Western Hemisphere countries in liberalizing their foreign investment regulations (Bolling, Neff and Handy, 1998). Argentina liberalized its investment laws in 1993, eliminating registration requirements, and the waiting period for repatriation of profits and capital. New laws also give foreign investors full access to local credit markets. Mexico liberalized its investment laws in 1989, increasing the stake that foreigners are allowed to hold in Mexican enterprises. Canada and Brazil have also revised and liberalized their regulations on foreign investment. In addition, trade pacts have had an important role in strengthening investment protections. NAFTA, for instance, contains a number of provisions on foreign direct investment, including the right to third-party arbitration in investment-related disputes.

Stronger investment protection in the Hemisphere is an important factor in the rapid growth of U.S. FDI in the region (Figure 7). In the food processing sector, the US FDI position in the Western Hemisphere increased from \$2.9 billion in 1990 to \$10.8 billion in 1997 – representing an average annual growth rate of 38 percent. The fastest growth for U.S. FDI in Latin American food industries occurred in Mexico,

where the U.S. investment position increased nearly 50 percent per year between 1990-97. The U.S. investment position in Latin America grew much faster than in other regions of the world: the average annual growth in the EU was 19 percent, and in Asia was 10 percent.

Figure 7: U.S. Direct Investment Position in Food Industries, 1990-97



CONCLUSION

This paper provides a “new institutional economics” perspective in assessing the prospects for a Free Trade Area of the Americas. The FTAA, now under negotiation, will remove tariffs and other impediments to trade and investment in the Hemisphere, and is expected to result in increased specialization, trade, and economic welfare. Whether this will be achieved will depend on whether firms will respond to new opportunities in an expanded regional market.

This paper describes the many institutional changes that have been occurring in the region. Governments are “getting prices right” and strengthening market price signals through trade and domestic policy reforms that have been implemented over the past decade. Very recently, the further development of harmonized standards and regulations in agriculture and food processing, development of greater accessibility of reliable information on product quality, and the strengthening of institutions that protect investments promise to reduce the risks firms take in expanding into global markets. These institutional developments, which are occurring in advance of the 2005 implementation of the FTAA, are likely to build and solidify a regional

constituency for Hemispheric trade reform, and make it more likely that the full potential of regional free trade will be achieved.

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THE POTENTIAL TRADE FLOW: AN AGREEMENT FOR THE AMERICAS

W. H. Furtan

INTRODUCTION

The Americas are considering a new trade agreement at a historic time. International trade in agricultural and food products has received much attention since the beginning of the Uruguay Round in 1986 and its implementation in 1995. Today there is little agreement on the outcome of that agreement, as some argue the Round was successful in making agriculture come in line with other industries while others hold that little was achieved.

In this paper I have been asked to outline the potential trade flows that could occur under a new trade agreement of the Americas. This is indeed a daunting task. One thing we know is that trade flows and exchange rates are almost impossible to predict, especially very far into the future. As a result, my comments will be constrained to a mundane set of topics. First, current trade flows and where they might change because of a new trade agreement are discussed. Second, a more complete definition of what kind of trade agreement are considered. In this regard, I will make a few suggestions and show how different agreements result in very different trade flows. Third, New Institutional Economics (NIE) are used to show that we must have some common set of institutions before we can move much further in trade liberalization. Finally, I will suggest that we need to focus more on trade in processed food products and intellectual property rights and less on agricultural commodities.

CANADA'S CURRENT AGRICULTURE AND FOOD TRADE

Canada has always been a trading nation. In its early years the New Territories exported fur, lumber and fish to France and England. With the opening up of the west in the latter half of the 19th century, wheat became the staple export and reached its apex in the 1930s and 1940s. Since the end of World War II, Canada has exported a more diversified set of agricultural commodities, although grains and oilseeds remain the most important (Figure 1). Over the last half of this century Canada has been very protective of some agricultural products, the list of which has changed from time to time. In the category of agriculture, vegetables, dairy, poultry, malt, wheat, and to some extent livestock, have had border protection in one form or another.

Currently grains and oilseeds receive no border protection and the domestic price is the world price plus some small adjustments for quality and marketing boards (positive or negative depending on your point of view). Livestock products receive some border protection through the health of animal regulations. The major

agricultural protection in Canada today is the supply managed industries of dairy and poultry products. This is evident from Figures 1 and 2, which show the limited trade in dairy and poultry products.

Figure 1: Canadian Agri-Food Exports by Commodity Group

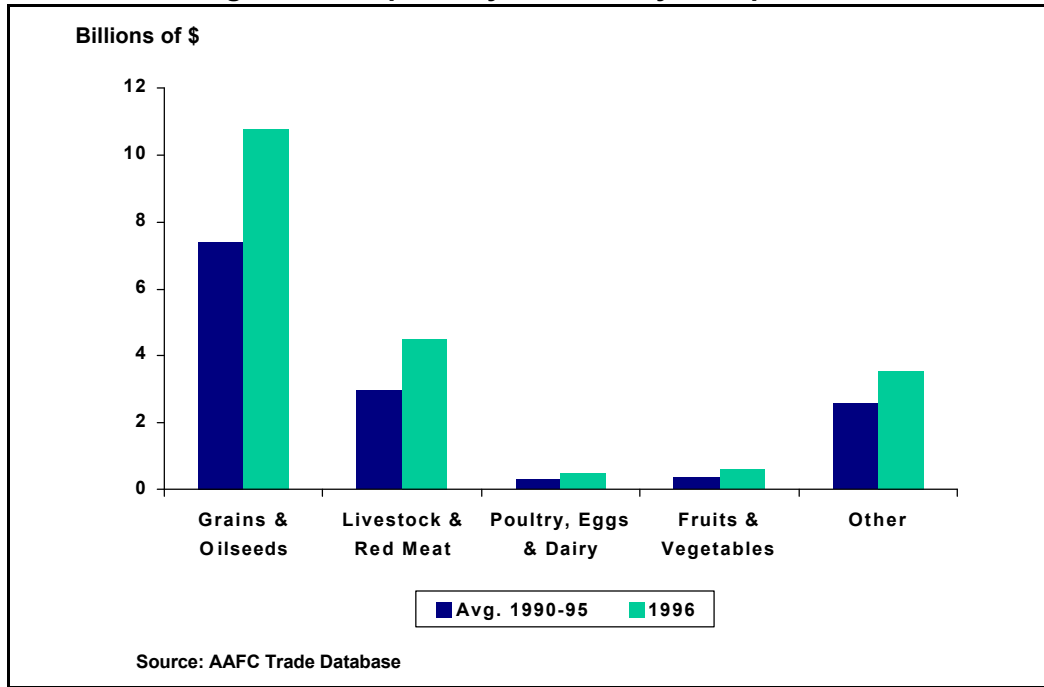
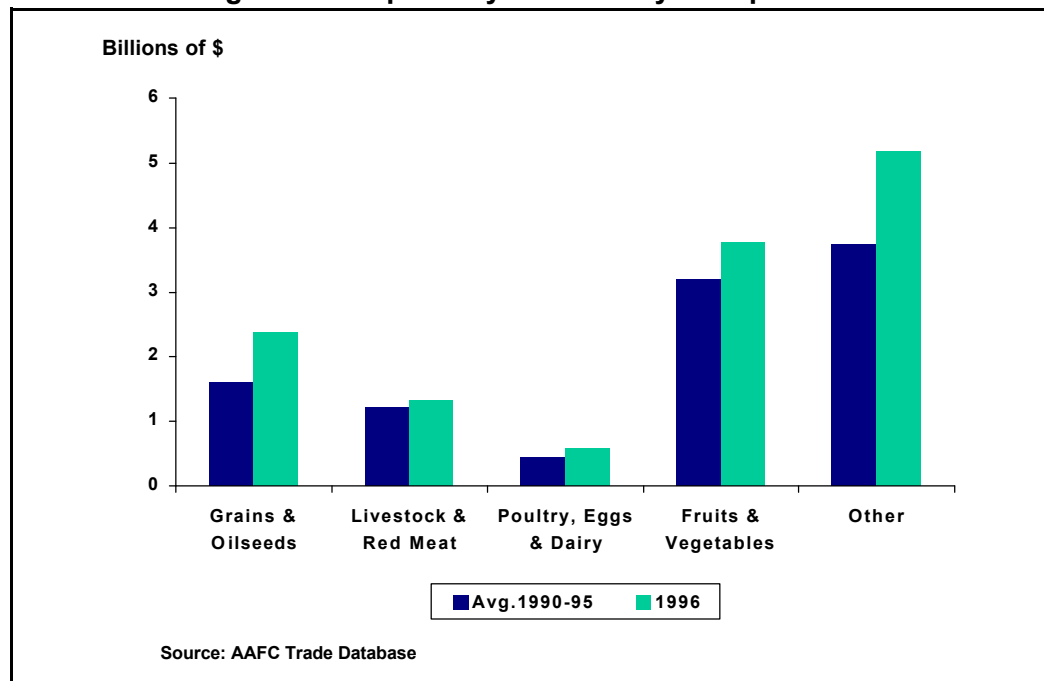


Figure 2: Canadian Agri-Food Imports by Commodity Group



Country of destination for Canada's exports and imports are summarized in Figures 3 and 4. The most obvious characteristic of Canada's exports and imports is the importance of the United States as a trading partner. Moreover, the United States is growing in importance for Canada, largely as a result of the NAFTA. On the export side, Japan and China make up 15% of Canada's export market, largely for grains and oilseeds. This leaves 35% for the rest of world. On the import side the situation is similarly weighted towards trade with the United States.

In terms of consumer-oriented agricultural trade, Canada has had a problem in developing export products and markets (Figure 5). Almost every government in Canada has the policy objective to increase the export of processed food products, however they have met with limited success. This objective is based upon the belief that the value-added products have the greatest return and improve employment opportunities. This is an aspect of the market that Canada will have to develop in the future.

Figure 3: Canadian Agri-Food Exports by Destination

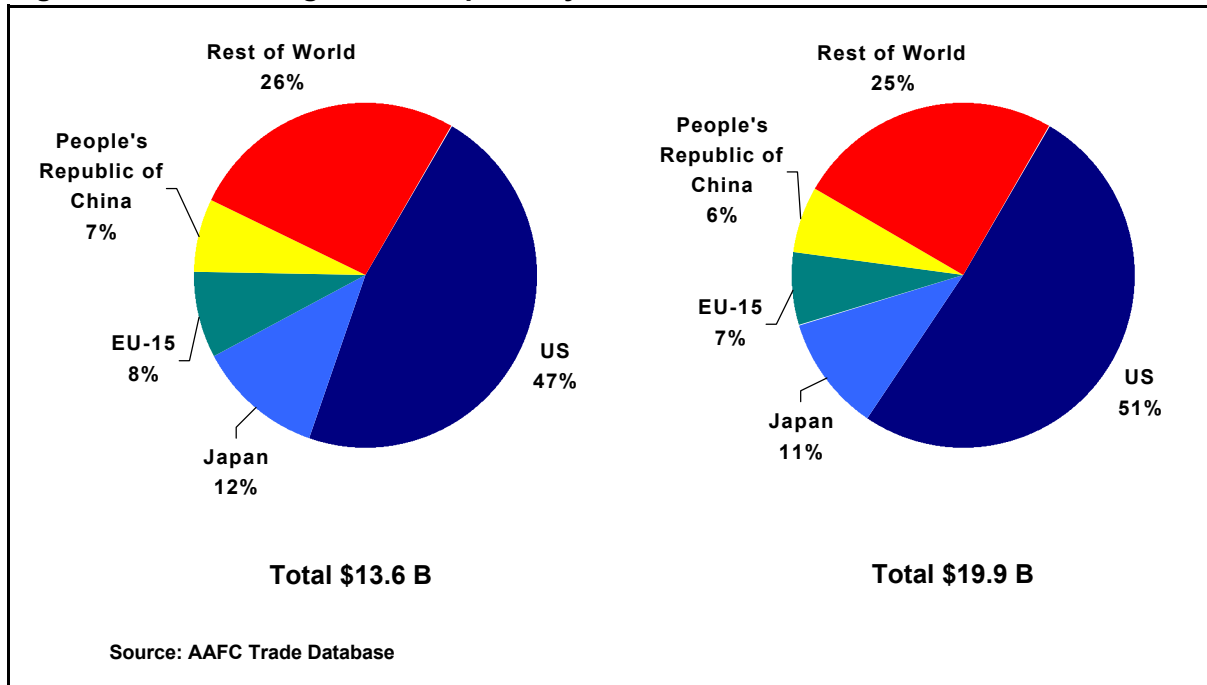
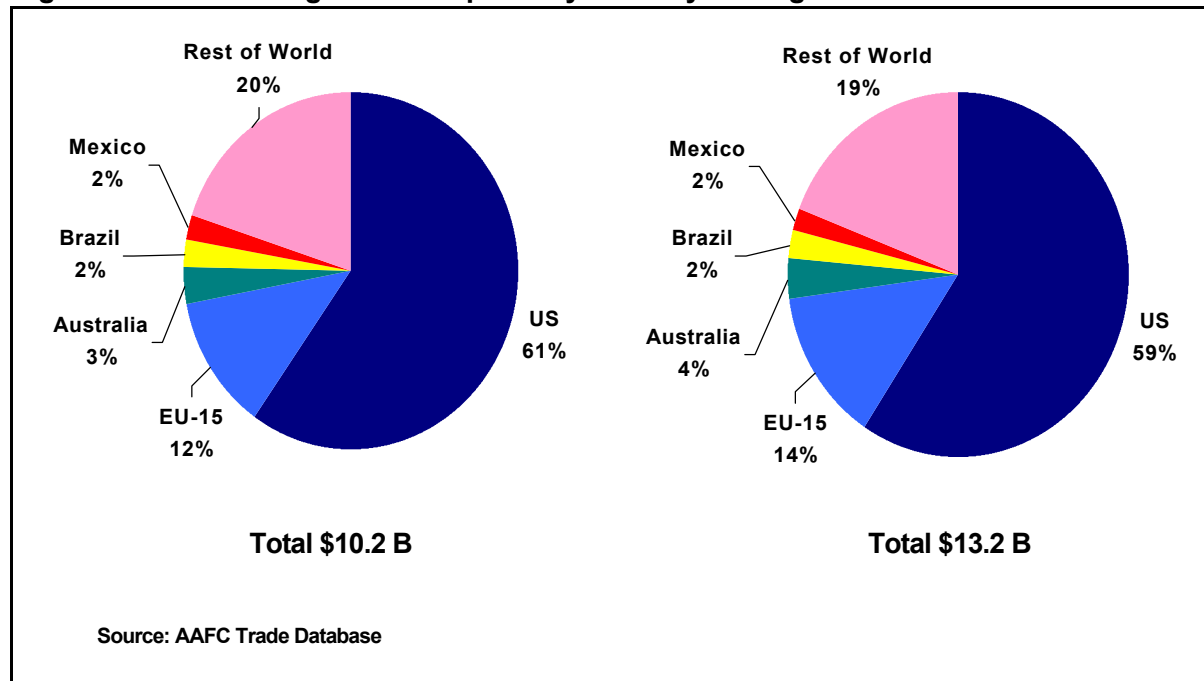
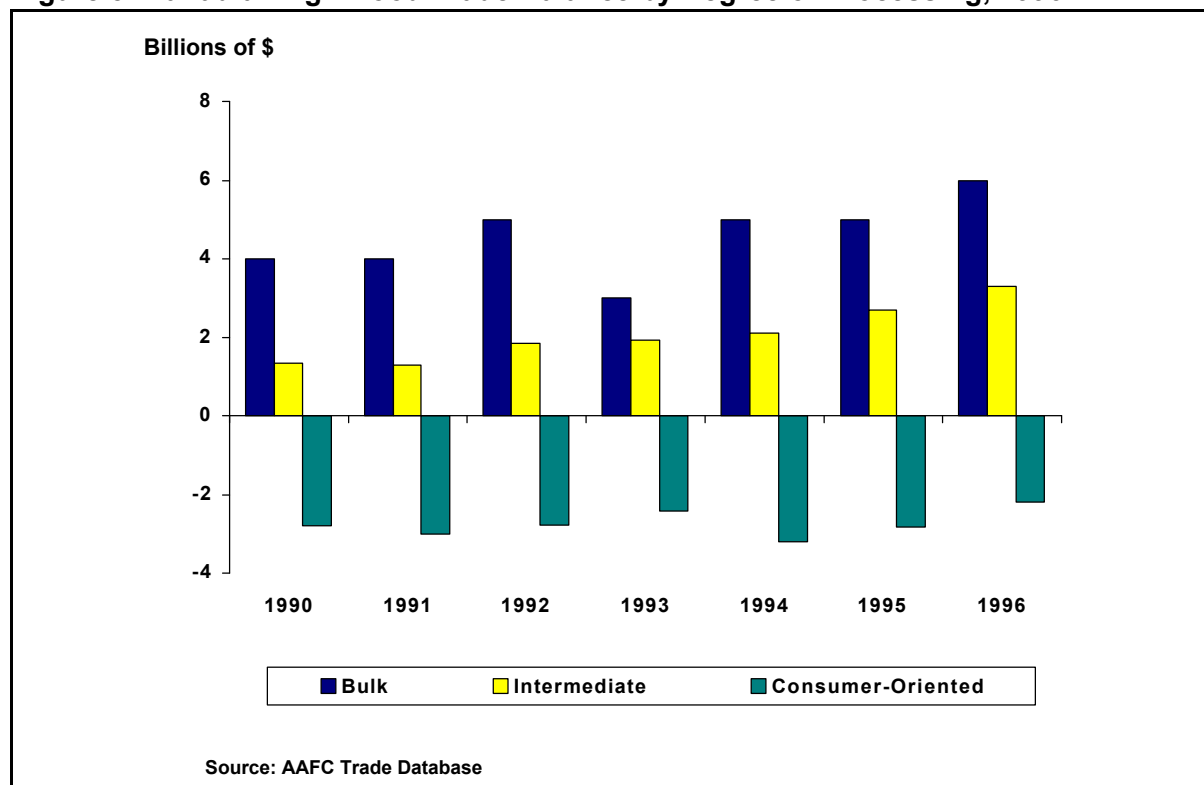


Figure 4: Canadian Agri-Food Imports by Country of Origin**Figure 5: Canadian Agri-Food Trade Balance by Degree of Processing, 1996**

It is difficult to draw many hard conclusions from these data. I would suggest that trade with the United States, Japan and China is not likely to decrease, which implies that trade with new partners will be limited. In the all-important, consumer-

oriented products, the critical variable in achieving increased trade is economies of size and scale of the multinational food processors. This is an area where agricultural economists have little to offer, unfortunately. Canada exists beside the largest and most prosperous market in the world and it is difficult to see that new partners from the Americas will displace the US.

MEANING OF A WESTERN HEMISPHERE FREE TRADE AGREEMENT

It is not clear what is meant by, or included in the term, Western Hemisphere Free Trade Agreement (WHFTA). The definition is difficult because it probably means different things to different governments, and governments will not want to define the term to carefully as part of a negotiating strategy. There appear to be at least three possibilities: (1) a trade agreement modelled on the World Trade Organization (WTO); (2) an expanded NAFTA; and (3) an European Union (EU) type of agreement with complete monetary union. Each of these three types of trade agreements requires different institutional arrangements including dispute settlement and policy harmonization mechanisms. It is very important to have clarification on definition before we can talk sensibly about the outcome of a WHFTA. The significance of this point is illustrated by a few alternatives.

First, the WHFTA might be an extension of the WTO trade agreement. The WTO is reducing tariffs and quantitative barriers as fast as negotiation allows. The WTO has not greatly expanded its influence into a few important areas of goods and services such as intellectual property. New multilateral agreements such as the Multilateral Agreement on Investment (MAI) have not been successful, which indicates the limited ability to move such agreements into new areas of jurisdiction. Countries can appeal to the WTO for trade interpretation but the organization has very limited enforcement power. This has reduced the WTO's ability to create a level-trading environment as most countries retain an arsenal of trade distorting policies available for use at a moment's notice.

Alternatively, we might think of a new trade agreement being similar to that of NAFTA. The NAFTA does not treat all countries the same and has some small differences among the three signatories. This type of agreement would require extensive negotiations unless one country joined at a time, much like the process that occurred with Mexico, and now Chile. What the final arrangement would look like is open to question, as all countries may have a different agreement.

How does the NAFTA differ from the WTO? First, NAFTA put in place a dispute settlement mechanism with representatives from each of the countries. Five members are chosen, two nominated by each country and the chairperson a joint appointment. The panel hears a case and makes a binding ruling (even though disputes have arisen again). Since 1993, this panel process has ruled on a number of controversial agricultural trade cases and the two countries have respected the results. As well, NAFTA allows for firms from the other country to challenge

legislation in the offending countries' court. This has happened in Canada where U. S. firms have challenged (successfully in some cases) Canadian legislation because it would cause injury to US firms in the Canadian market.

A third approach is to follow what has happened in the EU where economic integration has included trade barriers, monetary union and labour mobility. The most recent move by the EU to invoke the Euro would be equivalent to the Americas adopting one currency with one central bank and therefore one monetary policy. Given the unequal size of the economies in the Americas this would most likely mean adopting the U.S. dollar. However, would the United States be willing to give up control over the Federal Reserve? As well the EU has adopted minimum labour and environmental standards. This type of agreement would create a trading block of the Americas and would allow for major changes in the economies of all the participating countries. The economic impact of such an agreement would be large. It is difficult to see this type of agreement in the near future but it may be the ultimate end point of the negotiations.

Finally, in defining any new agreement the role of the United States will be paramount. The U.S. economy is not only the largest but it is also the strongest. With political power moving away from the White House and to the Congress it is difficult to see the United States risking the current economic environment for any new aggressive agreements.

INSTITUTIONAL STRUCTURE AND TRADE AGREEMENTS

Institutions are the rules and norms of society (Coase, 1937). Those rules and norms may be written down in a formalized (legal) manner or be very informal. (Williamson, 1983). Trade rules are embedded in the institutions of any country and thus, when trade agreements change, major changes to a countries institutions may be required. We need only think of a country like China, which is potentially entering the WTO to understand how entering a trade agreement would effect China's institutions (many of the rules governing day to day business in China are not written down). It is difficult for two countries to integrate their economies if one country uses unwritten rules and the other has a legal system with clearly written rules. In order for the WHFTA to work in a positive way there must be some link between the laws of the nation and the international laws.

The three options discussed in the previous section are different because of the amount of institutional change or institutional harmonization they represent. We can think of these agreements as different points on a spectrum of economic and political integration. The more the integration the more similar must be the institutional structure (therefore policies) and the greater the impact on trade patterns. For example, the WTO requires some reduction in border protection and some limited reduction in domestic support. The so-called "green box" programs also affect agricultural production and trade, but more indirectly. They are fully allowable under the WTO agreement (example research, development and State Trading

Enterprises). It is difficult to see how the WTO will make much more progress in enhancing trade without demanding more institutional change within member countries.

The three different trade agreements represent three degrees of trade-off between institutional sovereignty and institutional integration. As countries move toward more complete institutional integration the amount and value of trade should increase because of the lower transactions costs. This does not mean that all countries will gain equally but that the overall welfare level of the trading partners should go up.

A case in point is the changes that Mexico made to its institutional framework to join the NAFTA. Yunez (Workshop Proceedings, 1997) and the Lake Louise Workshop (Workshop Proceedings, 1998) detailed how Mexico completely modified farm programs as NAFTA was implemented. These changes have come at a high cost to many Mexican people but the government was willing to make major changes to the institutional structures to join NAFTA, with the expectation that longer term benefits would offset short term losses. On the other hand, Canada has not been willing to change many of its farm programs, rather it has just lowered the level of domestic support. In one of these areas, dairy, it could be argued that Quebec wants protection for its dairy sector because it places a higher social value on small farms. This proposition is supported by the fact that the province of Quebec contributes to very expensive farm programs outside supply management like the ASRA program. Is this difference based on a difference in culture and thus different institutions, or is it just superior farm lobbying? Whatever the answer, it will have a major impact on the patterns of trade.

One of the benefits of integration is the responsibility other countries may assume to help countries through economic problems. For example, the United States provided the Mexican government with billions of dollars when the peso lost value, argued to be in United States interest. Without integration, these types of arguments are more difficult to make. Here we see that there are trade-offs between the benefits of integration and the potential loss of cultural institutions.

LESSONS FROM NAFTA

Let us now return to the trade data that were discussed in the first section of this paper. Before doing that it might be useful to note that Canada and the United States are very similar in a number of ways. Both countries are democratic and enforce their laws through the courts. However the United States is a Republic and Canada is a Federation; consequently our constitutions are very different. This institutional difference means that the power of the central government is different, and that in turn limits how institutions can be brought together.

In the United States the national government is responsible for farm support programs. In Canada the two levels of government share the cost and responsibility of farm programs. This difference means that in Canada the federal government must

negotiate farm programs with provinces. In Quebec the farm programs are very different than in Alberta. This has an important impact on Canada's ability to harmonize farm policy with the United States, and to integrate the two economies. (*Editors note:* the first workshop on grains disputes (1995) provided discussion of this point in the first two papers by Hedley and Gellner, and Knutson).

Canada blocks trade in poultry and dairy products through supply management. Canada has a single desk seller for western wheat and barley while the United States uses the Commodity Credit Corporation (CCC) to implement its grain policy of farm support (Schmitz et al. 1999). It is doubtful that these policies would change much with the WHFTA and thus would limit the potential for increasing agricultural trade. U.S. based processing firms which had branch plants in Canada have used the freer trade environment to consolidate many of their processing plants in the United States in order to capture economies of scope and scale (Romain et al., 1998). They see the North American market as one and are investing accordingly. In this case the integration of the two economies is much further along than in the production of the raw farm commodities.

POTENTIAL TRADE FLOWS FROM THE WHFTA

The potential for new trade patterns to develop from a WHFTA will depend upon the degree to which the institutional structures of the trading partners are harmonized. The more similar the institutional structure the greater the integration of the economies and therefore the greater the trade flows. This follows because the more harmonization of rules and policies the lower the transaction costs. Lower transactions costs will increase the profit from trade thus encouraging more trade between the countries. The question then is how much can the institutional structures be brought together?

If Canada and the United States are an example, then the potential is limited. Even with the large number of similarities between the two countries they have been limited in the process of policy harmonization because of constitutional and cultural differences. As a result of past agreements such as the NAFTA these two economies are moving closer together. Even with the changes that have taken place the institutional differences still cause friction. Any new agreement that hopes to have much impact on trade patterns will have to go at least as far as the NAFTA which may be difficult for the Americas. To achieve an agreement as comprehensive as the EU is almost beyond reach.

CONCLUSIONS

The pattern of trade is very difficult to predict at the start of negotiations. Depending on the type of agreement the potential for new trade flows can be very different. If the WHFTA is aimed at lowering tariffs (and some are still very high)

then there is the potential to increase trade. However it is likely a number of exemptions for developing economies would be made, reducing the increase in trade flows in the near term.

A major point made throughout this paper is that trade agreements alter the institutional structure in a country. The degree or amount of change made to the institutions will have the greater affect on trade flows. We should focus more on the harmonization of institutions if we want to understand the constraints to trade in the Americas.

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SASKATCHEWAN WHEAT POOL/KPMG

S.J. Thompson

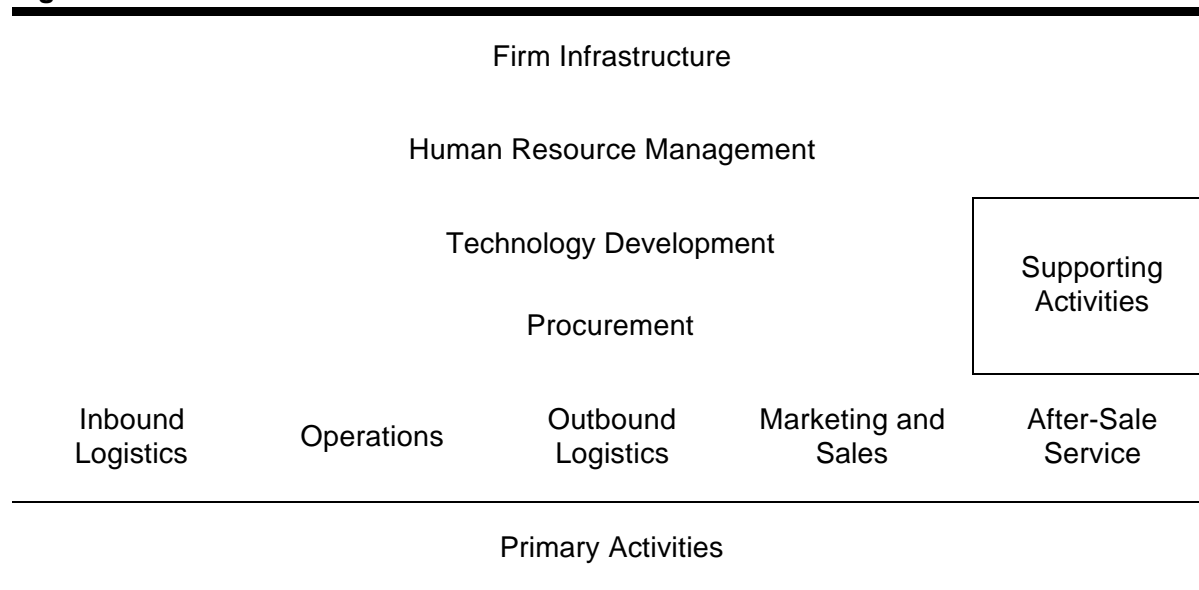
One of the objectives of this workshop is to discuss private sector response to a trade agreement. In the program rationale, the Coordinating Committee stated it this way:

But there is another important area that must also adjust in response to the policy trading environment. That is the micro-economy of decision makers, investors, entrepreneurs and others who fund, bear the risks, and produce, process and distribute the products which will be traded... the private sector. At the superficial level, within the private sector, as competitive conditions change in response to changed rules and terms of trade, there will be "winners" and there will be "losers". But we have learned that the economic system which has evolved within the three countries as trade has increased creates entirely new forces and pressures, as well as new opportunities. Investment, finance, exchange rates, business organization, trading rules, and many other conventions take on new challenges within the private sector.

I have been asked to discuss the implications of a Free Trade Area of the Americas (FTAA) for agriculture and to also provide comments and reactions on the earlier sessions. I will focus on the response of agri-businesses by examining the implications of trade agreements on the value chain of a firm (Figure 1). Trade liberalization and economic growth expands the opportunity set of economic activities available to firms and thus allows firms to re-optimize their value chain.

AGRICULTURE AND FTAA

The intent of the 34 countries in the western hemisphere is to reach a free trade agreement by 2005. There has been some discussion about whether the FTAA (Free Trade Area of the Americas) is meant to be a complement or a substitute for existing trade agreements in the hemisphere such as NAFTA, MERCOSUR, the Andean Pact, CACM, and CARICOM. The intent is to complement and co-exist with the regional trade agreements. Sub-regional trade pacts such as NAFTA and MERCOSUR, regional trade pacts such as FTAA, and the more global WTO are seen to provide distinct but complementary paths to freer trade. Furthermore, agreements such as NAFTA, MERCOSUR, and FTAA are seen as key building blocks to economic integration (Ralda, 1997).

Figure 1: Value Chain

Negotiations are underway in nine separate areas. During the first phase of the negotiations Canada is the lead country and has named Kent Jespersen as the Chair of the Americas Business Forum. The Americas Business Forum will coordinate input from private sector representatives from the 34 countries in the western hemisphere.

What will be the impact of a FTAA on Canada? According to USDA, the largest export gains for agriculture would accrue to Brazil (\$830 million), the Andean countries (\$650 million), Canada (\$480 million) and Argentina (\$350 million) while the largest import increases in agriculture would accrue to the United States (\$830 million), Central America and the Caribbean (\$780 million), and the Andean group (\$580 million). (Burfisher, 1999). The impacts of the integration of the western hemisphere have also been modeled by Diao, Somwaru, and Raney (1998) using a dynamic global general equilibrium model. Their work highlights the importance of the indirect benefits of trade liberalization through investment, productivity gains, and capital flows. It also suggests that although the direct benefits that would accrue to the United States from a FTAA may be small because of its current relative openness, the indirect impacts such as the flow of U.S. capital or direct foreign investment by U.S. firms could be significant. The model also suggests that capital flows either through direct foreign investment or through the demand for U.S. capital replace the flow of U.S. goods over time. Presumably this pattern of economic activity would also apply to Canada.

THE FIRM AND ADJUSTMENT

The ways in which firms adjust to new opportunities from globalization have been extensively discussed by Michael Porter (1994). A firm, according to Porter, is "a collection of discrete but interrelated economic activities - products are assembled, salespeople make sales visits, and orders are processed. These activities involve human resources, physical assets, technologies, routines, and information".

The value chain is a way of decomposing the activities of a firm into supporting and primary activities. The primary activities are: (1) inbound logistics, (2) operations, (3) outbound logistics, (4) marketing and sales, and (5) after-sale service. Support activities include infrastructure such as financing, planning, and investor relations, human resource management, technology development, and procurement. The value chain provides a way to examine the change in opportunities, forces, and pressures that occur as a result of trade agreements and to discuss how firms adjust to these changes.

Firms develop and implement global strategies to gain economies of scale, respond to global market conditions and to efficiently allocate resources. Two distinct strategies are possible. Firms may develop a series of distinct domestic strategies or they may choose to develop an integrated global strategy. The firm's choice will impact the value chain by allowing for different choices in the configuration and coordination of activities of the firm. Trade liberalization and economic growth allow firms an expanded choice set and can add multiple geographic dimensions to the value chain as the firm reconfigures its activities. An evaluation of the new business opportunities may also mean that the firm may withdraw from direct participation in some parts of the chain.

The value chain of an established multi-domestic firm will be quite different from a firm that is just venturing outside its national boundaries. For example, trade liberalization within Latin America has allowed established firms to redesign their business models. The firms have realigned their strategies in response to the expanded opportunity sets within the region. Instead of managing on a country by country basis, business units are combined into regional clusters. The firms have altered their production footprints to take advantage of greater plant specialization, increased intra-region trade, and consolidated operations. The firms have also generally altered their management models. Some of the benefits achieved by these actions include revenue growth, cost reduction, and the ability to attract high quality human resources. Entering firms face different challenges. These firms must determine the potential of the marketplace, develop an entry strategy, and attract and manage human resources. The existence of cultural differences means that partnerships, joint ventures, and alliances may be a better way than a greenfield operation to enter the marketplace (Forteza, 1997).

Going global is not an easy task. Streeter and Bills (1998) have studied the differences in how would be exporters and established apple exporters in the United States viewed the process. Established firms tend to focus on the trade opportunities from the analysis of supply and demand figures. Potential exporters tend to focus on financial risks (a qualified buyers list) and logistics. The established exporters viewed insurance as being a tool to handle logistical and credit risks and were more tolerant of exogenous changes in regulations. Potential exporters were more risk adverse and it was evident that the value chains of these firms were not yet suited to international trade.

As we have seen, logistical gains from liberalization may be significant. Optimizing activities throughout the supply chain can provide revenue growth and reduce costs. A sound credit policy is also important. However, there are many Canadian firms that either don't have or don't implement a credit procedure. To paraphrase the Export Development Corporation of Canada, exports are good but only if you get paid for them.

BURFISHER AND FURTAN

The papers by Burfisher and Furtan provide an excellent discussion of the importance of institutions which provide the rules of the game. Because institutions determine transaction costs, they clearly do impact the choices of firms and thus their configuration, coordination, and profitability. Innovations in institutions that decrease transaction costs reduce the amount of uncertainty that a firm experiences and better decisions regarding resources occur. Furtan's point regarding the relationship between the type of agreement as embodied by the trade-off between institutional sovereignty and institutional integration and the extent of the gains from trade is certainly accurate. Burfisher highlighted some of the institutional innovations that are occurring. The reform of trade policy provides better market access and allows markets to allocate resources more efficiently. Economic growth occurs as this happens.

The second innovation pertained to signals of reputation. Food safety standards and process standards such as ISO9000 allow for freer trade and reduce the risks to both firms and consumers from globalization. The ability of institutions to protect investments by protecting property rights and ensuring contracts are enforceable is extremely important and will significantly influence the actions of firms and governments. The significance of these institutional factors can be seen in recent Russian and Asian financial problems. During the Asian crisis it was clear that many of these nations lacked credible financial rules. The Russian crash of 1998 has certainly altered the investment decisions and sales patterns of agri-businesses.

Innovation by private firms can mitigate some of the risks inherent when institutions lack credibility and create economic returns through collaboration throughout the supply chain. In order to facilitate the development of the food system in the Ukraine, a group of agricultural suppliers such as Monsanto, Case, Dow AgroSciences, DuPont, and the Iowa Export Company in association with the Ukrainian Development Company and the Citizens Network for Foreign Affairs have created the Ukrainian Agricultural Development Company (UADC). UADC is a financial company that allows input suppliers, banks, and commodity traders to share the risk of doing business in the Ukraine by coordinating the financing throughout the supply chain of a commodity (Thompson, 1998).

Governments may also provide innovative solutions to the absence of credible institutions. The Canadian government has taken steps to reduce the risk for Canadian firms investing in Latin America. In 1997, the value of planned and actual Canadian investment in Latin America and the Caribbean was about \$15 billion.

Canada has been signing Foreign Investment Protection Agreements which are bilateral, reciprocal agreements that offer protection for direct foreign investment through legally binding rights and obligations regarding transparency, dispute settlement, national treatment, and fund transfers (Industry Canada and the Department of Foreign Affairs and International Trade, 1998).

EXCHANGE RATES

Exchange rate volatility and financial crisis do impact firms' strategies. To effectively compete in a global economy requires a more sophisticated approach to risk management. Enterprise risk management provides an optimal process to taking risks and is built upon the elements of corporate culture, procedures, and technology. The losses by Baring Bank of \$U.S. 1.5 billion in 1995 and by Orange County of \$U.S. 1.7 billion in 1994 occurred because the cultures of these firms allowed irresponsible behavior. Procedures allow the process of risk management to be systematized. For example, market risk limits explicitly show the amount of excessive risk for any portfolio segment. Technology allows information concerning risk to be collected, processed, analyzed, and utilized (Holton, 1996).

Exchange rates also impact investment activity. Economic theory implies that foreign direct investment and exports may be substitutes for one another. A depreciation in the value of a currency increases exports and reduces the outflow of capital for foreign direct investment. Gopinath, Pick, and Vasavada (1998) have found evidence that supports this for the U.S. food processing industry. The authors caution, however, that complementary relationships between foreign direct investment and exports can also occur because of factors such as intermediate products and technology differences.

CONCLUDING COMMENTS

The final aspects of the value chain impacted by trade liberalization that should not be excluded from our consideration concern the environment, the ethics of the firm, and the growth and development of the firm's employees. Direct participation in another economy can increase a firm's risk because of environmental liability. Firms may also face pressure from shareholders and consumers for its labor practices in its foreign operations regardless of whether the practices were unintentional. Because of cultural differences, firms must decide on what ethical principles it will employ outside its traditional geographic boundaries. In order for a firm to successfully participate in an expanded opportunity set, its employees must develop and display enhanced market competency. These issues all highlight the increased informational requirements in the global economy.

The central issue in adjustment appears to be how to create behavioral change. There are three ways that firms and people (because a firm boils down to people) can deal with change. People can react to change, adapt to change, or create change. The company that I worked for, Saskatchewan Wheat Pool, has undergone amazing changes. Three years ago it was a traditional cooperative. Today it is a publicly traded cooperative. The transformation to a market driven company is not over yet.

The crux of the transformation will be to change behavior, or in the words of this conference, cause adjustment to occur. The agri-business environment has changed. Part of my responsibilities were to enhance the contextual understanding of employees and customers so that adjustment could occur. This was not an easy task. The magnitude of the number of books on the subject of business transformation is a good indicator of the difficulty that firms face in creating change.

Communicating the context is an ongoing process. Showing up once a year to talk about change is not adequate. People have to hear the message over and over again. They also have to be able to discuss/argue/debate the context. This year the grain market is depressed, to say the least. The Canadian grain handling and transportation system is slowly moving to being market driven-- in other words, movement starts with a sale. This situation is still not well understood by either employees or producers. Because these groups don't understand the context, they can't accept closures of facilities or part time service. Consequently, some very senior people were assigned the task of going out and discussing this new context with employees so that the front line employees could talk about it with producers.

This conference has talked extensively about education, communication, and dialogue. By creating the contextual understanding we can achieve greater trade liberalization and the resulting economic benefits.

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STRUCTURAL CHANGE IN MEXICO

Andrés Casco/SAGAR

Mexico underwent a deep structural change during its process of developing a coherent agricultural policy. This change occurred in the framework of the agricultural sector so that Mexico could move ahead toward a more market-oriented economy.

We have dealt with four issues:

- The most obvious was the Macroeconomic Stabilization Program in which Mexico has engaged during the last twelve years.

Basically, the Macroeconomic Stabilization Program stabilizes the three main economic variables, the general price index, interest rates and exchange rates.

- The second area was our legal framework.

We had to go through constitutional changes. For those not familiar with Mexico, we recognize three types of properties in our Constitution: private property, public property and ejidos¹. Although ejidos previously were recognized in our

¹ Previously, common land, owned by the government, but managed by local communities.

Constitution, an ejidatario² could not put the land in collateral for a financial loan. The government would have to offer collateral for the loans to this group. As a consequence, there was a low rate of loan recovery from these producers. In 1991-92, a constitutional amendment was passed. The concept of ejidos property was added to Mexico's constitution and agrarian law was reformed. Presently, the ejidatarios can legally rent or use land for collateral if they go through a small administrative process. We moved to change our seed laws and many different administrative and legal changes whose main aim was to have a framework of certainty in terms of transactions between individuals. This process has not finished. As we move into deregulation of our economy, we have found many things to change and it has become a continuous process.

- Our third issue was trade policy.

Trade policy has been discussed a great deal in this workshop. I will only say that for Mexico, trade policy is an instrument of our whole economic program. We use trade policy to ensure that the rules of the game will not change. If someone in Congress or the Executive Branch wants to change it, they will pay a big price. Certainly the way we settle disputes was extremely important for us.

- The fourth issue was the institutional framework. We deregulated the economy and decentralized decisions.

In the case of the agricultural sector, the federal budget was handled through an office in Mexico City. People there were making decisions which were supposed to have an impact, for example, on a small town in Chiapas. That was ridiculous. We moved the federal budget to the states and created state agricultural commissions where there are representatives of federal and state governments, and producers. The commissions decide the menu of the things which they want supported. Whatever is chosen, they have to allocate the money (30 percent state, 30 percent federal and 30 percent producers). The producers decide the menu and what is chosen from it. The federal government is basically looking after the development of the programs as well as auditing where the money goes.

CHANGING ROLE OF GOVERNMENT

The role of government has changed dramatically in Mexican agriculture. We have created new rules of the game. We now audit government expenditures. We are also trying to fill the holes which were left by government moving out of economic activities.

For the last year, I have been working on how to decentralize the marketing system in Mexico. That deals with privatization of our warehouse system and elimination of our state trading firm CONASUPO. In the privatization of our warehouse system, I believe that we did it textbook-style. When we wanted to eliminate CONASUPO what we faced was opposition, not from the producers, but

² A farmer who farms a ejido.

from trade leaders. These leaders had captured considerable rents from the existence of a state firm. Also, state governments were concerned, because with CONASUPO, they had never had to worry about what would happen if they had excess supplies of commodities. Previously, CONASUPO would step in and buy their inventories.

We are currently trying to respond to many different situations which have arisen due to the elimination of CONASUPO. Examples include:

- The arbitration of contracts in terms of standards, quality of the programs, and enforcement of contracts that were guaranteed by CONASUPO.

Without CONASUPO, using maize as an example (yellow #2 corn in the United States), when we phased out CONASUPO in January of 1999, producer prices began to distinguish by quality. The price of yellow maize decreased and the price of white maize increased. The prices of Mexican red, blue and black maize skyrocketed because of niche markets.

Also, when CONASUPO was phased out, we received a number of calls from traders about the rules of the game. We stepped in with FIRA-Banco de Mexico, a second-level financial institution, to put 40 percent guarantees on the loans for financing inventories (marketing loans). Enforcement of the contracts will mean that the lender will lose 60 percent, and the government will lose 40 percent, if those contracts were not fulfilled.

We have handled beans, the other staple which is marketed through government, in a similar manner. We put a guarantee in the contract among private traders and producers.

The last commodity we have had on our hands is powdered milk. Powdered milk has been a big problem. We have trade agreements and have signed some compromises in WTO. We have agreements with the United States about quotas. Also, our producers have invested in the milk industry for the last five years. We have to do something which was economically reasonable, as well as, legally possible. Since we had a quota, CONASUPO was the only buyer of powdered milk and we divided the market. It is a segmented market, with 150 firms registered for the quotas. Five firms have 75 percent share of the market for powdered milk. We have a social program in the hands of a company called LICONSA, which buys close to 100,000 pounds of powdered milk a year. We asked LICONSA to go to the market. We then segmented the market and assigned a certain amount of the historic purchasing power of firms. We know on the margin, part of the demand of these firms. The rest of the demand, which is unknown, will be fulfilled through an auction system on the margin. The information of the auction system on the margin will allow us information that will be added to information in the next auction. We will start building the little points of the demand. With that we will adjust the quantities of the quotas. It is something which is being discussed with the United States and Canada. I believe that it fulfills WTO compromises as well as our trade agreements. It will be a nice way for the government to step out of these markets.

SECTOR POLICY

The last issue is sector policy. This basically deals with two things: the organization of producer organizations and the government instruments of support. There is a saying in Mexico.... "Agriculture is organized for the votes, not for economic reasons." That was the reasoning of our Minister of Agriculture about 20 years ago. Some politicians would like to continue with that, but I do not think that they can continue. Producer organizations basically respond to corporate decisions. The rules of the game have changed and producer organizations have to change as well.

We are moving toward designing our rural development law. This law will put more emphasis on producer organizations for economic reasons and allow them to build instruments of support that help them to live in this world with new rules. When we eliminated guaranteed prices, we had to put in an income support program. The first idea of the income support program was to compensate the losses due to the diminished prices. The second idea was to allow the producers to have access through the income support program to credit. We have not done the second part. The idea was that producers in PROCAMPO, the income support program, could use the net present value of the flow of income payments as collateral today for changing activities and investments.

Part of the federal budget that was in programs which coupled returns to production was eliminated. Part of that money went to infrastructure through the Temporal Employment Program (TEP). TEP basically puts that money which was in programs linked to production into programs which share in the cost of infrastructure (rural roads, small dams, etc).

We also have a program called Alliance (*Alianza para el campo*). It is named Alliance because we want to bring everybody together to share ideas and instruments. Alliance provides 30 percent of the cost of the program from federal money as long as the producers and states put in the remainder. In programs which deal with seeds, for example, we exchange indigenous seeds with certified seeds to improve yields. We also have a popular program which relates to the development of infrastructure that captures the runoff on producer dryland.

The basic idea of all of this is the elimination of all of the programs which dealt with production or the decision to produce, and replacement by a more market-orientated system. In this transition, producers do not have complete information. The role of government here is to try to assist them with the uncertainties which are in the new system so that they can make better decisions. We are trying to move that information to producers, with the assistance of the United States and Canada.

The response from producers is that we are doing things too quickly, and that they are in a world with more uncertainty. Those who are benefitting are not speaking out, and those who are losing are filling the newspapers everyday. We think that we are on the right track.

ISSUES AFFECTING LATIN AMERICAN AGRICULTURE AND FUTURE TRADE NEGOTIATIONS³

Eugenio Diaz-Bonilla, IFPRI

BACKGROUND

Agriculture and agro-industry are central components for the economies of Latin America and the Caribbean (LAC). Currently they account for approximately 25 percent of the regional GDP, and for the primary agricultural sector alone, about 10 percent. For several countries such as Guatemala, Guyana, Haiti, Honduras, Nicaragua and Paraguay, just the primary agricultural sector represents more than 20 percent of the GDP; in others such as Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Panama and Suriname, that participation is between 10 percent and 20 percent. In terms of employment, the primary agricultural sector represents more than 25 percent of total employment, with several countries showing greater participation: Belize (33 percent), Bolivia (47 percent), Ecuador (33 percent), El Salvador (36 percent), Guatemala (52 percent), Haiti (67 percent), Honduras (about 40 percent), Paraguay (39 percent), and Peru (36 percent).

Agriculture also has a large multiplier effect (i.e., how many dollars of activity in the rest of the economy are created by an additional dollar in agricultural activity), which has been calculated as about 4. Also, poverty issues and agriculture are related in Latin America. About 35 percent of rural population is poor while only 15 percent of urban population falls under that category (but the total number of poor in urban areas is larger than in rural areas because a large percentage of the population lives in cities in LAC). Rural poverty is related to the existence of very small farms and lack of investment in human capital and infrastructure. There are a large number of small producers, many of whom are under the level of what could be called a family farm: out of 17 million producers in LAC, about 15.7 million have less than 3 hectares.

At the same time, LAC is a large reservoir of natural resources. LAC has only 8 percent of world population but it has 23 percent of potential arable land, 46 percent of tropical forests, and 31 percent of fresh water. However, about 210 million hectares (14 percent of the productive area) show moderate to severe erosion. This problem is in part linked to poverty and lack of productive opportunities.

Obviously the performance of the agricultural sector is crucial to sustainable development in Latin America and it is linked to poverty and environmental issues. It is important to remember these facts in trade negotiations.

³ These remarks are based mainly on Diaz-Bonilla, 1999 and Diaz-Bonilla and Reza, 1999.

PRODUCTION

The pattern of agricultural production growth has not been uniform during the last 25 years. During the 1970s there was a distinct acceleration in agricultural production in LAC as high world prices fueled the expansion of exportable and import-substitution agricultural products and strong domestic demand sustained those products that were non-traded goods. Although the agricultural sector and rural areas were affected by a policy strategy biased toward the industrial sector and urban areas, supportive world markets and domestic income growth appear to have been enough to generate comparatively higher growth rates in the agricultural sector of LAC.

During the 1980s world and domestic conditions for the agricultural sector of LAC changed substantially. Devaluation of exchange rates and progressive advance of trade liberalization removed at least part of the policy bias indicated. Real exchange rates (defined as the price of tradable over non tradeable) increased in many countries in the region, favoring export and import substitution agricultural productions. However, reductions in government expenditures in infrastructure and technology, as well as the elimination of marketing and price support programs that were benefitting some specific crops and livestock products in certain countries, tended to affect supply negatively. Also the higher cost of imported inputs (as a result of devaluation), and the reduction of credit to agriculture by the public and private banking sectors (partially linked to macroeconomic stabilization programs), had a negative impact on agricultural production. Slow down in domestic demand affected livestock and dairy production because they are dependent on domestic consumption. The crisis of the industrial sector carried over to some agricultural raw materials, and the weakness in world markets hit exportable agricultural goods hard and made it difficult for LAC governments to continue the support of some import-substitution products, such as wheat in Brazil and Chile.

As a result of this combination of positive and negative conditions, agriculture fared better than the rest of the economy during the harsh decade of the 1980s and continued to grow albeit at lower rates than before. In the 1990s, after a slow start due to the continuation of low growth at the world level and in the region, LAC's agricultural production picked up again, at least until 1998. The full impact of the financial crises that began in 1997 in Asia is still to be seen.

TRADE

Agricultural trade is very important in Latin America. There are many countries where agricultural trade still makes up more than 50 percent of exports. In the 1960s, Latin America exported 7 dollars for every dollar of imports. Now, Latin America exports somewhat less than 2 dollars for every dollar of imports, which makes the region still a large net exporter of agricultural products.

The structure of agricultural exports in Latin American has changed over time. In the 1960s, Latin America was a cocoa, coffee and sugar exporter (these products represented more than 60 percent of all agricultural exports). In the last two decades,

however, there have been important changes in the structure of exports with the increase in oilseeds, and fruits and vegetables. Oilseeds and their products went from 3-4 percent in the 1970s, to about 20 percent of all agricultural exports in the late 1990s. Fruits and vegetables jumped from about 7 percent in the 1970s, to close to 30 percent of all agricultural exports today. In terms of trade negotiations these products pose different questions compared to the traditional tropical products, but they also differ somewhat from those raised by cereals. For instance, expansion of trade in fruits and vegetables may be more linked to Sanitary and Phytosanitary issues, rather than export subsidies.

An important characteristic of agricultural trade (and, in fact, of all international trade) in the region, is the steady increase in the share of intra-regional commerce, which, for the Americas (including the United States and Canada), moved from a quarter of total agricultural exports in 1981-83, to more than a third by mid-1990s. Among LAC countries Brazil is the less dependent on the region for its agricultural exports and imports, while Mexico appears on the other extreme of the spectrum. Other countries with greater diversification in the destination of exports and the source of imports of agricultural products and food are Argentina, Chile, Peru and, to a lesser extent Uruguay and Colombia.

Regional pacts have had an impact on the trade flows of their respective members. Clear cases are Mexico with regard to NAFTA and Uruguay, Paraguay and (to a lesser extent) Argentina with respect to MERCOSUR. But, for obvious reasons, NAFTA also has a strong presence in the trade flows of non member countries in the region, including Brazil.

All in all, the process of trade liberalization that has taken place in the region and the implementation of trade agreements have fostered agricultural trade. This has led to larger coefficients of internationalization, measured as exports over production and imports over consumption, for a variety of agricultural products, indicating a larger exposure of LAC's agricultural sector to world markets.

Within the region, different markets have been developing, each one with its own characteristics. For instance, LAC as a whole is a net importer of grains, creating a market where, within the region, Canada, the United States and Argentina compete, and the functioning of those markets are determined by the rules of NAFTA, MERCOSUR or other sub-regional trade pacts. There is also a market for oilseeds and vegetable oil where the United States, Argentina, Brazil and sometimes Canada, may be competing for market share in countries like Venezuela or Mexico. This competition is also influenced by regional trade pacts. Similarly, there is a very complex pattern of trade flows in fruits and vegetables, meat, dairy and other products, depending on different factors such as the time of the year (in fruits and vegetables), the regional trade pacts and agricultural policies in different countries.

In general, the evolution of trade flows will depend on trade and agricultural policies in the Americas and elsewhere, which, in turn will be influenced by different multilateral, regional and bilateral agreements that will result from the complex

negotiations ahead. These negotiations include the continuation of the process initiated during the Uruguay Round, and, for the countries of the region, the possibility of creating a Free Trade Area of the Americas, as well as extraregional negotiations such as the participation of NAFTA countries and Chile within APEC, and the discussions between MERCOSUR and the European Union.

THE MACROECONOMIC SITUATION

Though agricultural and trade policies are very important to define trade patterns, it is obvious that the latter are increasingly being influenced by macroeconomic developments and by the flows of capital that change with macroeconomic policies and conditions. Treating the balance of payments as an accounting identity, the current account (mainly the trade account including non-factor services plus payments for factor services) has to be equal to the capital account and the change in foreign reserves. Trade negotiations are concerned with the trade component (including non factor services) of the balance of payments. Currently, however, what is driving much of the dynamics of the trade balance is the capital account. When capital is flowing in, there is an acceleration of growth with multiplier effects in the economy, and usually a trade deficit emerges due to price and income effects. When capital leaves a country the process works in reverse and the trade deficit disappears (or it changes into a trade surplus). Whatever has been negotiated on the trade side may be overwhelmed by developments taking place at the level of macroeconomic variables and capital flows. Consequently, macroeconomic policies, including the issue of macroeconomic coordination, may become more important in trade negotiations over time.

POLITICAL ECONOMY OF NEGOTIATIONS

The political environment of future WTO negotiations, or for the creation of a Free Trade Area of the Americas, is going to be different from the one that prevailed in the Uruguay Round. From the point of view of the United States, while the focus in the previous round was on grain and oilseeds, future negotiations may center increasingly on more difficult products such as sugar, peanuts, citrus, beef and others. While much remains to be done at the level of grains and other products (especially vis-a-vis the European Union) the United States may or may not be in the position of offering leadership in the negotiations depending on the balance of interests within the agricultural sector of those groups that may benefit and those that may not.

In Latin America, the dynamics for trade negotiations may depend on the efforts of Brazil to put together a South American bloc to enable it to negotiate with the United States one-on-one. The negotiations between MERCOSUR and the Andean Pact to create a South American free trade region are well advanced. On the other hand, the convergence of economic recessions in Brazil and Argentina are creating tensions within MERCOSUR, which although not threatening to break the trade pact, complicate the possibility of developing common negotiating positions in

the region. At the same time, there are attempts to create a free trade area between MERCOSUR and the European Union, which will most certainly be postponed until the WTO negotiations are finished.

The evolution of those national and international coalitions of interests will define the shape of the future trade negotiations in agriculture within the Continent and at the world level.

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ECONOMIC ADJUSTMENT IN CHILE

Roy Rogers, Ministry of Agriculture, Chile

In discussing economic adjustment in Chile, it is important to know a little about Chile's recent history and performance. Chile is a small country with a small economy, endowed with very limited resources. It is far from markets and isolated. It has a very heterogeneous topography, climate and ecological area. It is also a solitary island surrounded by natural frontiers--the Andes on the east, a huge desert on the north, the Pacific Ocean on the west and islands on the south. Chile had a president at the end of the last century who said, "Chile is such a small country with so many problems, why don't we sell it and buy something closer to Paris."

The farm structure in Chile is very diverse. There are about 150,000 small farmers. Of those, about 20,000 are integrated and comprise what is really Chilean agriculture. Chile is trying to convert all of its disadvantages into comparative advantages. Sometimes it is said that Chile has undergone a miracle. I believe that there have been no miracles in Chile. Chile has been a guinea pig of every type of economic theory and strategy and we have learned our lesson.

Chile started its development in agriculture during the late-1950s and the 1960s. There was cooperation between the government and the state of California so that students could study infrastructure planning and receive human resources training (the Chile/California Plan). Many young professionals went to study at California universities.

In the 1970s, Chile began looking for a new strategy. It had a very orthodox period of quick liberalization of the economy and structural change. There was no sector policy. As a result, Chile faced the 1982 crisis with a drop of 14 percent of our GDP, and a balance of payments crisis.

During the 1980s, Chile returned to more pragmatic macroeconomic policy, as well as redefining the sector's policy approach. Chile adopted price bands, special credit schemes and attention was focalized on small farmers (positive real interest rate, but subsidized credit). Technical assistance to agriculture was also increased. Because of this package, the agricultural sector led the country in its economic recovery and agricultural production expanded at a rate of 7 percent between 1983 and 1989. Fruit exports boomed. During this period, Chile began a reforestation plan and the wine industry modernized.

In the 1990s, the democratic government mainlined the positive economic framework and introduced changes directed toward alleviating poverty and protection of the natural resources. Also, a decision was made to consolidate our liberalization strategy (opening up the economy). Agriculture was fully incorporated into this strategy. Also, during this period, there was oversupply in many of our internal markets, which is very dangerous for a small economy.

Chile began looking to trade agreements and negotiations to extend opening of the economy, initially through unilateral and regional agreements:

- an FTA with Mexico in 1991 to increase exports of fresh and processed fruit and pulp;
- an FTA with Venezuela in 1993 to increase apples, beans and industrialized agriculture produces such as tomato sauce and wine;
- an FTA with Colombia in 1993 to increase in fresh fruits, tomato sauce, and canned peaches;
- an FTA with Ecuador in 1995;
- an agreement with Bolivia in 1993 which was without tariff reduction, but provided preferences;
- an agreement with MERCOSUR in 1996;
- membership in APEC in 1996;

- an agreement with the European Union in 1996 (frame agreement for cooperation);
- FTA with Canada in 1997; and

Chile is now working on agreements with Central America and Panama.

Presently, on average more than 95 percent of our agricultural exports (in value terms) to Mexico, Venezuela, Colombia, Ecuador and Canada face no tariffs in the short and medium time period. For example, only 48 percent of exports to MERCOSUR face no tariffs. Chile decided to step forward towards greater liberalization last year, and Congress approved a new leveled reduction on our external tariff by 1 point for 3 years and 2 points in 2002, taking our common tariff to 6 percent.

THE RESULTS

Free trade and trade negotiations have been favourable for Chile. Total agricultural production increased during the 1990-96 period at about 4.5 percent even though there have been very severe droughts in Chile. There has been a significant increase in productivity. In wheat, for instance, there has been an increase of 300 percent in yields in the last twenty years. The current national average yield for wheat is 3.8 tons per hectare. The corn yield is 9.1 tonnes per hectare. The sugar beet yield is over 50 tonnes per hectare. Chile has done very well even though some of these crops are not very competitive abroad.

Total agriculture exports doubled between 1990 and 1997, reaching 4.7 billion dollars. This represents about 12 percent value growth during the period 1990-97, of which approximately 35 percent are forestry exports, 42 percent are agri-industrial exports and 25 percent are fresh fruits and vegetables. Wine exports increased from U.S. \$150 million in 1990 to U.S. \$450 million today.

There is a great diversification in terms of products and destiny markets:

- NAFTA represents 26 percent, Asia 26 percent, European Union 20 percent.
- MERCOSUR represents 12 percent.
- There are more than 500 products shipped to 130 markets.

The agricultural trade balance has been positive, growing from 1.6 billion in 1990 to 3.0 billion dollars in 1997. Rural poverty has been reduced from 51.5 percent in 1987 to 30.5 percent in 1996.

Currently, our strategy is to switch from commodities to delicatessens. Chile wants to offer more opportunities to our small farmers. We intend to produce more labor and technology intensive crops. We will pay attention to nutritional and safety issues while providing environmentally friendly production. We want to have consistent quality and to develop safeguard mechanisms.

Our policy framework, in a nutshell, is attempting to improve our assets which include irrigation, sanitary conditions, fertility recovery, and reforestation. We also will strive to improve our farmers' capabilities using technology and management transference. We want to change our farmers into entrepreneurs.

FTAA

After our failed efforts to get into NAFTA, the FTAA seems to be an initiative to support. Tariffs, though, are not a big issue for Chile because of tax escalation. Our main issues are sanitary and phytosanitary restrictions, dispute over resolution mechanisms, investment, technical regulations and standards, and cheaper imports (particularly inputs for agriculture). The FTAA will be used to put pressure on the EU. The main efforts should be placed on the involvement of as many countries as possible in the WTO negotiations to counter the EU. This is true particularly of small economies, such as the Caribbean and African countries.

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Other Workshop Publications

- 1995 — *UNDERSTANDING CANADA/UNITED STATES GRAIN DISPUTES.***
R.M.A. Loyns, Ronald D. Knutson, Karl Meilke (editors). University of Manitoba, Texas A&M University, University of Guelph. April.
- 1996 — *UNDERSTANDING CANADA/UNITED STATES DAIRY DISPUTES.***
R.M.A. Loyns, Karl Meilke, Ronald D. Knutson (editors). University of Manitoba, University of Guelph, Texas A&M University. December.
- 1997 — *HARMONIZATION/CONVERGENCE/COMPATIBILITY IN AGRICULTURE AND AGRI-FOOD POLICY: CANADA, UNITED STATES AND MEXICO.***
R.M.A. Loyns, Ronald D. Knutson, Karl Meilke, Daniel Sumner (editors). University of Manitoba, Texas A&M University, University of Guelph, University of California (Davis). October.
- 1998 — *ECONOMIC HARMONIZATION IN THE CANADIAN/U.S./MEXICAN GRAIN-LIVESTOCK SUBSECTOR.*** R.M.A. Loyns, Ronald D. Knutson, Karl Meilke (editors). Texas A&M University and University of Guelph. December.

These publications and early releases are on Farm Foundation's web site:

www.farmfoundation.org

This is the fifth in a series of annual workshop proceedings designed to produce economic analysis and information on Mexico/United States/Canada trade and policy issues in their agricultural/agri-food industries. The workshops are conducted with the objective of contributing to reduction of trade and policy disputes within the NAFTA countries through improved understanding of market structure, government policy, and trade flows. The 1999 workshop focused on private sector adjustment in the face of a new trading environment.

This workshop, held in Mexico in March, was attended by academic and government economists, and industry and interest group representatives. The publication consists of ten original papers and sixteen discussion comments. The overall theme of the workshop series is reflected in analysis of investment and risk management strategies, commodity market development, growth of alliances, and evolution of the truck and rail systems within NAFTA. One paper presents detailed research results on policy impacts on small farmers in Mexico (the *ejidatarios*). An important contribution of the proceedings is two papers which analyze exchange rate effects on trade. The last section of the book considers extension of trade cooperation into a western hemi-spheric trade agreement.

The publication is intended for readers with a general interest in the North American agricultural and food sector, and effects of trade agreements on private sector adjustment resulting from trade agreements. The material is also intended to be relevant to decision makers at all levels of the food chain to inform on economic relationships and market reality as a means to reducing trade and policy stress.

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