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Maquiladoras and NAFTA: The Economics of U.S.-Mexico Production Sharing and Trade

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Summary

Debate continues over the benefits of U.S. trade with Mexico, the North American Free Trade Agreement (NAFTA), and particularly maquiladoras, or cross-border production sharing plants. Maquiladoras generate a large portion of U.S.-Mexico trade, yet the economic effects are not widely understood. Many believe there is no benefit to such trade because it leads to the loss of U.S. jobs, production, and wages. Maquiladora products, however, have a high U.S. content that in addition to fostering productivity gains in both countries, may actually minimize the loss of U.S. jobs by allowing the higher paying jobs to stay at home rather than be shipped entirely abroad, for example, to Asia. Still, adjustment to globalized production creates challenges, particularly in addressing the plight of low-skilled workers who become unemployed. Research, however, continues to point to domestic rather than trade policy for the likely solutions, particularly the emphasis on education and training programs.

Mexico is the United States' third largest trading partner, accounting for 9% of U.S. world trade. The significance of these figures, however, rests not so much on the trade itself, but on the long-term economic integration that it reflects. The maquiladora program emerged in the 1960s to encourage such integration, a theme that was further embraced and broadened three decades later with passage of the North American Free Trade Agreement (NAFTA). Critics contend that both arrangements hurt the U.S. economy because they encourage businesses and jobs to migrate south of the border.¹ This report examines the economics of maquiladoras, NAFTA, and deepening integration between the United States and Mexico, particularly the effects and implications of production sharing.²

¹ For a current example of this thinking, see: The Economic Policy Institute, et. al. *The Failed Experiment: NAFTA at Three Years*. June 26, 1997. pp. 3-6.

² For a broader discussion of U.S. trade with Mexico, see: U.S. Library of Congress. Congressional Research Service. *NAFTA, Mexican Trade Policy, and U.S.-Mexico Trade: A Longer Term Perspective*. CRS Report 97-811 E, by (name redacted).

Production Sharing and U.S.-Mexico Trade

When a good is manufactured by firms in more than one country, it is known as production sharing, an arrangement that among other things, leads to trade within industry groups. Governments can encourage production sharing by giving preferential customs treatment to the trade that it generates. With respect to U.S.-Mexico trade, both countries have legislated such preferences. In Mexico, shared production is governed under the *maquiladora* program, a Spanish word in modern use denoting cross-border assembly. It began in 1965 when Mexico decreed that certain imports could enter duty free, provided that once processed or assembled the end products would be exported.

The United States reciprocates under customs heading 9802 of the Harmonized Tariff Schedule (HTS), which allows goods manufactured or assembled in foreign plants using U.S. parts to be imported with tariffs applied only on the value added abroad. These provisions are used by firms in many countries, particularly in the Caribbean and Southeast Asia, and cover various types of products such as automobiles, apparel, and semiconductors. The total value of HTS 9802 imports in 1996 was \$67.5 billion or 9% of total U.S. imports, although the percentage of production-shared imports may be as high as 15% because many from Canada and Mexico come in under NAFTA provisions and so are not counted under the 9802 heading.³

Mexico is the major source of U.S. production-shared trade, accounting for 41% of total HTS 9802 imports in 1996, and 62% of those imports from developing countries. As seen in table 1, the amount of U.S. HTS 9802 *exports* rose from 21.8% of total exports to Mexico in 1991 to 28.1% in 1996. Over the same time period, the amount of HTS 9802 *imports* fell from 47.1% to 37.6% of total Mexican imports. This decrease, however, presents an inaccurate picture because, as mentioned above, there is no way to track production-shared imports that enter the United States under NAFTA provisions. Other indicators suggest that production-shared imports are still growing despite a decreasing ability to quantify them.⁴

Maquiladoras clearly have prospered under these incentives. In 1975, they employed 67,214 workers in 454 plants producing \$1 billion worth of goods. By 1996, there were 754,858 employees in 2,411 plants with a total production of \$35 billion. Investment is heavily dominated by U.S. businesses, but Asian and European interest is growing. Of the total registered maquiladoras in 1995, 43% were wholly owned by Mexican interests, 38% by U.S. parties, and 14% by Mexican-U.S. partnerships. Most of the Mexican-owned plants, however, were under contract with U.S. firms. Approximately 2% came under Japanese ownership and 3% were owned by other foreign interests.⁵

³ U.S. International Trade Commission (USITC). *Production Sharing: Use of U.S. Components and Materials in Foreign Assembly Operations, 1993-1996*. Washington, DC, Publication No. 3077, December 1997. p. 1-7.

⁴ *Ibid*, pp. 1-7, 2-6, and B-6.

⁵ Federal Reserve Bank of Dallas. El Paso Branch. Research Department. Memorandum dated May 29, 1997 and The Maquiladora Industry: Still Going Strong (Part 2). *Business Frontier*. Issue 4, 1996, both by Lucinda Vargas; and USITC, *ibid*, p. 4-1.

Table 1. Total and HTS 9802 U.S.-Mexico Trade, 1991-96 (\$ millions or percent)

	1991	1992	1993	1994	1995	1996
Total Exports to Mexico	33,276	40,597	41,635	50,840	46,401	56,761
9802 Exports % of Total	21.8	21.9	24.6	23.6	28.6	28.1
Total Imports from Mexico	31,194	35,184	38,668	48,605	61,721	74,179
9802 Imports % of Total	47.1	48.6	49.1	47.5	40.4	37.6
U.S. Content % of 9802 Imports	50.6	52.7	52.1	50.3	51.4	52.0

Source: USITC, *The Impact of the North American Free Trade Agreement on the U.S. Economy and Industries: A Three-Year Review*. Publication 3045, Washington, D.C., June 1997. p. 3-31 and *Production Sharing, 1993-1996*, December 1997, pp. 2-2 and B-6.

The three largest maquiladora industry sectors are transportation equipment, textiles and apparel, and electronics. Transportation equipment includes U.S. imports of motor vehicles as well as related equipment, components, and parts such as internal combustion engines, ignition wiring harnesses, and other smaller parts (bumpers, brakes, radiators, etc.) Transportation equipment is produced largely by subsidiaries of the U.S. Big Three automobile manufacturers.⁶

Textiles and apparel is a highly competitive industry group, with Mexico and many Caribbean countries vying for U.S. market share of imports assembled from U.S. components. NAFTA, however, has tilted the relationship away from Caribbean countries toward Mexico so that sewn apparel is now among the fastest growing maquiladora sectors. Mexican assembled electronic components, by contrast, compete with those made in Malaysia, Korea, and the Phillipines. This sector involves numerous goods from semiconductors to television parts; Mexico dominates the latter category, Southeast Asia the first.⁷

Although Mexico is not alone in production sharing with the United States, *importantly*, its production-shared imports have a high percentage of U.S. content. Data since 1991 show that U.S. content represented slightly over half of the total value of maquiladora imports (see table 1). In addition, Mexican HTS imports constitute 61% of the dollar value of U.S. content entering under the HTS program from all over the world. The second highest level is a distant 5.7% of goods brought in from the Dominican Republic.⁸ Maquiladoras, *therefore*, because they rely heavily on U.S. suppliers, support the U.S. economy more than production sharing arrangements with all other countries.

⁶ For a detailed discussion on the automobile trade, see: U.S. Library of Congress. Congressional Research Service. *The Automobile and Parts Industry Under NAFTA*. CRSReport 97-887 E, by Pamela Madrid, (name redacted), and Gwenell L. Bass. pp. 13-15 and 36-38.

⁷ USITC, op. cit., pp. iii, 2-6, 2-8, 2-13, 2-20, and 3-4.

⁸ Ibid, p. B-6.

NAFTA, however, is altering the maquiladora relationship in two important ways. First, more bilateral trade is occurring under NAFTA because: 1) NAFTA is formally phasing out the maquiladora program, which will end on January 1, 2001;⁹ and 2) NAFTA provisions are less cumbersome than dealing with the HTS 9802 program. Elimination of the maquiladora program provides another benefit to U.S. firms operating in Mexico by allowing their products easier access to the local market.

Second, NAFTA is attracting non-U.S. foreign investment to Mexico (mostly Asian) as a way to access the U.S. market. Foreign producers in Mexico benefit from: 1) NAFTA's rules of origin (which raise tariffs on traded goods that do not have a certain percentage of NAFTA country content); 2) the 1994 peso devaluation (which further lowered the cost of labor in Mexico); and 3) Mexico's proximity to the U.S. (as both a supplier and final product market).¹⁰ For these reasons, it is critical to understand the economic incentives that drive production sharing, as well as the tradeoffs involved.

The Economics of Production-Shared Trade

The benefits of trade between two countries is perhaps best understood when it involves different goods. The United States does not grow bananas and Honduras does not make airplanes, which leads to trade. Even when two countries can produce like goods, they tend to trade for the final products that the other produces relatively more efficiently, which is the concept of comparative advantage. Finally, when production within industries and firms takes place in different countries, the intra-industry trade reflects the economic integration taking place.

Because countries are exporting and importing similar products, questions arise over how to measure the benefits of this type of trade. A common, but erroneous, notion suggests that such trade amounts to no net gain; the United States is simply drawing even (or losing) by exporting and importing the same goods and in the process also exporting jobs to Mexico. Apparently counterintuitive is the idea that such intra-industry trade is exactly the type of exchange to be expected from economic integration and was, in fact, the goal of policies put in place since the 1960s, such as the maquiladora program in Mexico or U.S.-Canada auto trade agreement.

Firms engage in production sharing to reduce costs, increase efficiency, and remain competitive in the global economy, and how they accomplish these goals determines the type of intra-industry trade that takes place. Firms can reduce costs by undertaking what economists refer to as "rationalizing production," where savings are first realized by using specialized plants that engage in one stage of the production process or in one particular product. Second, specialization leads to economies of scale and additional cost savings. Third, close geographic proximity minimizes transportation costs thereby encouraging border trade. These types of cost reductions promote intra-industry trade with Canada and Mexico in sophisticated products such as automobiles and parts.

⁹ *North American Free Trade Agreement Between the Government of the United States of America, the Government of Canada, and the Government of Mexico*. 1993. Annex I - Mexico, p. I-M-34.

¹⁰ USITC, op. cit., pp. 2-4 and 2-5.

Much U.S.-Mexico production sharing and trade, however, is explained by traditional trade theory that emphasizes relative factor costs (capital and labor). Mexico has a comparative advantage in low-wage labor, which allows the two countries to specialize in different stages of production that have different input mixes. Generally, lower wage economies, such as Mexico, inherit certain industry segments (assembly), while more developed economies, like the United States, remain competitive producing in other segments (specialized inputs or more sophisticated downstream production) consistent with their relative abundance of capital, technology, and high skilled workers.¹¹ This is in keeping with economic development patterns nationally and worldwide. For example, this explains the migration of textile manufacturing in the United States from New England to the South that began in the 1920s. Internationally, the same incentives now drive the movement of similar U.S. low-wage jobs abroad.

In fact, production sharing arrangements exist all over the world based on relative labor costs and are further nurtured by trade agreements and other government policies (e.g., HTS 9802). U.S. firms have affiliate arrangements in Southeast Asia and the Caribbean, Japan coproduces many goods in Southeast Asian countries, and the European Union shares production among its member countries.¹² Additionally, investment by Asian firms in Mexico has been growing to improve their position in the NAFTA market. As with U.S. firms, Asian investment in Mexican production facilities may actually increase use of U.S. inputs compared to similar investment made in Asia.

Production Sharing: Tradeoffs and Adjustment in the U.S. Economy

Although maquiladoras will fade away under NAFTA as a separate and privileged sector of U.S.-Mexico trade, production sharing will not. It will likely increase, indicative of the trend toward globalized production that transcends the maquiladora program, NAFTA, and U.S.-Mexico trade. This trend points to a world in which production arrangements create partnerships across national boundaries that previously were made within countries. Measuring imports and exports within industry groups may even give a false sense of competition where complementary relationships exist. Economists believe this fosters increased productivity, faster economic growth, and ultimately higher standards of living.

Despite the benefits for the world as a whole, it is also widely accepted that globalization presents “challenges” as well as “opportunities”¹³ because industry adjustments do not lead to gains that are distributed evenly either among countries or within them. Concerns over these challenges thrive in the United States, where many argue that production and trade from maquiladoras have resulted in lost jobs and falling wages, particularly in such industries as textiles. Indeed, production shifts to Mexico have shown up in the trade data, with textile mill imports (mostly knitted products) rising 247% from 1993 to 1996, whereas textile mill exports to Mexico (mostly fabrics) climbed by only 75%.

¹¹ For a textbook discussion, see: Brown, Wilson B. and Jan S. Hogendorn. *International Economics: Theory and Context*. Reading, Addison-Wesley Publishing Co., 1994. pp. 69-70.

¹² USITC, op. cit., p. 1-11 and Weintraub, Sidney. *NAFTA at Three: A Progress Report*. Washington, D.C., Center for Strategic and International Studies, 1997. pp. 34-39.

¹³ International Monetary Fund. *World Economic Outlook*. May 1997. pp. 45-47.

The trend for apparel and finished textile products is similar but less severe, with imports from Mexico rising 91% while U.S. exports increased by 73%.¹⁴

The employment and wage effects implied by these trade data are *not*, however, straight forward. Many of the low-skilled jobs (textile mill and some finished product positions) have moved to Mexico, with U.S. employment in this sector falling by 7-14% from 1993 to 1996. However, the higher-skilled, technology-enhanced textile jobs (mostly in fabrics and finished apparel) have remained in the United States and interestingly, the average wage has increased by 9-12% from 1993 to 1996, with productivity improving some 10%. In short, production sharing with Mexico is credited with minimizing job losses that would have been more severe had the whole process relocated to Asia, which in turn has allowed for a higher average wage for industry employment. Asian investment in Mexico even further supports these U.S. jobs.¹⁵

The textile example demonstrates how economic restructuring based on production sharing can help businesses achieve productivity goals and also lead to retention of relatively higher paying jobs in the United States, even in industries where global competition is fierce. But a critical policy issue remains: how to respond to the lower-skilled workers who have the most difficulty during the adjustment process.¹⁶

Some call for slowing economic integration, including rethinking the U.S. commitment to NAFTA (and free trade in general) to alleviate the adjustment problem. Others believe that those low-skilled workers facing employment problems will not find lasting relief based on any type of barriers to international economic relations. Studies have found that wage stagnation and job losses in this group are, for the most part, not the result of trade, but as noted by the International Monetary Fund, represent a broader trend “driven principally by advances in technology that favor skilled labor.”¹⁷ From this perspective, the solution is to be found in domestic rather than trade policy. The oft-repeated policy suggestions include supporting trade adjustment, first on a short-term basis by helping marginalized members of society to weather economic transition (the social safety net issue) and second, on a more permanent basis, by helping them learn to function in an increasingly competitive global economy (the education and training issue). This emphasis encourages response to, rather than confrontation with, global trends.

¹⁴ USITC. *The Impact of the North American Free Trade Agreement on the U.S. Economy and Industries: A Three-Year Review*. Washington, DC, Publication No. 3045, June 1997. pp. 6-16 and 6-22.

¹⁵ *Ibid*, pp. 6-16, 6-22, 6-27, and 6-28.

¹⁶ For recent anecdotal evidence that communities are adjusting, see: Jeter, John. Midwest Cities Turn NAFTA to Their Advantage. *The Washington Post*, November 29, 1997, p. A6.

¹⁷ IMF, *op. cit.*, p. 58. The macroeconomic literature also supports the role of technology rather than trade as the limiting factor in wage growth of low-skilled workers. For a less technical discussion see: Bhagwati, Jagdish. The Global Economy and American Wages: Fear Not. *The New Republic*, v. 216, May 19, 1997. pp. 36-41.

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