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How Does the North American Free Trade Agreement Affect Central America?

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Boris Segura

NAFTA seems like a very troubling agreement for Central America, especially in apparel and textiles. Losses from NAFTA depend on the economic size of Mexico. Central America can gain from NAFTA provided Mexico is "big enough" to satisfy completely U.S. import demands and Central America can redirect its products from U.S. to Mexican markets.

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Summary findings

Most Central American economies experienced slower growth in the 1980s than in the 1960s and 1970s, trailing far behind the Asian Tigers. Contributing to slow growth were severe external shocks, sizable macroeconomic disturbances, and widespread political instability.

The challenges Central America faces now may be even greater, conclude Leamer, Guerra, Kaufman, and Segura, because of Mexican liberalization, continuing instability of the real exchange rate, low savings rates, and, finally, the North American Free Trade Agreement.

Improvements in per capita income are closely linked with exports to North America of labor-intensive manufactures. Earnings from the export of tropical agricultural products are important, but the Central American labor force is unlikely to earn higher wages unless countries diversify more into manufacturing.

The Asian Tigers began their economic miracle by shifting into such labor-intensive manufactures as apparel and footwear, which they could export to a vast high-wage market. But the U.S. market for such exports is now more crowded and threatens to become more so, with exports from China and other very low-wage countries. With Asian competition hurting Central America's chances, it could be said that wages in Central America are set in Beijing, not in San José.

Leamer, Guerra, Kaufman, and Segura examine the critical drivers of Central America's future competitiveness: economic liberalization, uncertainty about the real exchange rate, distance from key markets, savings rates, and NAFTA. Central American economies have low wage rates, and a considerable locational advantage over Asia in selling in North American markets, especially Mexico. But real exchange rates in Central America are more unpredictable than those in Asian countries.

Central America faces a chicken-and-egg problem. To stabilize its terms of trade, it must expand exports of manufactures. But instability in the terms of trade deters the investments that would lead to expanded exports of manufactures. By greatly increasing Mexico's attractiveness to foreign investors, NAFTA could be the straw that breaks the camel's back, as far as Central America is concerned.

For this reason, the governments of Central America need to do all in their power to increase domestic savings and reduce investment risks. Exchange rate stabilization should be carried out obviously with appropriate macroeconomic policies — but also by encouraging exports of labor-intensive manufactures with appropriate incentives, supporting infrastructure and educational investments. The key conclusion is that the future of Central America rests importantly on exports to Mexico, a market which today is pretty much untapped. Investments in transportation infrastructure that can facilitate this emerging trade are likely to have very large payoffs for the Central American economies.

This paper — a product of the Country Operations Division, Latin America and Caribbean, Country Department II — is a self-standing summary of a longer report (Central America and the North American Free Trade Agreement) commissioned by the department and completed in August 1994. The study was funded by the Bank's Research Support Budget under the research project "Central America and a Liberalized Mexico with and without NAFTA" (RPO 678-73). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sandra Vallimont, room I4-554, extension 37791 (58 pages). May 1995.

Country Department II
Latin America and the Caribbean
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CENTRAL AMERICA AND THE NORTH AMERICAN FREE TRADE AGREEMENT

Edward E. Leamer
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Martin Kaufman
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[1] This working paper is a self-standing summary of a more extensive report (of the same title) commissioned by LA2CO and completed in August 1994.

CENTRAL AMERICA

AND

THE NORTH AMERICAN FREE TRADE AGREEMENT

A. OVERVIEW

1. Most of the Central American economies experienced slow growth during the 1980s in comparison with the two previous decades.[1] Central America has trailed way behind the Asian Tigers including Korea, Taiwan, and Singapore. Among the causes of the slow growth in Central America were severe external shocks (gyrations in the terms of trade, the world business cycle, and altered access to foreign capital), sizable macroeconomic disturbances and widespread political instability. Naturally, Central America looks forward into the twenty-first century with hopes of performance levels greatly improved over the recent past. But the future could well bring greater challenges for a number of reasons including the Mexican liberalization, continuing real exchange rate instability, low savings rates and, finally, the North American Free Trade Agreement (NAFTA).

2. In our view improvements in per capita incomes in Central America have been and will continue to be closely linked with exports of labor-intensive manufactures to North American markets. Although earnings from the export of tropical agricultural products are very important for the region, it is highly unlikely that the Central American labor force can be employed at reasonably high wages if the region does not diversify more into manufacturing.

3. A shift into labor-intensive manufactures at early stages of development is a prominent characteristic of all the successful developing countries in Asia. These countries began their economic miracles by exporting labor-intensive manufactures such as apparel and footwear to a high-wage market that was so vast that it seemed capable of absorbing virtually unlimited quantities of these products without any noticeable affect on the terms of trade. The market to which we allude was the U.S. But the U.S. market for labor-intensive manufactures is now much more crowded with competitors than it once was, and the market threatens to become even more crowded in the future with greatly increased imports from China and other extremely low-wage Asian countries. Asian low-wage countries that are crowded out of the U.S. market may be able to redirect their exports toward high-wage Asian markets in Japan, Korea and Taiwan. These markets could well be the sources of growth for South East Asia in the future as the U.S. was in the past for Japan, Taiwan and Korea. But Central

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[1] Central America includes Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama.

America, for locational and kinship reasons, has no competitive advantages in Asia. Nor is Central America likely to find especially favorable high-wage markets for its labor-intensive manufactures in Europe. Thus the future of Central America seems to rest critically in competing effectively in North American markets for labor-intensive manufactures.

4. With that as our premise, in this document we identify the critical drivers which will affect the competitiveness of Central American exports of labor-intensive manufactures to North America, and we give our assessment of their probable impacts in the future.

5. One driver is **economic liberalization** which is sweeping the globe and adding enormously to the size of the labor force that competes in the internationally integrated economic system. The Mexican liberalization which began in 1985 promises to make Mexico a much tougher competitor for Central American products in the U.S. market. The Chinese partial liberalization has already greatly increased Chinese exports to the U.S., and promises much more to come. The Mexican export mix is to some extent differentiated from the export mix of the low-wage Asian countries, but Central America is going head-to-head against China in exporting apparel to the U.S.

6. Offsetting the increased competition in the U.S. market may be the emergence and growth of new markets elsewhere. In particular, an open and growing Mexico will create new markets for which Central America has very important locational advantages over Asian suppliers. For the same locational reasons, growth in China and other Asian countries is not likely to generate much demand for Central American products. An extremely troubling scenario has Chinese products flooding the North American market with very low-priced goods and thereby greatly diminishing the possibility of economic growth in Central America or in Mexico. For Central America, Asian competition has both a felt and an unfelt effect—the first reducing actual exports to the U.S. and the second reducing future exports to Mexico which would have occurred had there not been the Asian competition. Under this very pessimistic scenario, wages in Central America are set in Beijing, not in San José.

7. A second driver is **real exchange rate uncertainty**. The internationally liquid pool of financial capital is seeking locations on the globe with workforces that can be employed at predictably favorable wage rates. The Central American economies have low wage rates but much more unpredictable real exchange rates than the successful Asian countries. We estimate that the five-year standard error for predicting real exchange rates is about 10 percent in the successful Asian countries but about 25 percent in most Central American countries. This real exchange rate uncertainty closely parallels uncertainty in the terms of trade. The five-year standard error of the terms of trade in Central America is about 20 percent compared with only 9 percent in Asia. This terms-of-trade uncertainty comes from the heavy dependence of Central American countries on exports of coffee and bananas. This creates a "chicken-and-egg" problem. As long as exports are not diversified into labor-intensive manufactures,

the terms-of-trade uncertainty will remain high which will contribute substantially to uncertainty in the real exchange rate. But this uncertainty in the real exchange rate encourages investors to choose less risky locations, and makes it more difficult for the region to diversify into labor-intensive manufactures.

8. A third driver is **distance**. Distance has a substantial effect on the patterns of international trade and Central America has a great locational advantage over Asia in serving the North American market. To communicate as clearly as possible we translate the distance effects into tariff equivalents. The distance disadvantage that China suffers compared with Mexico when selling in the U.S. market is like a tariff of 100 percent and more for many goods. The locational advantage of Central America over Asia for selling in the Mexican market is even greater. The distance advantage is not the same for all goods, and Central America should be moving its product mix toward items that are "expensive" to ship from Asia to North America. A product to avoid is electrical machinery which according to our estimates travels great distances with relatively moderate costs, conferring to Central America compared with Asia only a 1.6:1 locational advantage in the U.S. market and a 2.3:1 advantage in the Mexican market. This contrasts with apparel, which travels with moderate costs that confer to Central America compared with Asia a 4.1:1 locational advantage in the U.S. markets and a 11.2:1 advantage in the Mexican market.

9. A fourth driver is **savings**. Like many slow-growing poor regions Central America has a low savings rate. The relatively meager savings are dissipated over a rapidly growing workforce and consequently there has been little increase in the ratio of capital to worker. The poor but low-wage countries of Asia are experiencing capital inflows from the high-wage Asian countries including Japan and Taiwan. Central America can hope to attract investments from the U.S. but is likely to be very dependent on internally generated savings, more so than in the past because of greater competition from Mexico for scarce international investment funds.

10. The fifth driver is **NAFTA**. This agreement grants Mexico preferential access to the U.S. and Canadian markets, which creates yet another threat to Central American development. The amount of the preference is small in most products, especially in comparison with the uncertainty in the real exchange rate. The preference is substantial in three critical sectors: sugar, apparel, and textiles. Especially in apparel and textiles, NAFTA seems like a very troubling agreement for Central America, but we argue here that if Mexico is " big enough" and if Central America and other countries can access the Mexican market without facing substantial trade barriers, then the lowering of U.S. barriers to Mexican products may actually make Central America better off. Reductions in exports to the U.S. market can be more than offset by increases in exports to Mexico, leaving Central America exporting more at higher prices.

11. Countries outside of North America can benefit from NAFTA because it creates economic forces which tend to bring down U.S. prices to the level prevailing in the rest

of the world, thus in effect eliminating the U.S. protection and, more importantly, foreclosing the option of raising barriers in the future. The reason for this is straightforward, if not apparent. Provided there is a difference in the price of a product sold in the protected U.S. market and the price of the same product sold in Mexico, Mexican producers have an incentive to ship **all** production to the high-price protected U.S. market. This trade diversion will reduce the difference between the protected U.S. price and the free-trade Mexican price and thus lower the effective level of U.S. barriers, possibly to zero. The redirection of Mexican production toward the U.S. market in principle will make way for third country suppliers in Mexico—Central America being an obvious choice because of locational advantages. Thus even if Central America does not have the same preferential access to the U.S. market, provided that Central American access to the Mexican market is free of significant barriers, NAFTA can imply gains for Central America as well as for Mexico.

12. This argument concerning the effect of NAFTA on Central America is summarized schematically in Figure E.1 which shows how the losses from NAFTA depend on the economic size of Mexico. If Mexico is very small, the agreement is unimportant. A larger Mexico displaces Central American exports from North America and causes overall revenue losses. If Mexico is even larger, Central America can gain, because Mexican exports flood the U.S. market and reduce the effective U.S. barriers. The gains to Central America accrue when Mexico is big enough to satisfy completely U.S. import demands at the protected price, and therefore to drive third-country suppliers out of the U.S. market. Once these third countries are not the marginal suppliers, the U.S. tariff becomes inapplicable.

13. In the apparel sector, Mexico is now far from being large enough to undo U.S. protection. Mexican production levels are only about 15 percent of U.S. imports, and need substantial quality upgrading to compete in this new market. By our reckoning, Central America stands to lose about 4 percent of its earnings from exports of apparel as a result of NAFTA. This number increases with Mexican growth, but the end of the apparel protectionism is more likely to come from successful GATT negotiations than from the indirect effect of NAFTA. Textiles, however, are a different story. Mexican production in 1985 was already 107 percent of U.S. imports. U.S. policy intended to protect the lower-end labor-intensive segment of textile production is likely to be substantially affected by NAFTA, and Central America could find new opportunities in Mexico for these products.

14. NAFTA affects both the rate of return and the risk of investments in Mexico and thus the relative desirability of investments in Central America compared with investments in Mexico. The effect on the rate of return is adequately measurable, and is not very large in most products compared with, for example, the effects of location or the historical variability in the real exchange rate. Moreover, as we have just explained, if Mexican production levels are great enough, the reduction of U.S. barriers explicitly targeted on Mexico by NAFTA, will be spread around the globe as

Mexican sales in the protected U.S. market drive down the high U.S. prices to levels prevailing in the rest of the world.

15. Although the effect of NAFTA on the rate of return to investments in Mexico is adequately predictable and probably fairly small, the risk-reducing effect of NAFTA is both quite unpredictable and possibly quite significant. NAFTA promises Mexico future access to the very important markets in the U.S. and Canada, and embodies an explicit dispute settlement provision for the adjudication of the conflicts which will surely arise. For that reason, NAFTA is rather like the clause in the U.S. Federal Constitution which exempts intra-state commerce from interference from state governments. Like NAFTA, the Constitution, embodies a dispute settlement mechanism, leading ultimately to the Supreme Court of the United States.

16. The U.S. Federal Constitution derives its significance not because it reduced or eliminated barriers among states, but rather because it assures producers in one state access to markets in another free of new and unexpected interference from state governments. This guarantee is obviously important, but its effects are extremely difficult to assess empirically. Likewise, NAFTA will ultimately derive it real power from the mutual commitments of the three governments not to interfere in cross-border commerce. Today, we do not really know what these commitments are.

17. The nature of the commitments in the U.S. Federal Constitution did not become clear until disputes were actually adjudicated. Even today, after more than 200 years, the meaning of the Constitution continues to evolve. NAFTA is 2,000 pages of words that will be interpreted by committees of representatives of all the parties. It is therefore a living document and it will take some time to determine exactly what commitment value it really has. Most importantly, it remains to be seen how anti-dumping disputes will be resolved. Thus NAFTA does reduce the risk of commerce between the U.S. and Mexico, possibly by a large amount. Time will tell.

18. A second important risk-reducing effect of NAFTA is that it makes more permanent the very substantial liberalization of the Mexican economy. Liberalizations that do not deliver on their initial promises quickly enough are necessarily reversed. NAFTA probably improves the pace at which the favorable effects of the Mexican liberalization will be spread among Mexican citizens and it also increases the overall gains. NAFTA furthermore buys the Mexican economy more time to deliver because of the commitment value of an international agreement.

19. NAFTA may also help to stabilize the Mexican real exchange rate by tying the Mexican economy more closely with the U.S. and also by allowing export diversification into manufacturing and away from petroleum. Heavy dependence on petroleum exports has historically contributed substantially to instability in the terms of trade.

20. We do not pretend to see clearly the amount of risk reduction afforded Mexican investments by NAFTA, nor the impact of this risk reduction on the choice of

investments in Central America versus investments in Mexico. We will show that real exchange rate uncertainty has a very important negative effect on growth. By implication, other forms of uncertainty are also important. Furthermore, savings rates in Central America fall far short of the levels needed to support development strictly from internal sources and the attractiveness of Central America to international investors is essential. For these reasons, the governments of Central America need to do all in their power to reduce the risk of investments. Actions should include stabilization of the real exchange rate, free trade agreements that promise access to important foreign markets, and an internal legal system which protects the property of investors from unpredictable expropriation. Exchange rate stabilization should be carried out obviously with appropriate macroeconomic policies, but also by encouraging exports of labor-intensive manufactures with appropriate incentives, supporting infrastructure and educational investments.

21. We now turn to more detailed analysis of these remarks.

B. GROWTH AND TRADE

22. There is a very clear reason why the external markets for manufactures are essential for improvements in per capita income. Economic growth induced by capital accumulation generally is limited by declining marginal productivity of capital. An open economy does not face as severe a problem with declining marginal productivity of capital because the potential decline in productivity can be offset by a shift in the product mix toward more capital-intensive sectors and these products can be sold profitably in external markets. For the capital-scarce countries of Central America, labor-intensive manufactures such as apparel and footwear are the products of choice, as they have been in comparable but much more successful Asian countries.

23. Successful growth in Central America will therefore almost certainly be accompanied by greater concentration of production and exports on labor-intensive manufactures. But without receptive markets for these manufactures, Central American investments would soon face seriously declining marginal productivity of capital.

Global Factor Supplies

24. The Heckscher-Ohlin model which we use to form a vision of the future of Central America explains trade in terms of differences in factor supplies. Figure E.2 illustrates land, labor and capital supplies of a large number of countries in 1988 in a "Leamer triangle" which has ratio scales along the edges. To determine the value of a ratio, trace a line from a vertex through the point of interest in the triangle to the edge where the scale is indicated. This figure indicates that land per worker in the U.S. is quite similar to Panama. Costa Rica, Mexico and Honduras have a little less land, Nicaragua a bit more. Guatemala is much more land scarce and El Salvador is very scarce in land. If the multi-cone Heckscher-Ohlin model is correct, we can expect a development path for El Salvador that is different from Costa Rica and very different

from Nicaragua, provided of course that changes in the labor force do not make these countries more similar.

25. Another feature of the 1988 data that is worth pointing out is that both Mexico and Costa Rica have much higher ratios of capital per worker than the other Central American countries with the exception of Panama. If the model is correct, Mexico and Costa Rica are more likely to have production of manufactured goods. Indeed this conforms well with reality, to which we now turn.

Trade Dependence Profiles for Central America

26. In this subsection we discuss trade dependence profiles based on the commodity aggregates that are discussed in greater detail in the full report (Section IV.B). The classification includes two raw materials aggregates (Petroleum and Raw Materials), four crops (Forest Products, Animal Products, Tropical Agriculture and Cereals), and four manufactures (Labor-intensive, Capital-Intensive, Machinery and Chemicals.) In terms of input intensities, these four manufactured aggregates are ordered by physical capital intensities, but chemicals is generally more intensive in human capital than is machinery. These four manufactured products form a ladder of development which many countries seem to follow, beginning with exports of apparel (LAB), then moving on to textiles and iron and steel (CAP), and finally to machinery (MACH) and chemicals (CHEM).

27. Net exports per worker of these ten aggregates in 1965 and 1988 for El Salvador, China, Costa Rica, Honduras, Mexico, Nicaragua, Panama and the U.S. are reported in Table E.1 and illustrated in Figures E.3, to E.6.[2] Countries in Table E.1 are ordered by their net exports per worker of the labor-intensive manufactures aggregate. Care should be taken in comparing the charts because the vertical scales are different. The choice of scales facilitates a comparison of the comparative advantage but it obscures the overall level of trade dependence which is most accurately summarized by the average absolute net export figures reported in the last column of Table E.1.

28. Generally Central America is a region with a heavy dependence on exports of tropical agricultural products. A very important but more subtle feature of the table is growing comparative advantage in labor-intensive manufactures. Although only Costa Rica in 1988 had positive net exports of these labor-intensive products, the other countries in the region over this time reduced their levels of imports and seem on the verge of becoming net exporters. We argue below that this trend toward exporting labor-intensive manufactures will continue if and only if Central America experiences reasonable levels of growth in GDP per capita.

29. The 1988 trade patterns and the 1988 factor abundance triangle (Figure E.2) conform rather well with the three-factor Heckscher-Ohlin model described in the

[2] Data assembled by Ligang Song (1993) and in Leamer (1984).

previous section. Mexico and Costa Rica which are about in the same point in the resource triangle have about the same pattern of trade, although Mexico has substantial receipts from petroleum exports. Both have substantial earnings from exports of labor-intensive manufactures. Both export tropical agricultural products. El Salvador, with its great abundance of labor but scarcity of capital is not quite able to export the labor-intensive manufactures and has earnings heavily concentrated on tropical agricultural products. Honduras which has about the same level of land per worker as Costa Rica has much less capital, and therefore has no earnings from labor-intensive manufactures and depends very heavily on exports of tropical agricultural products. Nicaragua has about the same capital per worker as Honduras, but more land, and is even more dependent on exports of agricultural products.

30. The trade diagrams also include the two other primary actors in our drama: China and the U.S. China in 1965 did export the labor-intensive manufactures, but trade per worker was very small in all categories. Chinese trade in all categories increased enormously, and net exports per worker of labor-intensive manufactures in particular grew from US$0.5 per worker to US$22.0 per worker. The U.S. market readily accepted these changes with net imports per worker growing from US$20.7 in 1965 to US$434.9 in 1988.

31. Panama, with an enormous appetite for machinery, is quite unusual. Panama's imports of labor-intensive manufactures is about the same as the U.S. with net imports exceeding US$400 per worker. The U.S. has an apparent trade deficit in merchandise trade with cereals and chemicals net exports not great enough to offset imports of all other items.

Changing Patterns of Trade in Labor-intensive Manufactures

32. The action in Central America is in the labor-intensive manufactures. The same kind of action is occurring in Asia. Figures E.7a and b display the net export data of this commodity aggregate for a large number of countries, comparing 1965 with 1988. Figure E.7a has the data in normal scale and Figure E.7b uses a logarithmic scale to allow as many of the data to be seen as possible.[3] It should be noted that this scale greatly compresses extreme values. If there were no changes in comparative advantage from 1965 to 1988 these data would all lie on a straight line. Also, a lot of the 'noise' in the logarithmic graph occurs for small values of net exports per worker which are scaled to appear large. Clearly, comparative advantage in labor-intensive manufactures (apparel and footwear) is very much in turmoil with a large number of countries shifting from being importers to being exporters. In response, France, the UK, Austria and even Hong Kong switch in the opposite direction from exporting to importing. Japan and Belgium, although still having positive net exports in this category, are substantially reducing their export dependence on this product, falling from the list of top ten net exporters to well back in the pack.

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[3] sgn(x) log(1+abs(x))

33. The scatter of labor intensive net exports per worker compared with capital per worker in Figure E.8 reveals the nonlinearity suggested by the multi-cone Heckscher-Ohlin model. At very low levels of capital per worker, capital accumulation causes increasing dependence on imports of labor-intensive manufactures. This reverses itself at a capital/labor ratio of around US$5,000 in 1965 dollars, and net exports of labor-intensive manufactures become positively related to capital abundance. Then, at capital per worker of around US$15,000 in 1965 dollars, the effect of capital accumulation reverses again, and capital accumulation leads to growing dependence on imports of these products.

34. The potential nonlinearity in the trade dependence function is captured empirically with a model including higher order terms. The models that are estimated control for different types of land and disaggregate workers roughly into skill groups.

Heckscher-Ohlin Simulations

35. The estimated H-O-V model can be used to predict how the labor intensive net exports of Central America will evolve in the future. The 1988 scatter diagram (Figure E.8) includes three different paths generated from the preferred model. The solid curve uses world average levels of the land variables; the upper curve uses the El Salvadoran land-scarce data; the lower curve uses the Nicaraguan land-abundant data. The curve for El Salvador is very similar to the world average, but land scarcity forces greater dependence on exports of labor-intensive manufactures. The land-abundant Nicaraguan case is rather different, with capital accumulation associated always with increasing dependence on imports of labor-intensive manufactures. The placement of this curve is dictated by limitations of the functional form and the influence of the countries which combine both capital and land abundance including Australia and Canada. For our purposes, it is more appropriate mentally to adjust downward the Nicaragua curve to give it net imports of labor-intensive manufactures earlier in the development process.

36. Curves like those in Figure E.8 can be used to form projections of the future levels of net exports of labor-intensive manufactures. These projections are driven by both the capital/labor ratio and the land/labor ratio. The land variables can change but only slightly over time. Labor growth can be predicted with a reasonable degree of accuracy from demographic trends. Thus future reductions in the land/labor ratios can be foreseen with a rather high degree of accuracy. The capital/labor ratio is both more important and also more difficult to project. We will deal with our inability to project accurately the capital accumulation in Central America by forming several different scenarios, for both the labor force and the investment rate. The labor force has been assumed to grow pari-passu with population. We consider initially three different scenarios in which the labor force grows at the average population growth rate of the last decade, and in which it deviates by 10 percent above and below. This amount of variability in the labor force growth does not alter the land/labor ratios or the capital/labor ratios enough to affect substantially the predicted net exports of labor-

intensive goods. For that reason, we report only the case with future labor force growth rate equal to the average growth over the last decade. These are reported in the first column of Table E.2 varying from a low of 1.5 percent in El Salvador to a high of 3.5 percent in Nicaragua.

37. The three scenarios are driven by three different assumptions about capital accumulation, differing in terms of assumed investment rates reported in Table E.2.[4] In the first scenario, capital accumulation is driven entirely internally with investments as a share of GNP equal to historical levels of the domestic savings rate, varying from a low of 6 percent in El Salvador to a high of 25 percent in Mexico. The second scenario allows foreign investment and sets the investment ratio to GNP equal to the average investment rate of the last decade which varies much less than the savings rate—from a low of 13 percent in El Salvador and Guatemala to a high of 26 percent in Costa Rica. These investment rates are much higher than the savings rates for the poorer countries, and external sources of funds are essential even to maintain existing capital/labor ratios. The third high-growth scenario adjusts this last investment rate upward by a factor selected to allow the relatively capital abundant countries, Costa Rica and Mexico, to accumulate enough capital over a decade to achieve peak levels of net exports per worker of labor-intensive manufactures. These high investment rates vary from 19 to 39 percent of GNP. This is not intended to be a plausible scenario but rather helps to determine the extreme changes in net exports of labor-intensive manufactures and identifies an investment rate necessary to produce very accelerated development and perhaps a shift in the cone of specialization that these counties are in. This, in our view, would be one way to escape increased competition from China in labor-intensive manufactures.

38. By inserting the estimated capital/labor ratios and the revised land/labor ratios into the regression equation, we can forecast for the different scenarios what will happen to the net exports of these economies. The actual 1988 data do not of course conform with the regression model and we do not want our projections to assume implicitly that this difference is eliminated. Denoting the estimated regression function by: $y = f(x)$ and the actual data by y_0 and x_0, we form our prediction given the future value x_1 as: $y_1 = y_0 + f(x_1) + f(x_0)$. These projected changes are measured in comparison with an internal GNP yardstick in Table E.3 and in comparison with an external market-size yardstick in Table E.4.

39. Scenarios (1) and (2) do not predict major changes in net exports of labor-intensive products compared with GNP for Costa Rica, Panama, or Mexico, basically because in 1988 these countries already had relatively high levels of capital per worker. The effects are much larger for Guatemala and Honduras, and especially for El Salvador which under scenario (2) with historical investment rates increases net exports per worker from US$-1.4 to US$192, or 5.6 percent of 1988 GNP. In 1988 Costa Rica already had net exports of labor-intensive manufactures equal to 3 percent of

[4] The depreciation rate has been assumed to be 13.3 percent in line with previous studies.

GNP. The highest ratio to GNP of 11 percent occurs for El Salvador under the high investment scenario (3). *These ratios to GNP seem high enough to raise concern about NAFTA and other external threats for most of the countries in the region, certainly for Costa Rica and El Salvador, also for Guatemala and Honduras, but less so for Nicaragua and not at all for Panama.*

40. The external comparisons in Table E.4 reveal that both the 1988 levels of Central American net exports and the predicted changes form a completely insignificant share of U.S. imports. These levels form a much larger share of Mexican imports, with Central America as a whole, after satisfying the demand from Panama, comprising 19 percent of Mexican imports under the historical investment rate scenario (2) and 78 percent of Mexican imports under the high-investment scenario (3). We argue in this document that under NAFTA Mexico has an incentive to increase both its exports and its imports, exporting more to the U.S. and importing more for consumption purposes. For that reason the comparison with Mexican consumption in the last panel of Table E.4 may be more appropriate than the comparison with Mexican imports. Under scenario (2), Central American net exports comprise only 7.8 percent of the Mexican market, and even under the high-growth scenario comprise only 33 percent, both figures not allowing at all for growth in Mexico over the decade. Thus there seems to be ample market size in Mexico to accommodate exports of labor-intensive manufactures from Central America.

Growth and Exports of Labor-intensive Manufactures

41. We believe that the future of Central America rests heavily on effective competition in the North American markets for labor-intensive manufactures. Three related sets of facts support this conclusion:

- The U.S. market has become much more important for the exports of labor-intensive manufactures from Central America;
- Countries that are slightly ahead of Central America in GDP per capita and capital per worker have much higher levels of net exports per worker of labor-intensive manufactures; and
- High rates of economic growth in moderate-income developing countries have almost invariably been accompanied by an increase in the exports of labor-intensive manufactures.

42. The growing importance of the U.S. market for Central American exports is discussed in Sections IV and VIII.A.2 of the full report. The cross country nonlinear patterns of trade in relation to capital abundance are discussed in Section VII.A.3 and serve as a data-foundation for the simulations discussed in the previous section. Now we turn to the third set of facts, the dynamic version of the nonlinear cross-sectional model. Here we demonstrate the linkage between growth and labor-intensive exports using first a set of 62 countries and then by reviewing the case of Central America.

This demonstration is not entirely straightforward because we do not expect nor do we find a simple linear relationship between economic growth and exports of labor-intensive manufactures. At low levels of capital abundance, we expect to see a positive association between growth in GDP and growth in net exports of labor-intensive manufactures. At high levels of capital abundance, we expect the relationship to reverse itself.

43. The relationship between growh and exports of labor-intensive goods was estimated using a data set for 62 countries and two years (1974 and 1988). To allow for the interaction of the level of GDP per worker and growth the following relationship was assumed :

$$\Delta(T_i/L_i) = \alpha + \beta \times \%\Delta GDP_i \times [\theta_1 + \theta_2 GDP_i/L_i + \theta_3(GDP_i/L_i)^2]$$

where $\Delta(T/L)$ is the absolute change in labor-intensive exports per worker (dollars), $\%\Delta GDP$ is the annualized percentage increase in GDP in dollars, and GDP/L is GDP per worker in the initial period (1974). This functional form allows the association between growth $\%\Delta GDP_i$ and exports $\Delta(T_i/L_i)$ to depend on the initial per capita GDP. The estimated regression is:

Constant = -16.53; Std. Error of Y Est. = 408.95;

R Square = 0.2995; No. of Observations = 62; Degrees of Freedom = 58

	%GDP	%GDP×(GDP/L)	%GDP×(GDP/L)^2
Coefficient	0.69321	0.0712	-0.01579
Std. Err. of Coef.	0.54466	0.15496	0.00954

44. From this estimated equation we can solve for the level of GDP per worker at which the association between growth and net exports turns from positive to negative. This is US$9,000 per worker. For countries with a GDP per worker at US$7,000 (low GDP per worker countries for now on), a half percentage point increase in the annualized rate of GDP growth approximately gave (during 1974-88) a US$5 increase in the exports of labor-intensive manufactures per worker.

45. In Figure E.10 we show the very strong association between economic growth and increases in labor-intensive trade that has existed in Central America, with Mexico also included. In 1970 Central America exported US$13 per worker of labor-intensive manufactured goods—Costa Rica had the highest exports per worker with US$23, well above the Mexican value of only US$5. In 1990 labor-intensive exports increased to US$52 per worker for Central America. During the two decades Costa Rica had the biggest absolute increase but Panama had the highest rate of growth of labor-intensive exports. The evolution of labor-intensive exports and the rate of growth of GDP is depicted in Figure E.9 where a clear positive relationship can be seen. Nicaragua, the

only country with a negative annualized rate of GDP growth, is also the only country with a negative rate of growth in labor-intensive exports.

46. The increased labor-intensive manufactures went mostly to the U.S. Central America exported only 4 percent of the labor-intensive manufactures to North America in 1970 but 63 percent in 1990. We thus conclude that Central American growth has been and very likely will continue to be closely linked with exports of labor-intensive manufactures to North America.

C. CHALLENGES TO CENTRAL AMERICAN GROWTH

Asian and Mexican Competition in the U.S. Market

47. Economic growth in Central America seems very dependent on exports of labor-intensive manufactures to the U.S. and to a lesser extent Canada. But Central American access to these North American markets is threatened by increased competition from two sources: Asia and Mexico. The growth in U.S. imports from low-wage countries over the last decade has been substantial. Table E.5 reports the top ten trade partners of the U.S. in 1989 and 1993. Exports from Mexico have been growing at the very healthy pace of 10 percent per year. Exports from Central America grew fifty percent faster at 15 percent per year. But most notable of all is the huge increase of imports from China, with a growth rate of 27 percent.

48. The growth in U.S. trade with Mexico and China is not an accident. Both of these low-wage economies have been engaged in substantial though rather different liberalizations which have facilitated external trade. In 1985 Mexico was a very closed economy with significant barriers against imports of most products and substantial impediments to many kinds of exports. The liberalization of the Mexican economy since 1985 has greatly lowered Mexican barriers to international trade.[4] A liberalized and growing Mexico promises greater competition in the U.S. market for Central America but also should create attractive new markets in Mexico for Central American products. A liberalized China is merely a threat, especially when you consider the enormous size of the Chinese workforce.

49. The importance of the U.S. market for Central America is all the more clear in the second part of Table E.5, where the total trade figures are divided by GDP. Measured in this way, the U.S. market is not that important for Japan, since Japanese exports in 1992 to the U.S. were only 3 percent of Japanese GDP. This contrasts with the Canadian figure of 18 percent, the Taiwanese figure of 12 percent and the Mexican figure of 10 percent. Measured in this way, the dependence on the U.S. market has decreased for all of its top ten partners except China.

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[4] See Hufbauer and Schott (1992), pp. 14-15.

50. Central America, on the other hand, has become increasingly dependent on the U.S. market, Panama excepted. For Costa Rica and Honduras, the export to GDP ratios are 25 percent. These, of course, are Central American countries with the most favorable recent growth experiences.

51. In sum: *Mexico and China seem to be on an economic collision course in the U.S. market. Central America will be caught in the collision, but may escape to Mexico.*

Short Run Elasticity Computations of the Effects of NAFTA

52. In this Section we report preliminary estimates of the effect of NAFTA on trade flows in several key manufactured goods. These estimates are based on a partial equilibrium model developed in Section II which describes the effects of preferential tariff reductions in terms of the trade diversion of Mexican exports to the U.S. market and also trade creation as a result of the lowering of a barrier to trade. We use here the special case of that model with a perfectly elastic supply of imports coming from the rest of the world (ROW). For commodities such as apparel and textiles, Mexican production constitutes such a small share of total world exports that it seems very unlikely that the trade creating aspects of NAFTA could have very much affect on world price levels. Thus the infinitely elastic case seems pretty appropriate.

53. In this case the trade diversion from the U.S. market is the percentage change in ROW exports given by:

$$dS_{row}/S_{row} \rightarrow -(\varepsilon_{mex}S_{mex}/S_{row})\,(t_{mex}/(1+t_{mex})) \quad \text{as} \quad \varepsilon_{row} \rightarrow \infty$$

where ε is the elasticity of Mexican export supply to the U.S. This formula is the product of three numbers: the Mexican supply elasticity times the ratio of Mexican exports to ROW exports times the tariff level. The last two of these numbers are both in the order of 0.1 and their product is thus in the order of 0.01. *Unless the Mexican supply elasticity is very large, the trade diversion effect of NAFTA thus has to be very small, in the order of 1 percent. This makes NAFTA seem like a very insignificant event for Central America (a part of ROW).* But, as mentioned earlier, under a free trade agreement Mexico has incentives to redirect its production to the U.S. market and use cheap imports from third parties for consumption. This may make the Mexican export supply elasticity much larger than is traditionally assumed or estimated. In the next section, we offer an explicit model that includes separately a Mexican supply function and a domestic Mexican demand function, not the collapsed export supply function used in this section.

54. Table E.6 shows the trade diversion results of four different scenarios for the Mexican export supply. The first three cases use hypothetical elasticities ranging from an extremely inelastic case ($\varepsilon = 0.1$) to a very elastic situation ($\varepsilon = 10.0$). The fourth scenario uses the estimates of elasticities of Spanish export supplies as a proxy for the Mexican figures.

55. In general, we observe only mild trade diversion when the Mexican supply is very elastic, otherwise trade diversion is negligible. This is shown by cases (1) and (2) where trade diversion does not exceed 1 percent of total imports. If the Mexican export supplies were very elastic, then we would observe some trade diversion, but still in the moderate range. If the Spanish elasticities[2] were a good approximation to the Mexican ones, then apparel would exhibit the highest trade diversion which, nonetheless, would be almost insignificant at less than 0.5 percent of total imports.

56. These trade diversion estimates may look promising for Central America, but they have to be taken cautiously because they do not reflect the full burden of NAFTA. Specifically, they do not take into account the likely case of Mexican producers exporting a much larger share of output to the U.S. to take advantage of higher prices, while importing cheaper products for Mexican consumption, a possibility to which we now turn.

Estimates Allowing for the Redirection of Mexican Output

57. Tables E.7 report some simulation exercises regarding the trade diversion effects of NAFTA allowing for the complete diversion of Mexican supply to the U.S. market. Four log-linear functions determine the equilibrium: U.S. import demand, ROW export supply, Mexican supply and Mexican demand. There are two possible post-NAFTA equilibria. In the **first**, ROW continues to export to the U.S. market, but Mexican supply is diverted to the high-priced protected market in the U.S. In the **second**, ROW exporters are driven from the U.S. market and the tariff is no longer applicable. A bifurcated equilibrium occurs with the difference between prices in the U.S. and prices in ROW no longer determined by the U.S. tariff level. The effective tariff is the difference between the U.S. price and the ROW price, which under this second condition is less than the nominal U.S. tariff level. A **third** equilibrium could be selected if this effective tariff level became negative. Then the U.S. tariff level would be rendered totally ineffective, and the free trade equilibrium would occur with a single world-wide price level. The calculations presuppose knowledge of both the supply and demand functions which comes partly from estimated elasticities taken from the academic literature, and partly by calibration to make the initial equilibrium conform well with the 1985 facts. We took from Stern et al. (1974)[5] the U.S. import demand elasticities for each ISIC category that we analyzed. We also employed actual data on the Mexican net-exports to production ratio and the Mexican production to U.S. imports ratio as a matching reference. The ROW supply was assumed to be very elastic to represent a marginal supplier that predominantly determines the international price. The constant in front of this ROW supply function is arbitrarily a function of the units in which the commodity is measured. We have set it equal to one in all cases.

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[2] The data on the Spanish supply elasticities was taken from: Donges, Juergen "The Spanish Industry in Face of its Integration into the European Community." Economia Internazionale, Vol. 33, pp. 271-81, 1980.

[5] Stern, R.M., J. Francis, and B. Schumacher. Price Elasticities in International Trade. Macmillan, 1974.

The Mexican supply and demand intercepts were chosen first to calibrate the numbers to match the actual initial data, or next, to show some interesting scenarios that allow Mexican growth either from capital accumulation or from increased economic efficiency as a result of liberalization.

58. Table E.7 shows different scenarios for each commodity group. The scenario reported in column (1) is formed by calibrating the Mexican and U.S. functions to reproduce the 1985 data on the ratio of Mexican trade to Mexican production and the ratio of Mexican production to U.S. imports. In Column (2) we try to increase the size of Mexico to correspond with the highest growth scenario defined in Table E.2. The reason for exploring this rather extreme assumption is that the effect of NAFTA on Central America depends fundamentally on the economic size of Mexico. If Mexico is small, Central America will lose. If Mexico is a bit larger, Central America will lose even more. But if Mexico is "large enough" Central America can actually benefit from NAFTA. To determine if this is a plausible outcome, we need to know how big must Mexico be to have this ameliorative affect.

59. The computations reported in Section 8.A.3 show that Mexican net exports of labor intensive goods would be multiplied by approximately 6 times under the high-growth scenario after a decade of growth. Moreover, the capital/labor ratio would be multiplied by nearly 2.5 times. We assume that specific subcategories of net-exports grow at the same rate as the labor intensive net-export aggregate, that capital-labor growth translates into a roughly similar growth in production per worker, and that U.S. import growth is equal to population growth, then we can get some rough estimates on the relevant ratios in Table E.7. Specifically, with Mexican net exports increasing by a factor of 6 and production by a factor of 2.5 the Mexican net-export to production ratio would be multiplied by 6/2.5—roughly 2.5 times—and the Mexican production to U.S. imports ratio would grow by nearly 2 times. These are the predicted figures that drive the calibration in column (2). If this is not enough to produce a bifurcated equilibrium, then the size of Mexico is increased first to produce a bifurcated equilibrium, column (3), and next an equilibrium in which Central America is made better off, column (4).

60. Clothing and Pottery exhibit all four columns, column (1) with a relatively small Mexico, column (2) a mid-size Mexico still without bifurcation, and columns (3) and (4) the cases of a bifurcated equilibrium and a ROW benefiting from NAFTA, respectively. In the first two columns the ROW price suffers a mild deterioration, with a Mexican share of U.S. imports jumping up strongly. When we replicate the 1985 data in column (1) the lost earnings for ROW are rather small, 3.8 percent in Clothing and 4.8 percent in Pottery. The Mexico with growth case, column (2), causes greater losses for Central America as a result of greater price declines and a smaller market share. If Mexican production is increased by more than a factor of 10 and the ratio of Mexican production to U.S. imports is increased to around 90 percent, a bifurcated equilibrium occurs, with Central America losing 17 percent of its revenues in Clothing and 8.7 percent of its revenues from Pottery. If Mexico is a bit larger still, with pre-NAFTA output levels exceeding U.S. imports, then Central America can gain, earning

higher prices for its exports which are then completely directed toward the Mexican market.

61. For Leather Products the reduction in ROW earnings in column (1) shows a 9 percent loss, with a strong jump in the Mexican share of U.S. imports. Column (2) already shows a bifurcated equilibrium with Central America. A modest increase in the size of Mexico beyond the column (2) size is enough to make Central America better off. Glass Products also exhibits in column (1) a loss of earnings for ROW on the order of 9 percent, but column (2) now displays both a bifurcated equilibrium and a better off ROW with earnings increases of 21.8 percent.

62. For Textiles and Beverages the 1985 data imply a bifurcated equilibrium with ROW earnings increases on the order of 6 percent. This comes basically from initial Mexican production levels that are more than enough to satisfy U.S. import demand. Actually, the effective U.S. tariff for Beverages is reduced to zero.

63. All the calculations are to some extent out of date, especially because they do not embody economic growth and product mix changes in Mexico as a result of the Mexican liberalization. Leamer's (1993) estimates of the potential effect of the Mexican liberalization on the levels of Mexican output produce output figures that make Mexico large enough to reduce the U.S. effective tariff to zero in all these product categories. In this sense, NAFTA amounts to a general lowering of U.S. trade barriers, not a preferential lowering in favor of Mexico. And Central America will gain, provided that it is willing and able to redirect its products from the U.S. market to Mexico.

Destination of Central American Exports

64. The partial equilibrium simulations that are presented here predict diversion of Central American exports away from protected North American markets, which will be supplied instead from North American sources which can sell free of the trade barriers applicable to non-members. This would radically alter the geographic pattern of Central American exports, particularly for the labor-intensive manufactures which are most likely to be subjected to trade diversion, because of their growing importance for Central America and because these are the manufactured products that are most protected in the U.S.

65. In the last two decades, the geographic pattern of Central American exports of labor-intensive manufactures (principally Apparel and Footwear) has shifted dramatically away from other Central American countries toward the U.S. Almost 94 percent of Central American exports of labor-intensive manufactures in 1970 were shipped to other Central American countries; 4.2 percent went to the U.S. and Canada; and only 0.1 percent went to Mexico. In 1990 only 23 percent of Central American labor-intensive exports stayed in the region, and 63.3 percent were shipped to the U.S. and Canada.

66. This enormous change in the destination of exports came not from the collapse of Central American markets but rather from very rapid growth of exports to North America. While exports to other Central American countries grew at an annualized rate of 2.3 percent from 1970 to 1990, exports to the U.S. and Canada grew at 25.8 percent.

67. This shift in the destination of Central American exports of manufactures was experienced especially by Costa Rica, Honduras and Panama. Costa Rica had very substantial growth of exports of these products. Costa Rican exports in 1970 were almost completely targeted on Central America, but North America and other countries were the destination of choice in 1990. Exports to Mexico were never substantial, even when Costa Rican exports were directed locally to other Central American countries. Honduras and Panama are very similar, although Panama exports substantially to "other" countries. El Salvador, Guatemala, and Nicaragua are also similar, just a little behind in time. Belize, on the other hand, seems way ahead, with exports targeted on North America even in 1970. But none of these countries had any exports to speak of to Mexico, even while they were exporting substantially to other Central American countries.

68. The Mexican exports of labor-intensive manufactures also grew rapidly from 1970 to 1990. The change in the destination of these exports was more subtle, but the increase in the share going to North America in 1990 compared with 1980 is substantial, and is compatible with a basic theme of this paper: Mexico will target North America, Central America should target Mexico.

Locational Advantages of Central America

69. The distances between Central America, Mexico and the U.S. are short compared with distance between these countries and the countries of Asia and Europe. This closeness confers upon the countries of the region a mutual comparative advantage in products that do not travel well over long distances. Although transportation and communication costs have fallen dramatically in the second half of the twentieth century, and trade has increased much more rapidly than GDP, distance remains a major deterrent to trade and will continue to play an important role in the economic interactions among the countries of North and South America and between the Americas, Europe and Asia.

70. Distance between partners as well as adjacency has a very substantial effect on trade. This is revealed by the data presented in Table E.8 which reports the distance between countries that is necessary to include 50 percent of trade for each of the ISIC categories.[6] For example, referring to the first entry in Table E.8, we see that 50 percent of trade in Furniture takes place between countries that are less than 645 miles apart, and that this distance includes only 4.9 percent of the country pairs, far below

[6] Trade between a pair of countries is divided by the product of their GNP's in order to control for the country size effect.

the 50 percent that we would expect if distance had no effect. The last column of Table E.8 compares the distance effect in 1985 with the distance effect in 1970. A number in excess of one means that the commodity traveled longer distances in 1985 than in 1970. The commodities that traveled much farther in 1985 were, in order: Leather, Apparel, and Other Manufactures, the latter including jewelry, musical instruments, and athletic goods. Shoppers in the U.S. must surely be aware how many of these items come now from far-away places, namely Asia. But there are some products that do not travel as well as they once did. Listed in order, these are: Petroleum Refined Products, Coal, Food, Beverages and Transport Equipment. The message here is an important one: *distance is not becoming much less important in determining trade patterns*. It is true that more products are coming to the U.S. from Asia, but the explanation for this increase in trade is larger Asian and European GDP, not a smaller effect of distance. Thus: *Globalization has come largely from geographic dispersal of economic activity, not from a shrinking globe.*

71. These tables make very clear that distance matters, but they do not get directly at the task: what kind of trade pattern should we expect among the U.S., an emerging Mexico and Central America? Specifically, how much does distance depress trade? Toward that end we can compute the product-by-product distance advantage of Central America compared with China for accessing the U.S. market.

72. Table E.9 contains a commodity-by-commodity summary of the effect of distance on North and Central American trade in 1985 based on a gravity model that explains bilateral trade with a variety of variables including an adjacency effect and also the distance between trading partners. The first column has the distance elasticity and the second the adjacency effect defined as the trade multiplier applicable to adjacent countries. The next three columns compare the effect of distance on exports to the U.S. from Mexico, Central America and China. The last two columns compare the distance effects for Central America and China exporting to the Mexican market, first without the adjacency effect and second with the adjacency effect included, the latter designated as Guatemala.

73. The Central American distance advantage over Asia for exporting to the U.S. market in the first column varies from a high of 16.7 to a low of 1.6. For the critical labor-intensive sectors of Apparel and Footwear the locational advantage ratios are around 4. For Electrical Machinery, the advantage ratio is only 1.60. Mexico is both closer to the U.S. and also adjacent. Although the estimated adjacency effect is not always favorable, it generally contributes substantially to exports. Because of both the location and adjacency advantages, the Mexican ratios are almost always higher than the Central American ratios. This is revealed most clearly in the column which compares Central America with Mexico as competitors in the U.S. market. Other things equal, Central American apparel exports to the U.S. would be only 70 percent of Mexican exports, and only 50 percent of exports of Electrical Machinery. This Mexican advantage would be all the greater if the distance of several hundred miles from northern Mexico to southern U.S. were used instead of the 1,800 mile figure

74. Competition in the Mexican market is rather different. Here the locational advantage of Central America over Asia is very strong, often exceeding a factor of ten to one. The adjacency effect of Guatemala adds a further fillip to these numbers.

75. To make the point about the effect of distance as clear as possible, these distance effects are translated into tariff equivalents reported in Table E.10. Starting with the gravity model $T_{ij} = \alpha D_{ij}^{\gamma} (1+t_j)^{\theta}$ we can ask: What is the tariff-equivalent of distance? Take a pair of countries separated by a distance of D_0. Trade between them can be reduced either by imposing a tariff or by moving them apart to the new distance D. What level of the tariff yields the same trade as the distance D? The formula for trade over the longer distance is $T = \alpha D^{\gamma}$. The trade encumbered by the tariff is $T = \alpha D_0^{\gamma}(1+t)^{\theta}$. These are equal when $\alpha D_0^{\gamma} = \alpha D_0^{\gamma} (1+t)^{\theta}$. Solving this equation yields the tariff equivalent of distance:

Tariff equivalent of distance = $(D/D_0)^{\gamma/\theta} - 1$

where: γ = distance elasticity; and θ = tariff elasticity.

76. The tariff equivalents reported in Table E.10 are remarkably large. The first column uses the elasticity estimates from Linneman et.al. The next six columns use three different values for the distance elasticities and two values for the tariff elasticity. The distance elasticity of -1.5, -1 and -0.5 range over the set of estimated values from Table E.8. For each of these distance values two tariff elasticities are included: a high tariff elasticity of -3 and a low tariff elasticity of -0.5. The low value for the tariff elasticity yields extraordinarily high values of the tariff equivalent. This elasticity refers to an experiment in which a tariff is imposed against a single country, and substitution among suppliers may make the elasticity rather high. The number -3 seems plausibly high and exceeds the Linneman et al estimate of -2.6.

77. The Chinese distance disadvantage of 3.6 compared with Mexico for exporting to the U.S. is equivalent to a tariff of approximately 23 percent for even the least elastic distance effect and the most elastic tariff effect. Under these same extreme condition, Central America has an advantage over Asia in the Mexican market as if the Asian products had to face a 37 percent tariff. That of course is a substantial tariff, but it is very small compared with most of the other tariff-equivalents in the table.

78. Of course the effect of distance and adjaceny are very complex and cannot be completely captured in simple measures of distance. One reason is that the effects must be greatly influenced by transportation infrastructure. The estimates can also capture cultural influences that are not otherwise controlled for. But regardless of these corrections, it will surely remain the case that Central America has a substantial locational advantage over Asia in both the U.S. market and the Mexican market. In the U.S., however, even without NAFTA, the supplier of choice is Mexico. This leads to one clear conclusion: the future of Central America rests importantly on exports to Mexico, a market which is today pretty much untapped. Investments in transportation

infrastructure that can facilitate this emerging trade are likely to have very large payoffs for the Central American economies.

Wages as a Source of Comparative Advantage

79. Although closeness works to the advantage of both Mexico and Central America compared with China for exporting to the U.S. market, wage levels work in the opposite direction. Wages in China and other low-wage Asian countries are as low as US$0.20 per hour compared with Mexican wages of US$1-2 and U.S. wages of US$10 -12. The huge population levels in China and India make it clear that for the foreseeable future, both Mexico and Central America will compete with China and other Asian countries offering low-wage low-skilled labor to produce goods for the U.S. market.

80. Low wages confer comparative advantage in some products but not all. Actually, there are many products that tend to be exported by high-wage countries, presumably because high wages indicate availability of skilled workers. Estimated effects of distance are compared with the impact of the wage difference in Table E.11. The numbers reported in this table come from the model presented in the full report that predicts trade as a function of importer and exporter wage rates, per capita GNPs and a variety of other factors. Using Table E.11 as a guide, the wage gap between the U.S. and Mexico/Central America/Asia implies that:

- **Apparel** is imported by the U.S.

- **Beverages, Footwear and Pottery** are also low-wage exports but these products will compete in the U.S. market with products from some high-wage countries.

- **Paper Products, Transportation Equipment, Non-ferrous Metals, Machinery** and **Professional Instruments** should all be exported by the U.S. to the low-wage countries, although, except for **Metal Scrap** they also are exported to high wage countries.

- **Food Products** and **Textiles** will be traded in both directions, but with a balance in favor of the U.S.

- Central America and Mexico might be expected to exchange **Leather, Other Food, Glass**, and **Textiles**.

Real Exchange Rate Uncertainty

81. Uncertainty in the real exchange rate is a major risk factor in the allocation of internationally mobile investment funds. The real exchange rate (RER) in Central America is more unpredictable than in Asia. Ideally we would decompose the uncertainty in the real exchange rates into two parts, one that comes from internal monetary management and the rest that comes from external monetary shocks and from

both internal and external real shocks. Ideal macro economic management in principle can eliminate the first, but there is nothing that a single country can do about the second. Toward this goal we present regressions of the RER uncertainty on the terms-of-trade (TOT) uncertainty. We take the TOT uncertainty as an imperfect measure of the uncontrollable fundamental and treat the residual as controllable with ideal macro economic management.

82. Relatively high TOT variability in Central America compared with Asia does contribute to its relatively unstable RER. The TOT volatility in Central America comes from an export mix that is heavily concentrated on several specific agricultural commodities, which tend to have more volatile prices than exports of industrial goods. Asian exports, on the other hand, include relatively large amounts of rather diversified manufactures[9]. In particular, booms and busts in international coffee prices (the major export crop in Central America) have been common in recent Central American economic history, bringing about sharp swings in the RERs[10].

83. Table E.12 presents some measures of TOT uncertainty in Central America and several Asian countries during 1970-90. These measures are one-year and five-year forecast standard errors from a simple autoregressive forecasting equation analogous to the measures of the RER uncertainty in Section III. Excepting Indonesia, the TOT in Asia show smaller uncertainty than Central America's. This is compatible with our viewpoint that the RER in Central America is relatively unpredictable due, to a large extent, to relatively high variability in the TOT shocks which comes from a highly specialized export mix, compared to Asia.

84. These data (excepting the outlier Nicaragua) plus data for Argentina, Brazil, Cyprus, Kenya, Peru, Philippines, Tanzania, Thailand, Tunisia and Turkey and the corresponding regression line are graphed in Figure E.11 which clearly illustrates the relationship between RER uncertainty and TOT uncertainty. In this figure the Asian countries are clustered together with low RER and low TOT uncertainty, whereas the Central American countries display both higher RER and higher TOT uncertainty. The 23 observations have been used to estimate the regression (standard error in parenthesis):

$$sRER = 0.08 + 0.89\ sTOT; \quad R^2 = 0.26$$

$$(0.06) \qquad (0.32)$$

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[9] Harberger (1988) generalizes the argument, pointing out that the supply elasticity of tradables (exportables and importables) in Asia is much higher than its counterpart in Latin America. Therefore, given a similar external shock, the RER in Asia has to undergo a smaller and quicker adjustment (as compared to the one needed in Latin America) in order to restore internal and external equilibrium.

[10] It is important to also consider the import-induced variability in the terms of trade. However, when comparing the recent economic history of Central America and Asia, we notice the fact that the hardest import prices shocks felt by the two regions (i.e., the two oil shocks) were common and therefore points to export-induced variability in the terms of trade.

where sRER and sTOT are the five-year forecast errors in percentage form. This regression allows us to decompose the RER uncertainty into that which is due to fundamental TOT uncertainty and a residual which may be mostly due to monetary shocks but may also be partly determined by other real shocks. According to this regression, 26 percent of the cross-country variability in RER uncertainty comes from the TOT fundamental. The estimated coefficient is both statistically significant and economically large. Almost 90 percent of the TOT uncertainty is translated into RER uncertainty.

85. Next we ask how important is the RER uncertainty as a determinant of economic performance[11]. Here is a simple equation, which links growth of GDP with RER uncertainty and terms of trade changes:

$$g(GDP) = 0.08 - 0.11\ sRER + 0.53\ g(TOT);\ ^{12} \quad R^2 = 0.52$$

$$(0.007) \quad (0.03) \quad (0.20)$$

where g(GDP) is the average annual growth of real GDP from 1970 to 1990 and g(TOT) is the average annual percentage change in the TOT. The TOT effect in this equation is both statistically significant and economically large. This equation suggests that 53 percent of the percentage change in the TOT is translated into economic growth. In a static setting in which productive capacity is fixed and improvements in the TOT just mean higher earnings, this would be a very large number since the trade sector as a share of GDP is often much less than 50 percent. But, dynamically, an improvement in the TOT may allow higher savings which is the real determinant of growth over longer periods of time.

86. The effect of RER uncertainty on economic growth is also measurable (statistically significant) and economically important. An increase in the RER uncertainty from the level in Korea of 8 percent to the Costa Rican level of 28 percent is estimated to reduce the average annual growth of real GDP by 2 percent ($0.20 \times 0.11 = 0.02$), or, equivalently, to reduce the total growth over this twenty year period by 40 percent which is a very substantial number.

87. What improvement can Costa Rica expect if all the variability in the RER is eliminated except the TOT fundamental? Using the first regression, $sRER = 0.08 + 0.89\ sTOT$, and the Costa Rican sTOT of 0.14, the predicted sRER is $0.08 + 0.89 \times 0.14 = 0.20$ compared with an actual of 0.28. This reduction in the RER uncertainty of 0.08 is a little less than half the gap between the Korean value for sRER and the Costa Rican value. This 0.08 figure translates into an improvement in the growth rate of $0.080 \times 0.110 = 0.009$, which is almost 1 percent—small perhaps for a single year but equal to 20 percent over a twenty year period (neglecting issues of compounding).

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[11] This relationship was studied originally by Edwards (1988).

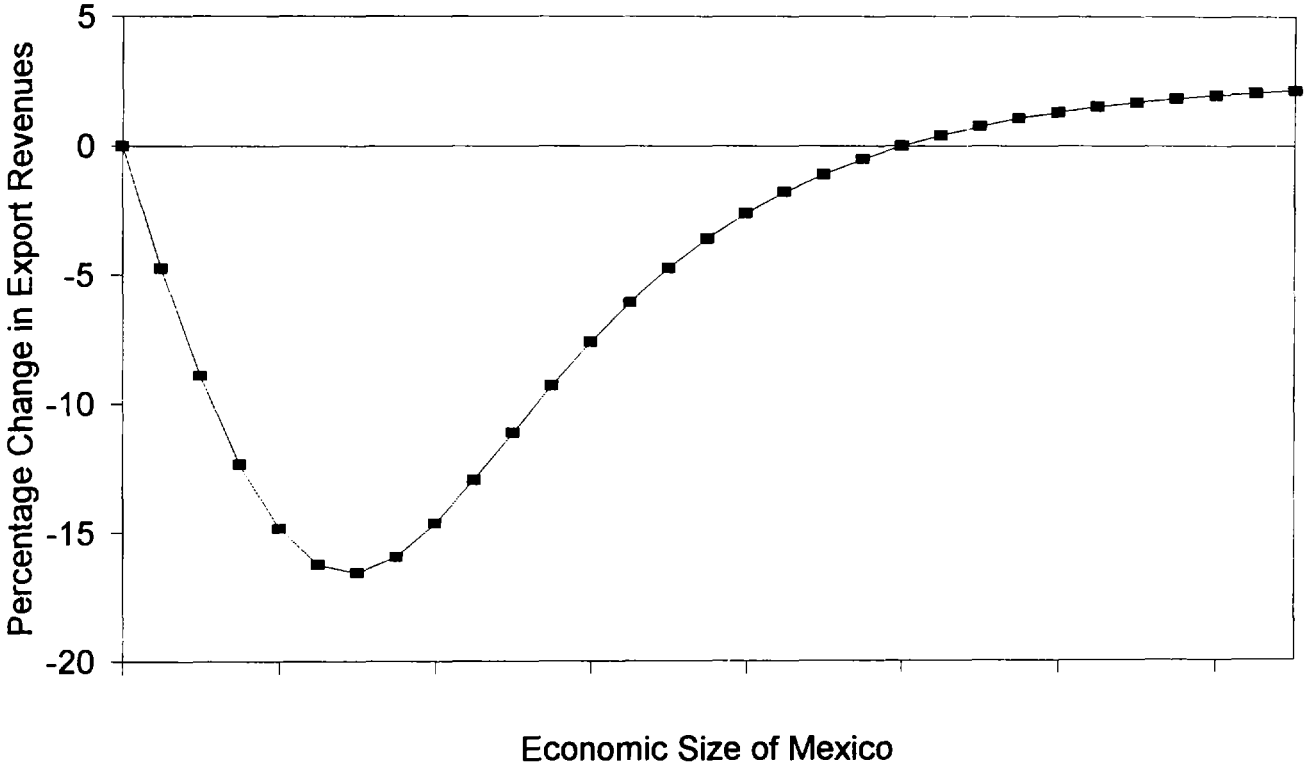
[12] In this formulation we also used as a measure of sRER the coefficient of variation, with very similar results.

88. In sum, we believe that real exchange rate uncertainty is an important determinant of the future economic growth in Central America affecting the capacity of the region to attract investments from either internal sources or external sources into the production of tradable manufactures. Even with the best macro economic management, a substantial amount of RER uncertainty will come from the fundamental TOT uncertainty. *This creates for Central America a chicken-and-egg problem. Expansion of exports of manufactures is necessary to stabilize the terms-of-trade, but the instability in the terms of trade deters the investments that would lead to expanded exports of manufactures. By greatly increasing the attractiveness of Mexico to foreign investors, NAFTA may be the straw that broke the camel's back, as far as Central America is concerned.*

Figure 1

Effect of NAFTA on Central America

Export Revenues and Size of Mexico



RESOURCE ENDOWMENTS
1988

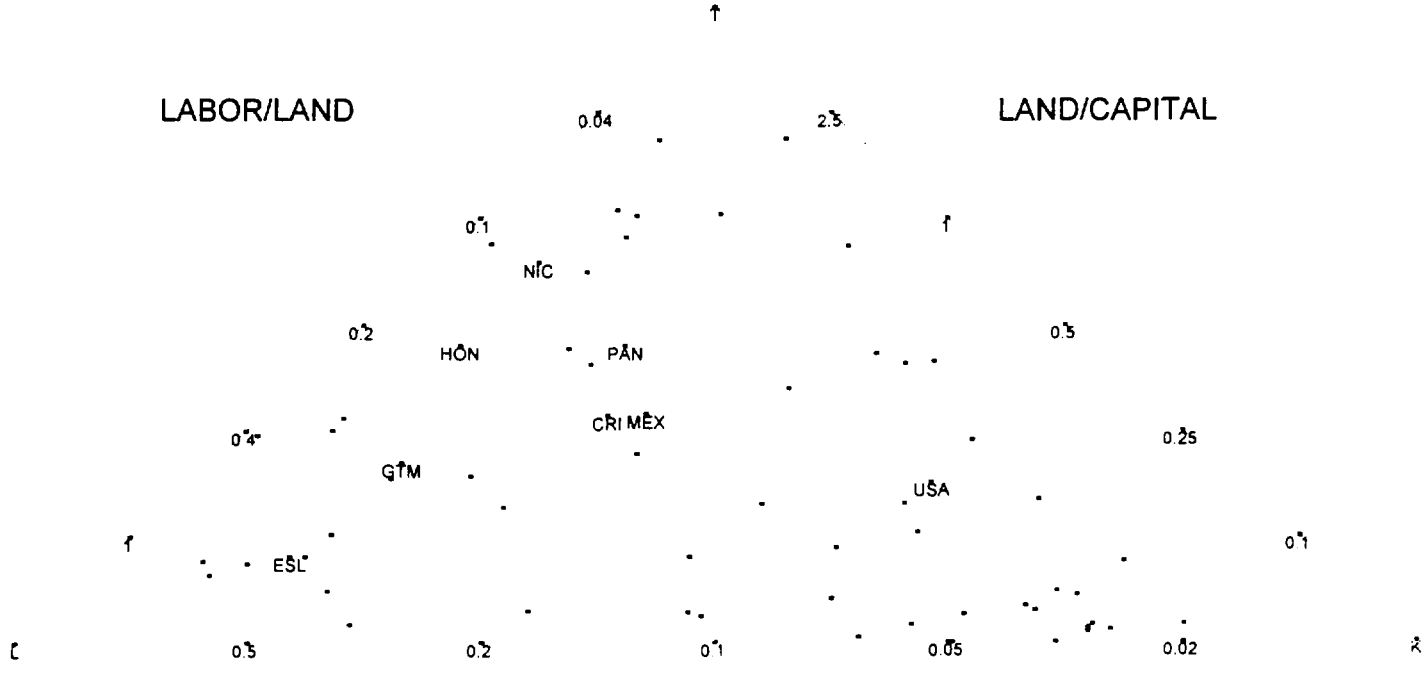
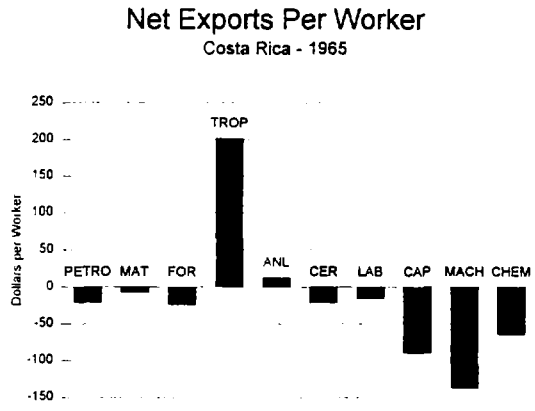
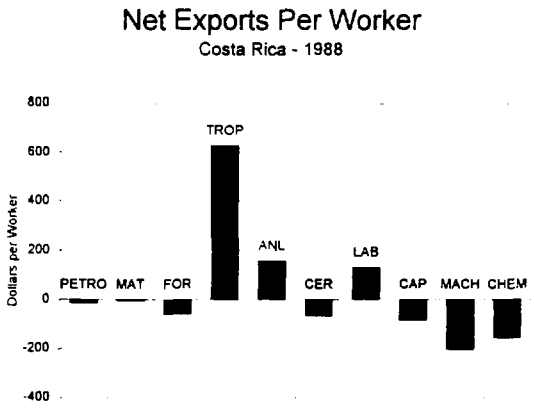
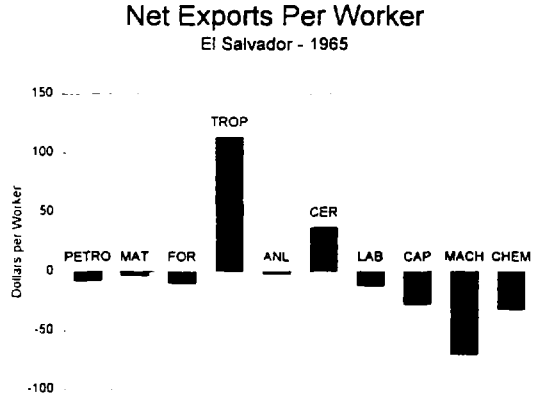


FIGURE E.2

Figure E.3


Net Exports Per Worker
Costa Rica - 1965
Dollars per Worker
250
200
150
100
50
0
-50
-100
-150
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM


Net Exports Per Worker
Costa Rica - 1988
Dollars per Worker
800
600
400
200
0
-200
-400
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM


Net Exports Per Worker
El Salvador - 1965
Dollars per Worker
150
100
50
0
-50
-100
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM

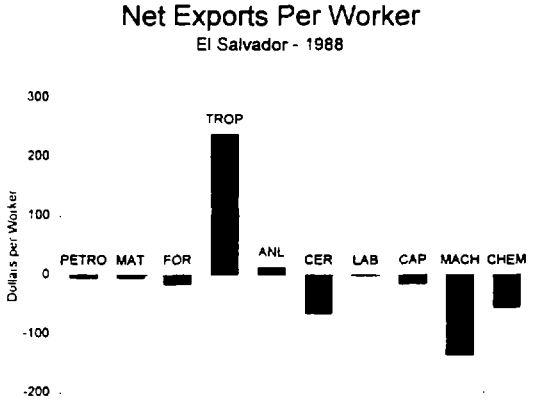

Net Exports Per Worker
El Salvador - 1988
Dollars per Worker
300
200
100
0
-100
-200
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM

Figure E.4

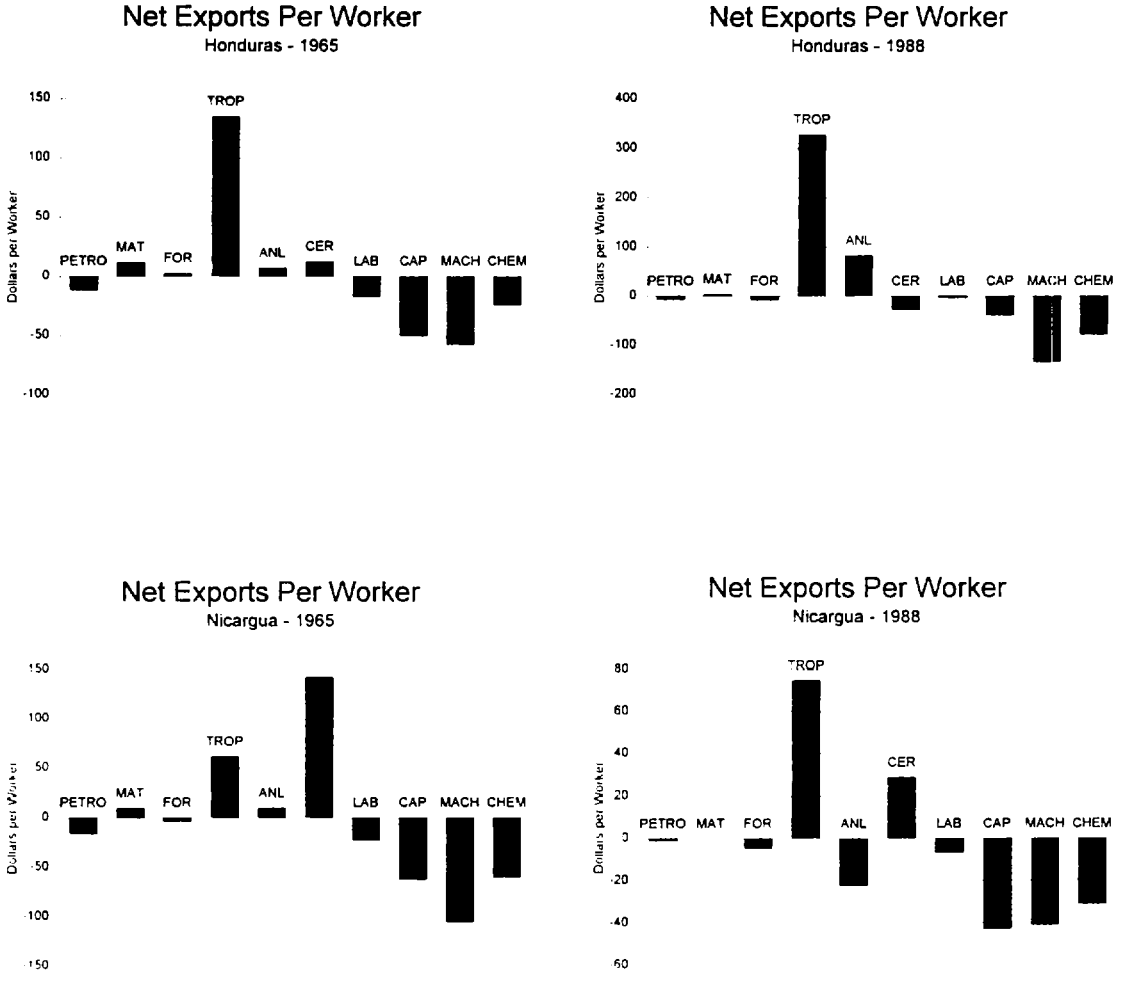

Net Exports Per Worker
Honduras - 1965
Dollars per Worker
150
100
50
0
-50
-100
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM
Net Exports Per Worker
Honduras - 1988
Dollars per Worker
400
300
200
100
0
-100
-200
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM
Net Exports Per Worker
Nicargua - 1965
150
100
50
0
-50
-100
-150
PETRO
MAT
FOR
TROP
ANL
LAB
CAP
MACH
CHEM
Net Exports Per Worker
Nicargua - 1988
Dollars per Worker
80
60
40
20
0
-20
-40
-60
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM

Figure E.5

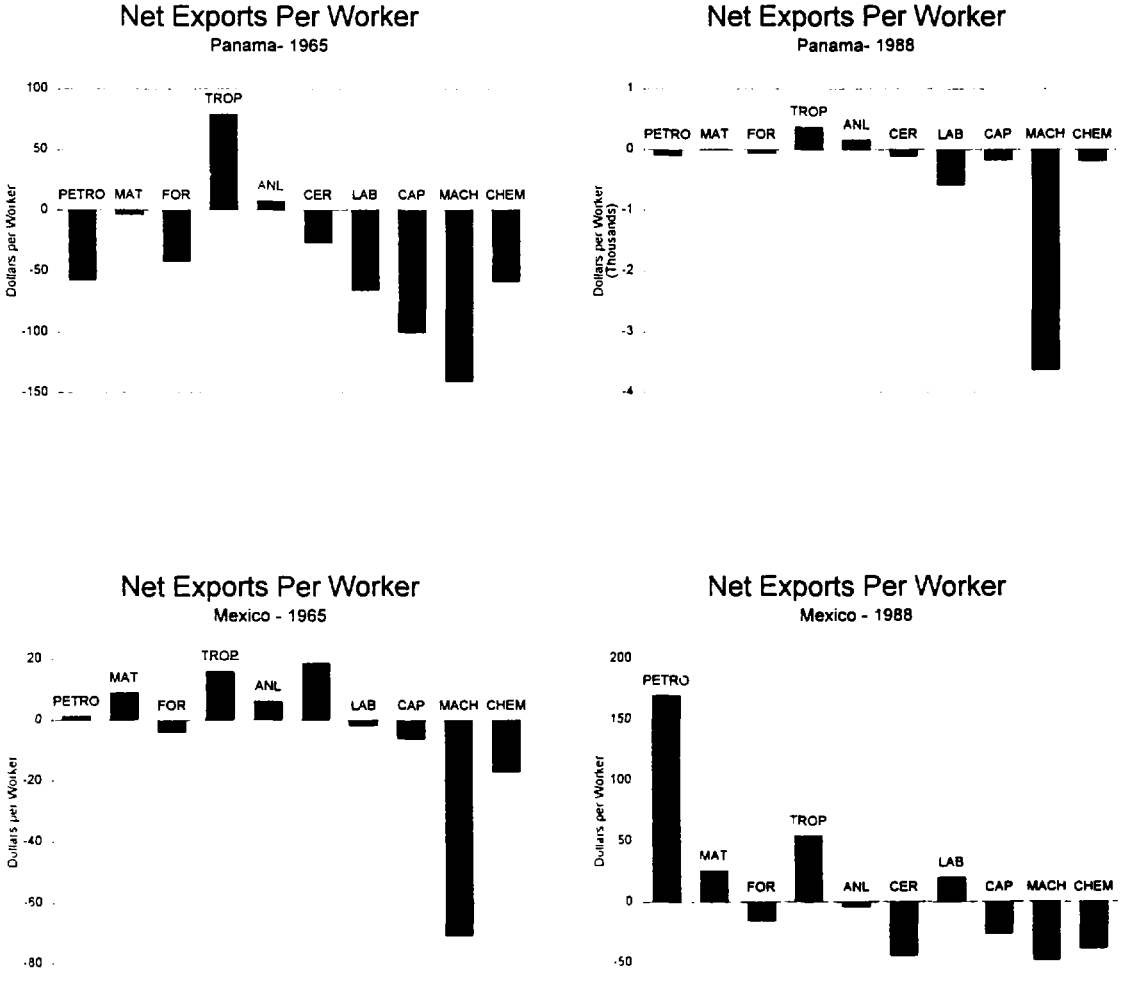
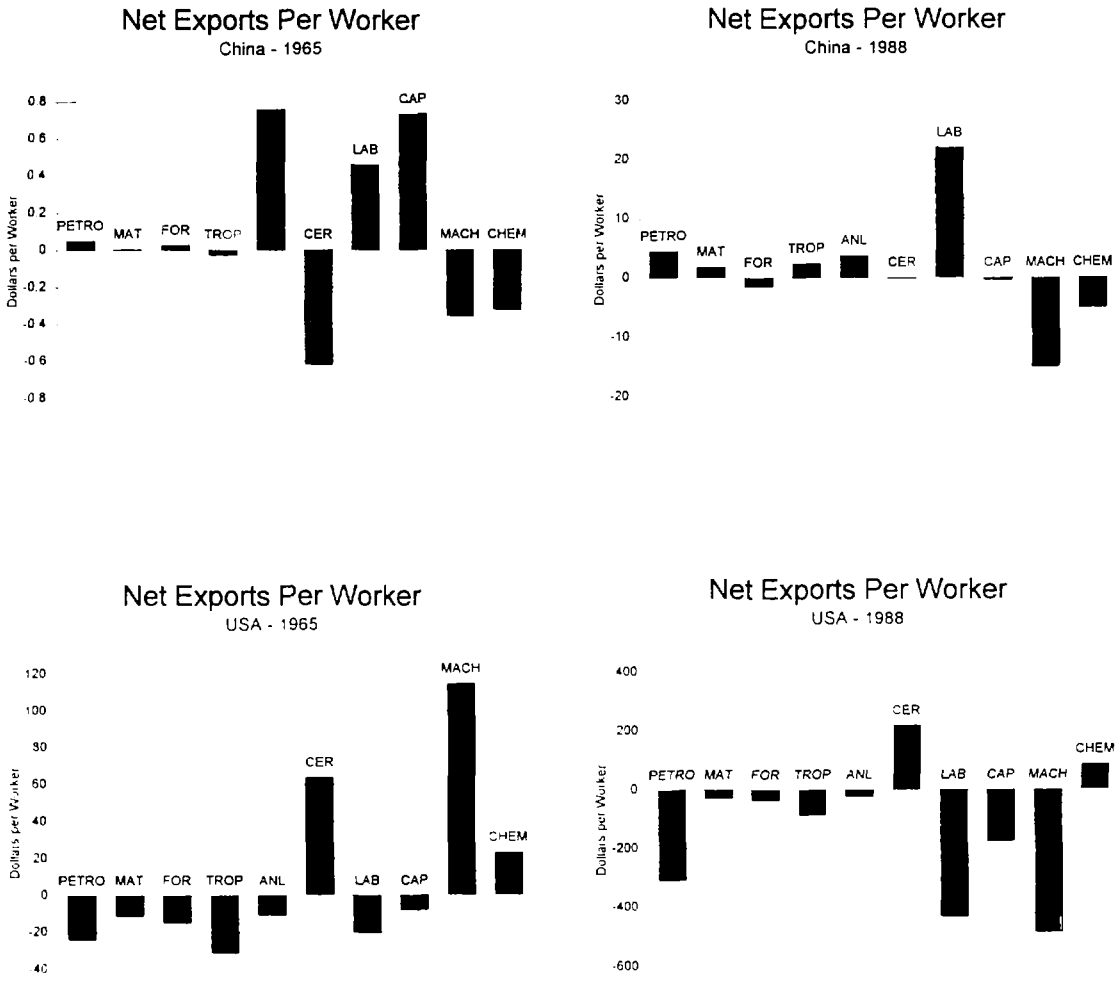

Net Exports Per Worker
Panama- 1965
Dollars per Worker
100
50
0
-50
-100
-150
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM
Net Exports Per Worker
Panama- 1988
Dollars per Worker (Thousands)
1
0
-1
-2
-3
-4
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM
Net Exports Per Worker
Mexico - 1965
Dollars per Worker
20
0
-20
-40
-60
-80
PETRO
MAT
FOR
TROP
ANL
LAB
CAP
MACH
CHEM
Net Exports Per Worker
Mexico - 1988
Dollars per Worker
200
150
100
50
0
-50
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM

Figure E.6


Net Exports Per Worker
China - 1965
Dollars per Worker
PETRO
MAT
FOR
TROP
CER
LAB
CAP
MACH
CHEM
Net Exports Per Worker
China - 1988
Dollars per Worker
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM
Net Exports Per Worker
USA - 1965
Dollars per Worker
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM
Net Exports Per Worker
USA - 1988
Dollars per Worker
PETRO
MAT
FOR
TROP
ANL
CER
LAB
CAP
MACH
CHEM

Labor-Intensive Net Exports Per Worker

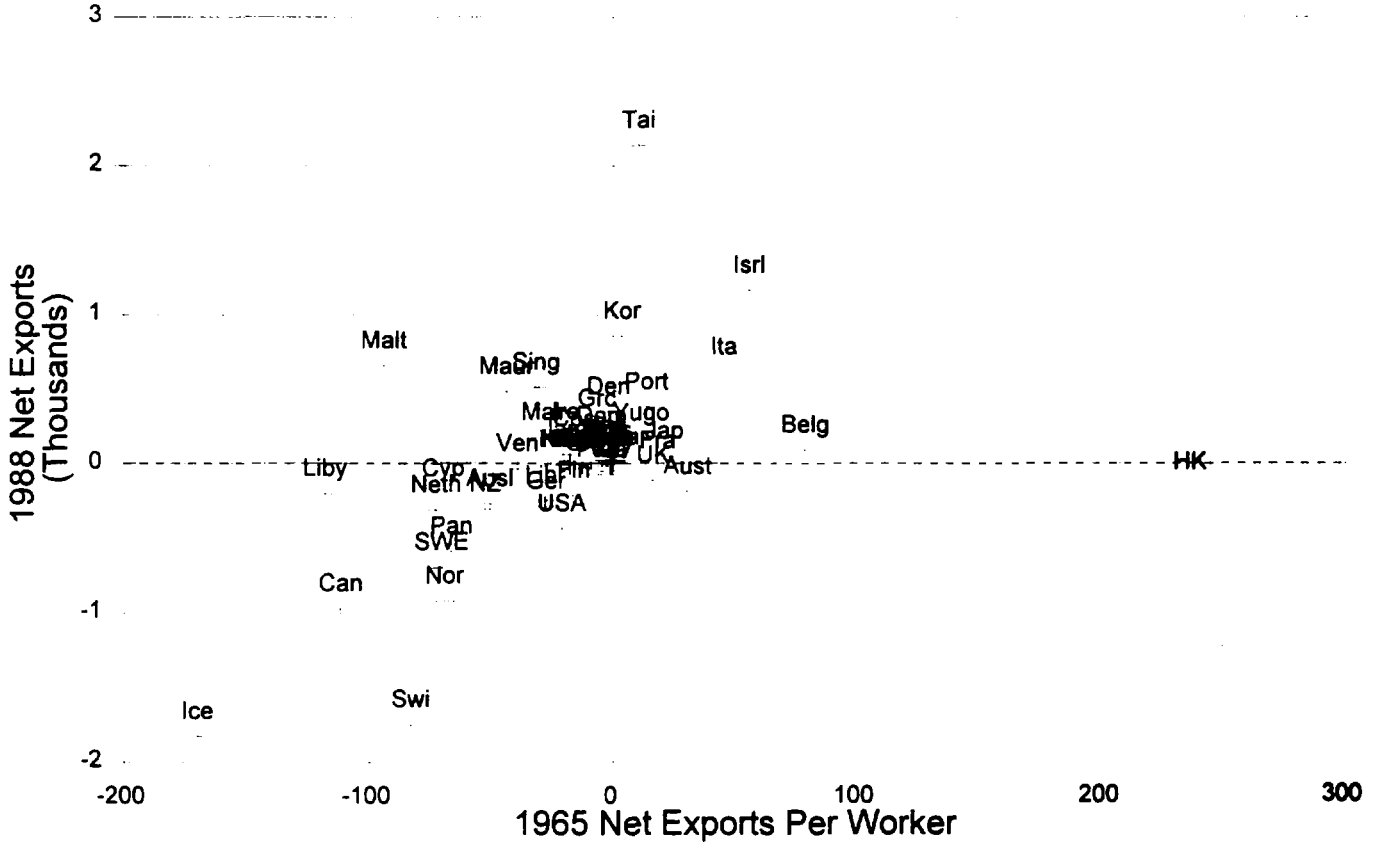


Figure E.7.a

Labor-Intensive Net Exports Per Worker

Log Scale

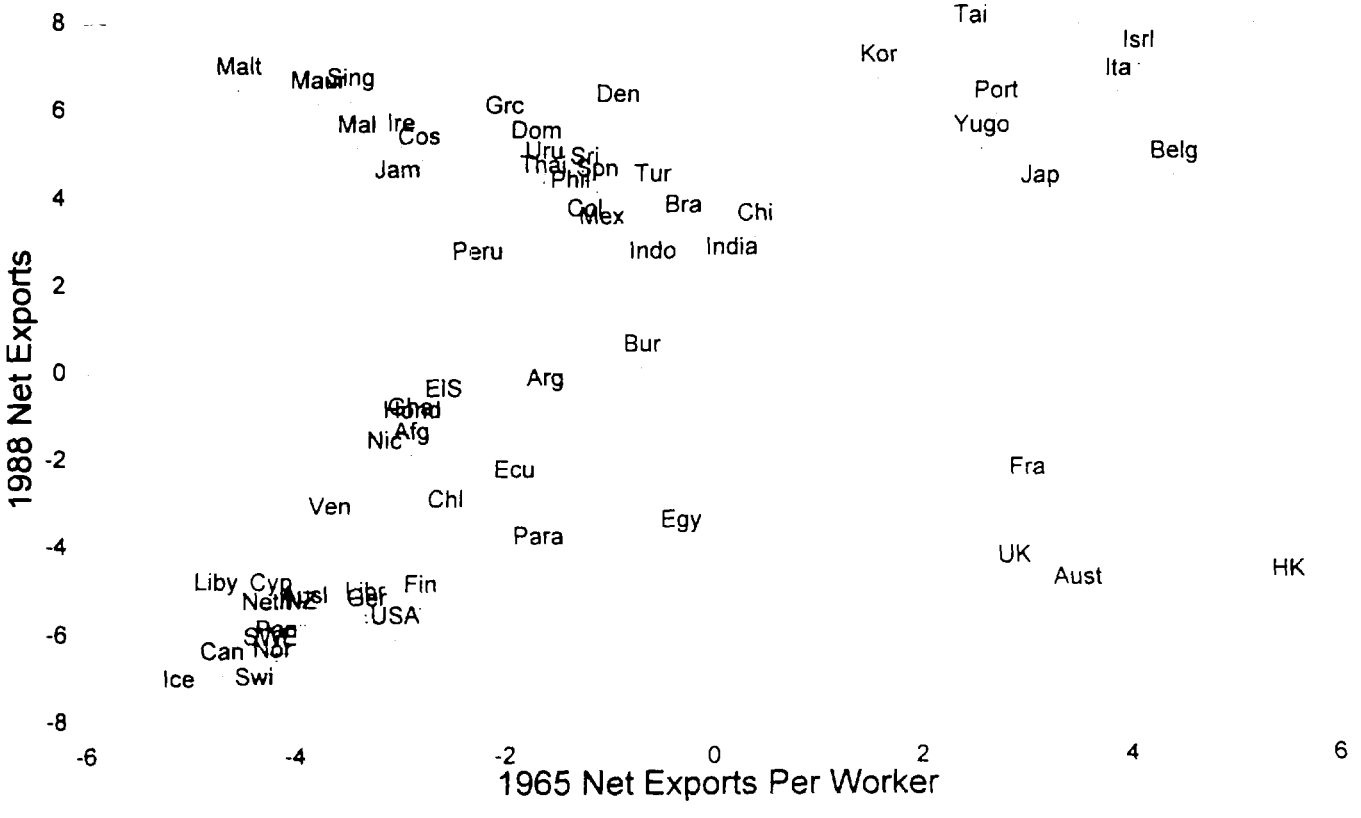


Figure E.7.b

FIGURE E.8

LABOR INTENSIVE NET EXPORTS
1988

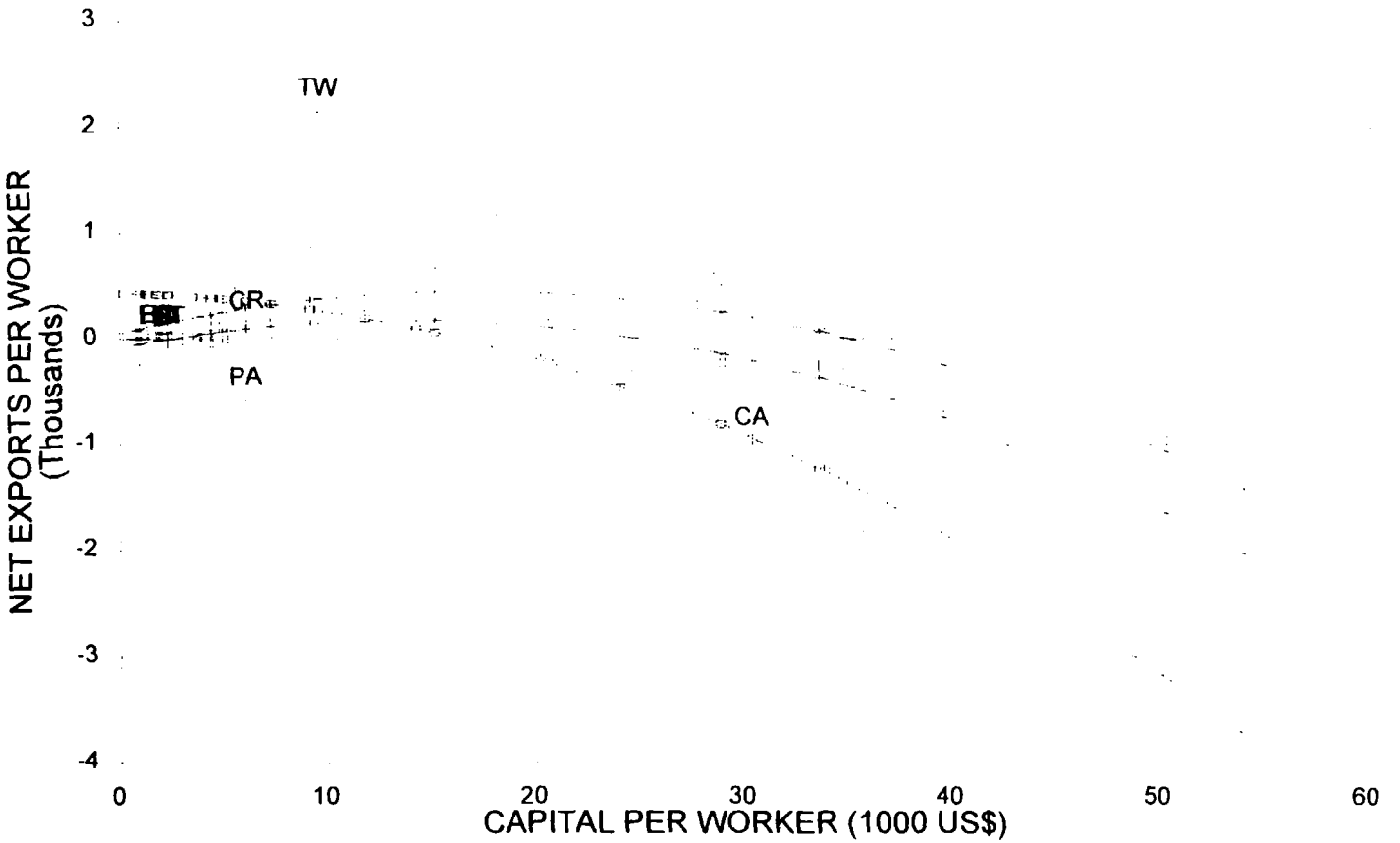


Figure: E.9

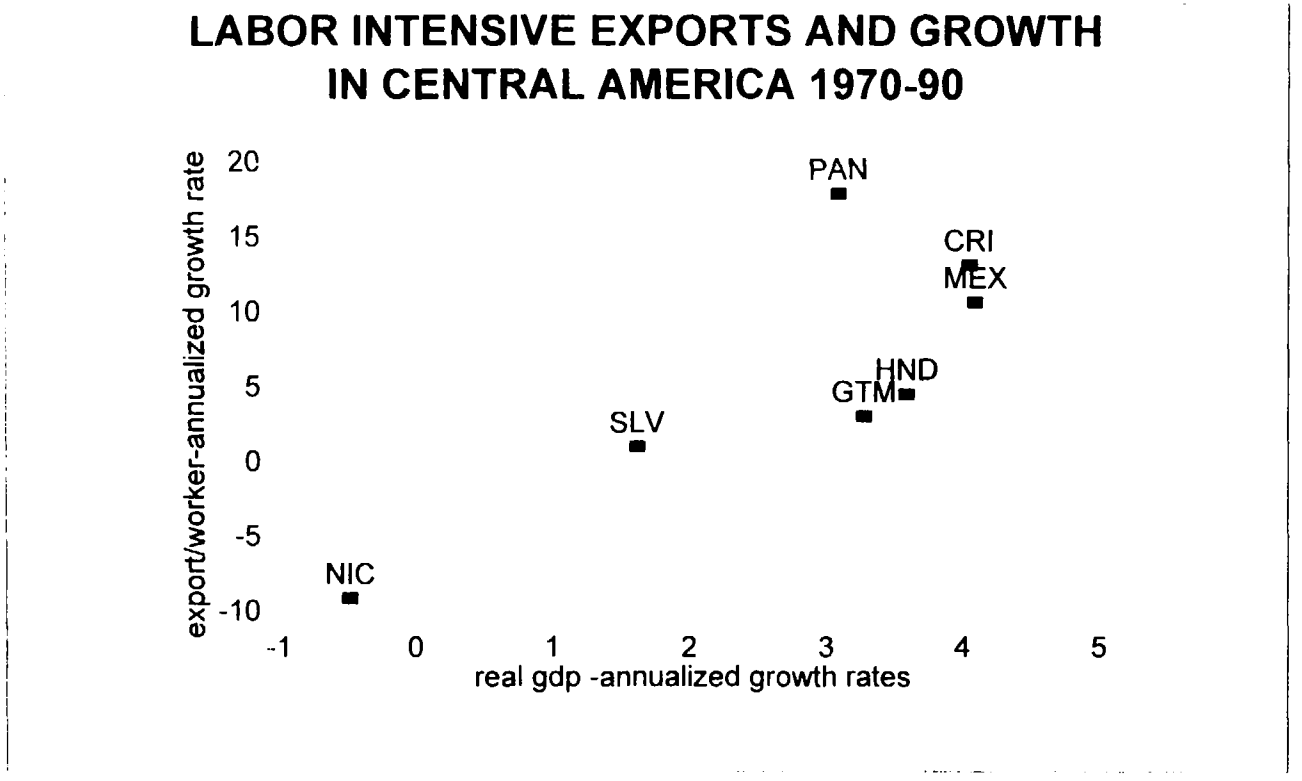
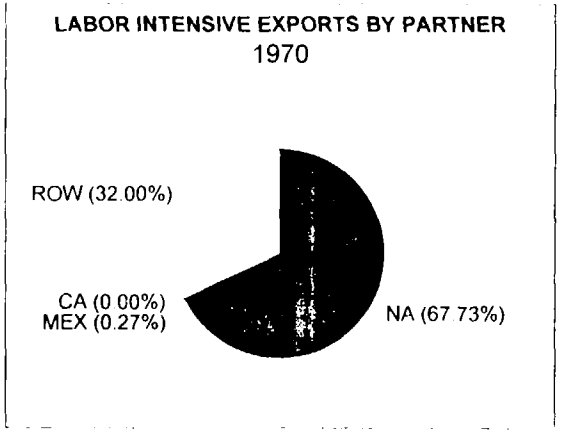
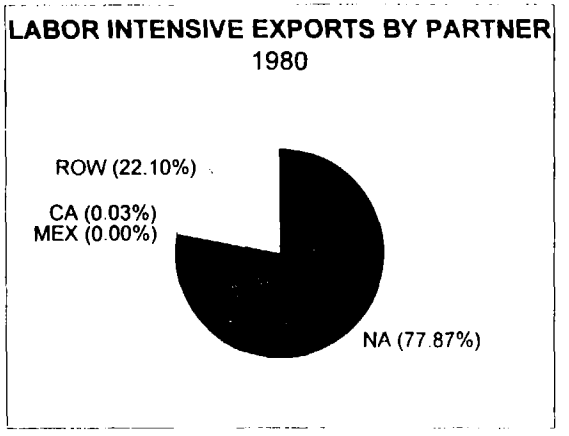

LABOR INTENSIVE EXPORTS AND GROWTH
IN CENTRAL AMERICA 1970-90
export/worker-annualized growth rate
20
15
10
5
0
-5
-10
-1
0
1
2
3
4
5
real gdp -annualized growth rates
PAN
CRI
MEX
HND
GTM
SLV
NIC

Figure: E.10.1

BELIZE LABOR INTENSIVE EXPORTS





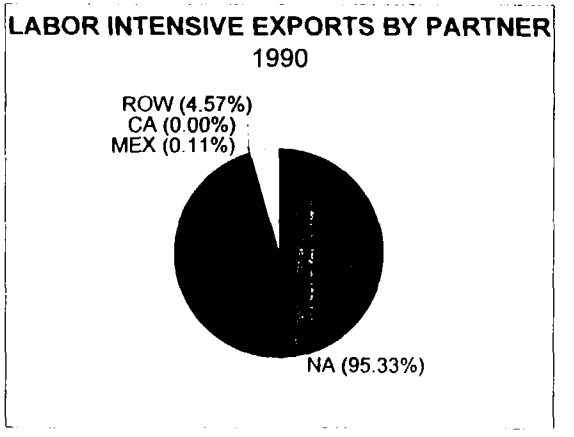
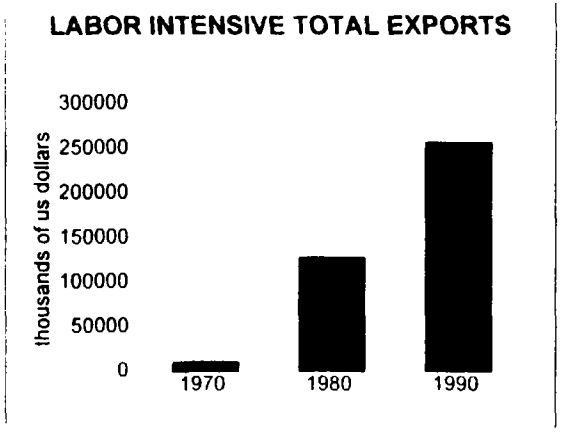
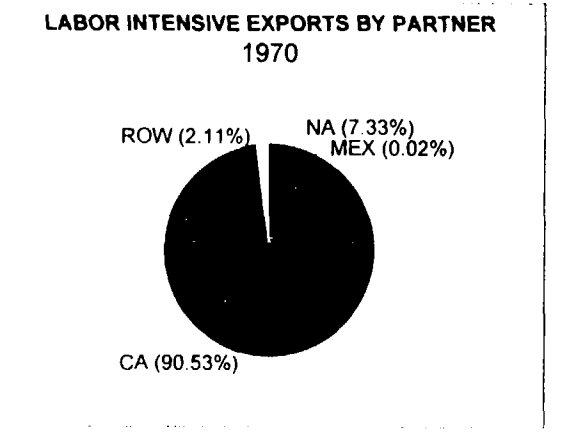
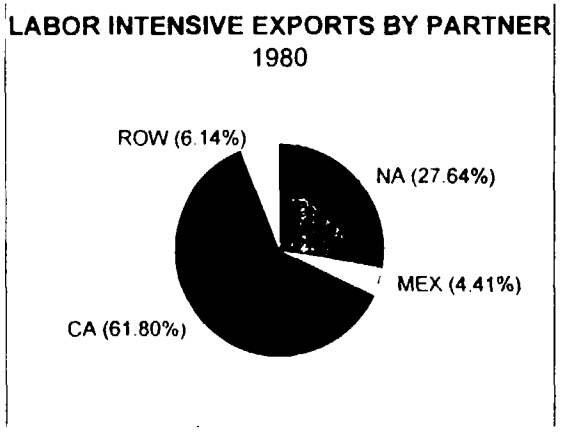


Figure: E.10.2

COSTA RICA LABOR INTENSIVE EXPORTS







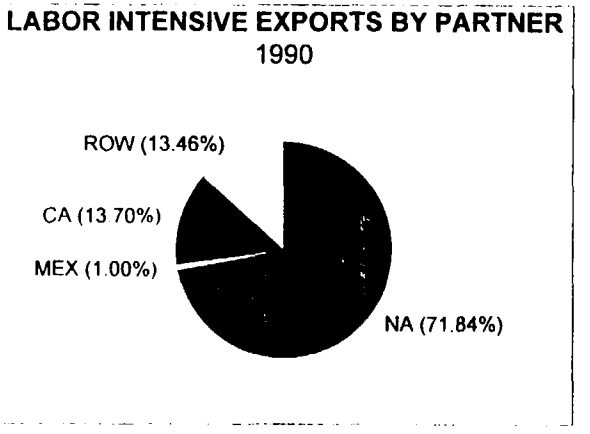
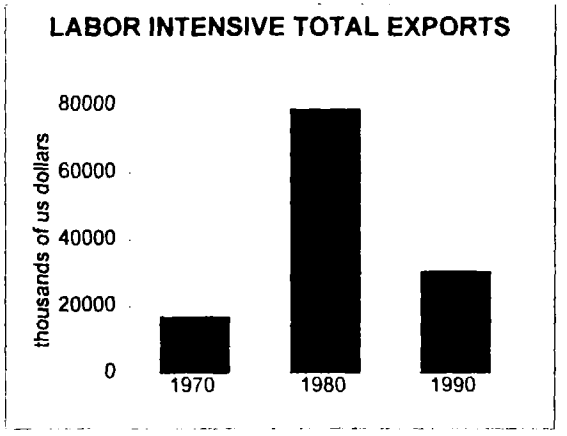
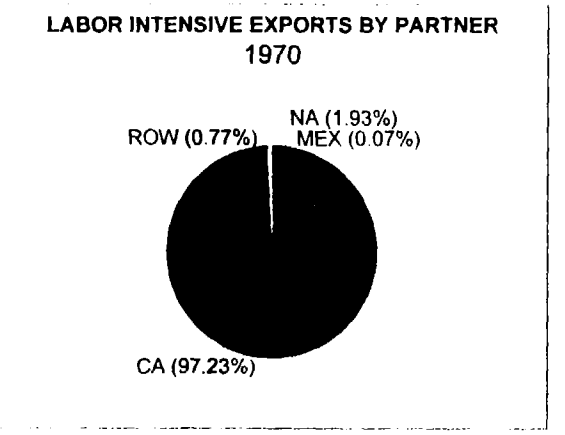
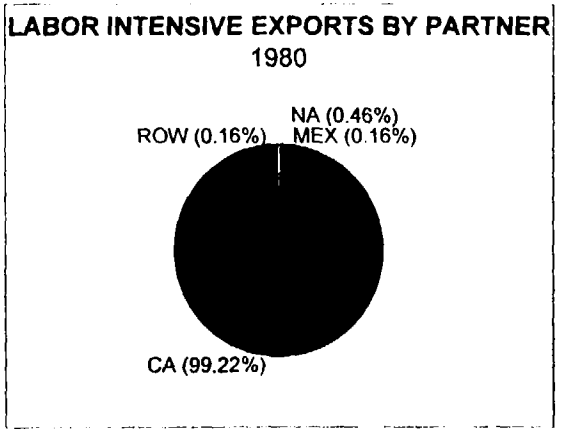


Figure: E.10.3

EL SALVADOR LABOR INTENSIVE EXPORTS







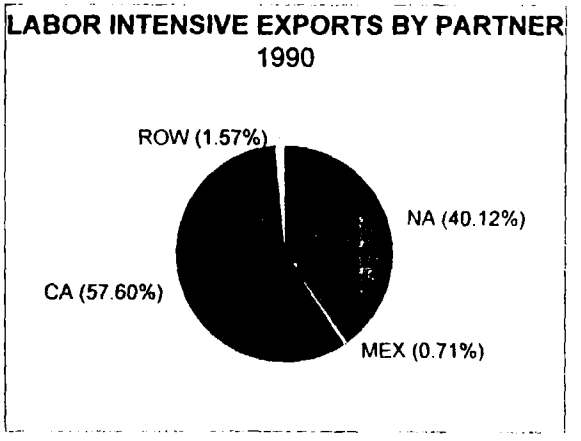
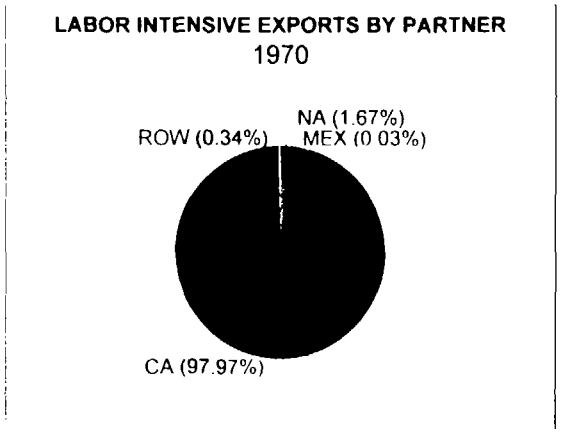
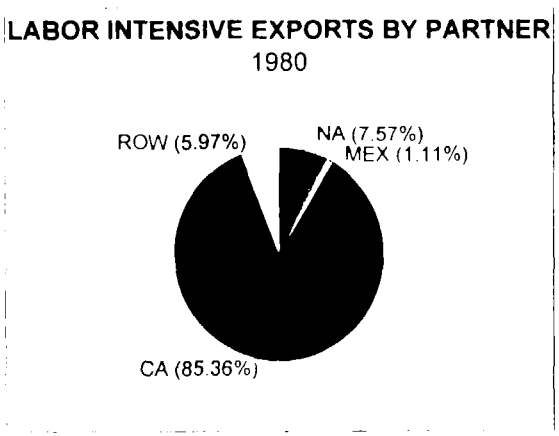


Figure: E.10.4

GUATEMALA LABOR INTENSIVE EXPORTS





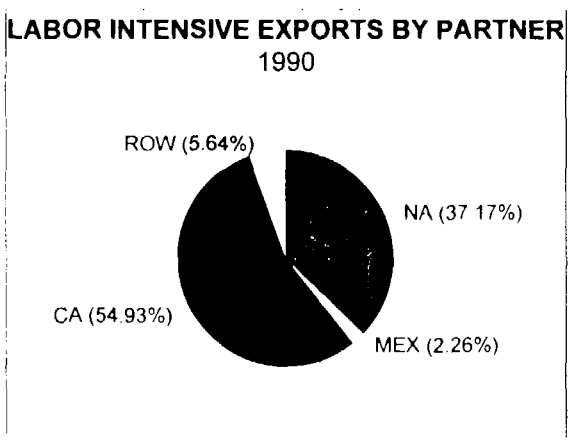
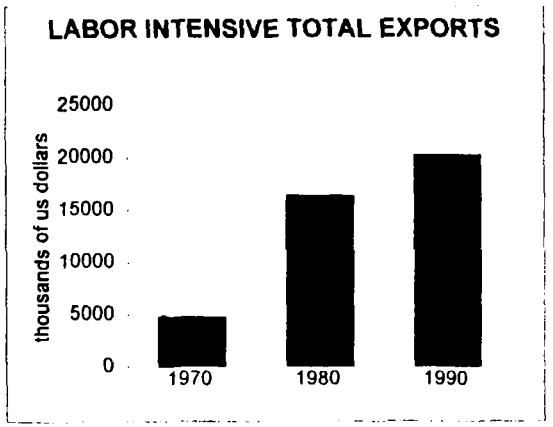
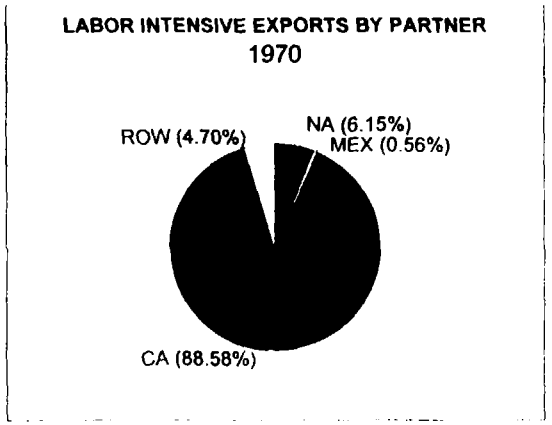
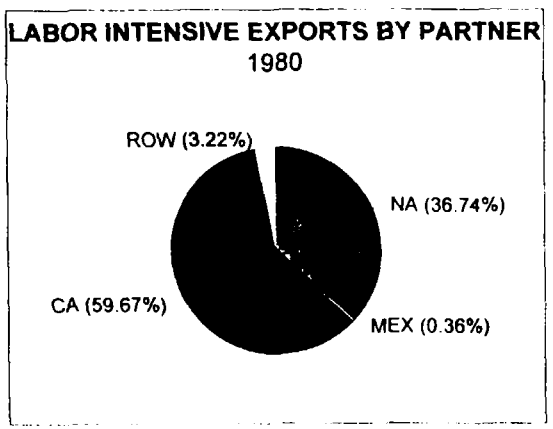


Figure: E.10.5

HONDURAS LABOR INTENSIVE EXPORTS







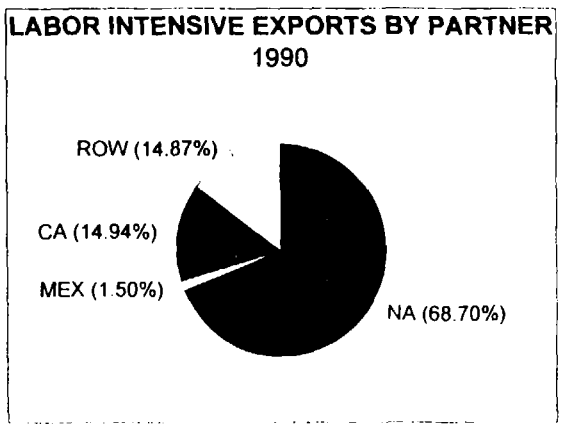
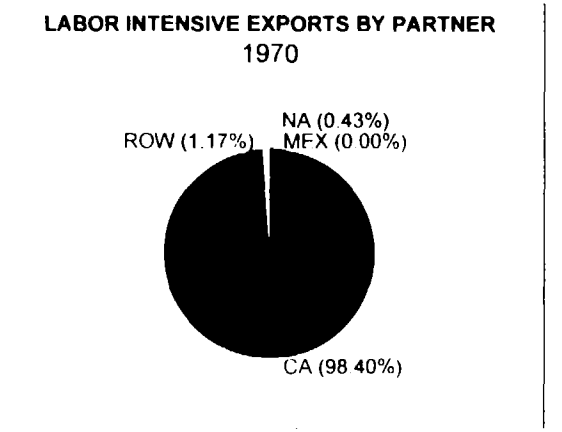
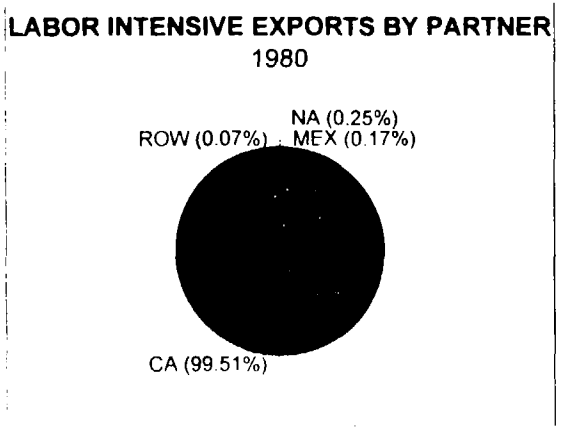


Figure: E.10 6

NICARAGUA LABOR INTENSIVE EXPORTS





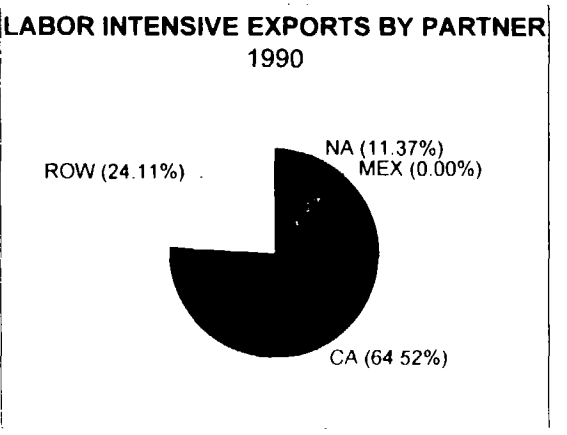
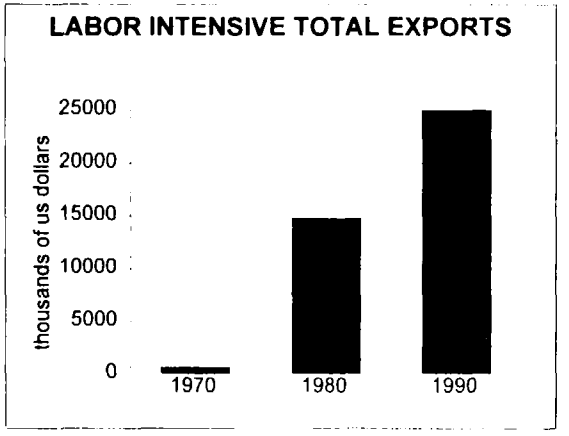
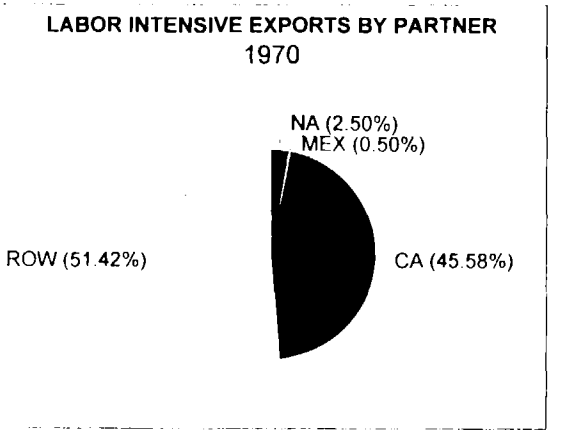
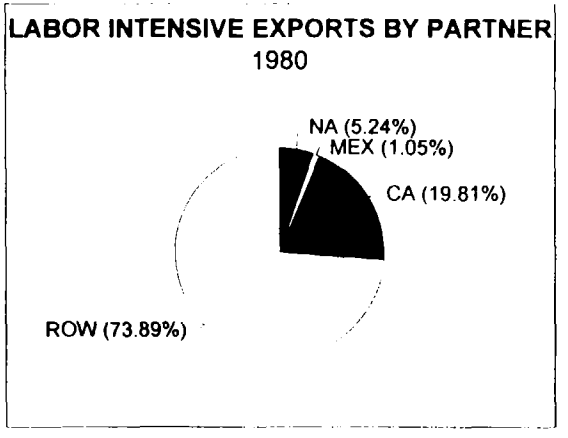


Figure: E.10.7

PANAMA LABOR INTENSIVE EXPORTS







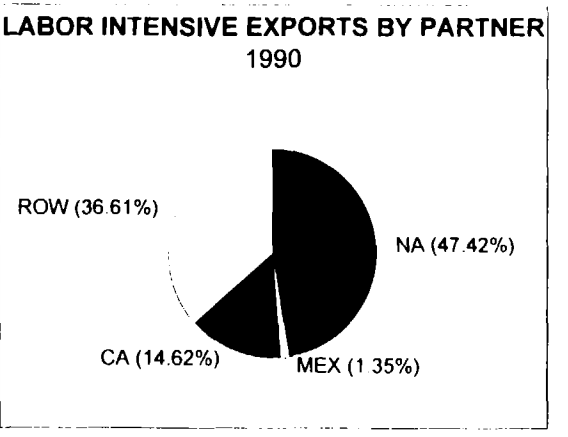
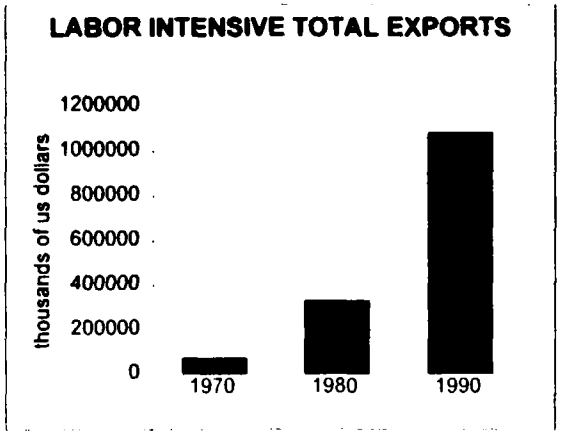
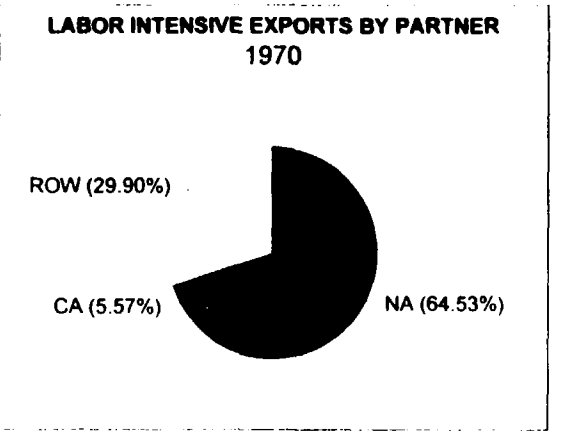
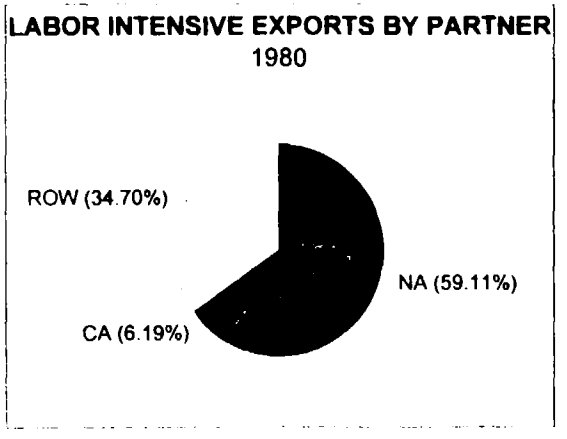


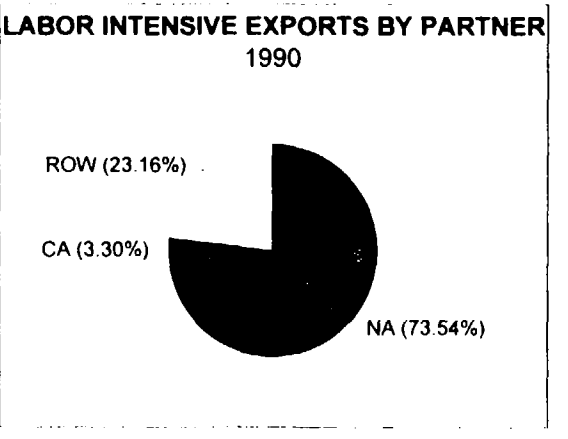
Figure: E.10.8

MEXICO LABOR INTENSIVE EXPORTS









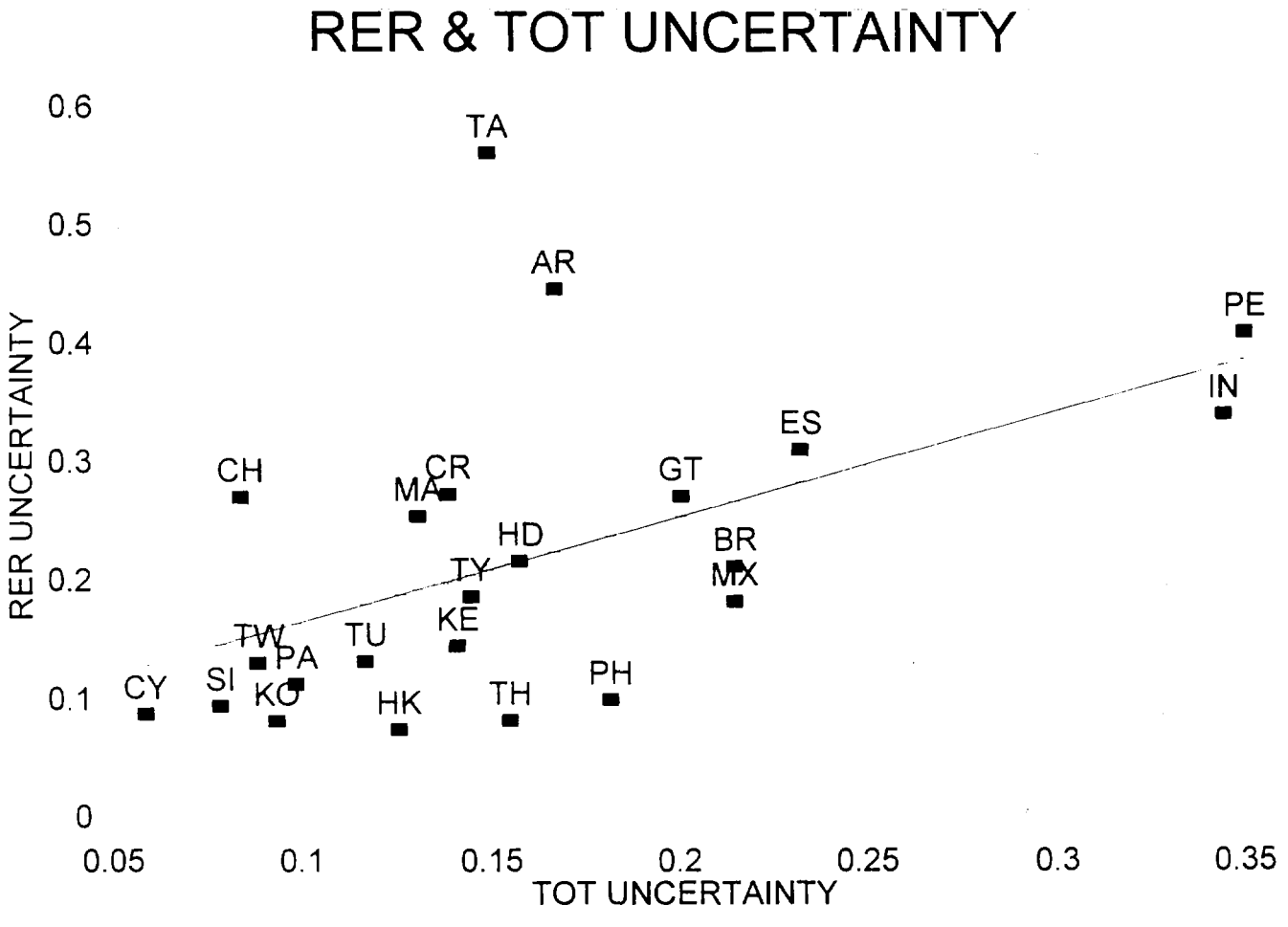

RER & TOT UNCERTAINTY
RER UNCERTAINTY
TOT UNCERTAINTY
0.6
0.5
0.4
0.3
0.2
0.1
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
TA
AR
PE
IN
ES
CH
CR
MA
GT
HD
BR
MX
TY
KE
TW
TU
PA
PH
CY
SI
KO
HK
TH

FIGURE E.11

Table E.1
Net Exports Per Worker, Ordered by Labor-Intensive Net Exports
1965 and 1988

	1965	PETRO	MAT	FOR	TROP	ANL	CER	**LAB**	CAP	MACH	CHEM	Balance	Sum Absolute
11	China	0.0	0.0	0.0	-0.0	0.8	-0.6	**0.5**	0.7	-0.4	-0.3	0.7	3.4
40	Mexico	1.4	9.0	-3.9	16.1	6.3	18.8	**-2.0**	-6.2	-71.1	-17.2	-48.9	151.9
18	El Salvador	-8.1	-3.5	-10.0	113.3	-2.3	37.3	**-12.6**	-28.0	-70.8	-32.4	-17.0	318.1
13	Costa Rica	-21.6	-7.2	-23.9	202.0	12.5	-21.6	**-15.8**	-90.0	-137.5	-65.0	-168.1	597.1
24	Honduras	-11.6	11.9	2.4	135.0	7.3	12.7	**-17.2**	-50.2	-57.6	-24.4	8.2	330.6
58	USA	-24.0	-11.3	-14.9	-31.4	-10.8	63.7	**-20.7**	-8.1	114.9	23.2	80.7	322.9
43	Nicaragua	-16.0	9.6	-3.7	61.9	9.9	143.0	**-22.9**	-62.6	-105.3	-60.4	-46.5	495.2
45	Panama	-57.4	-3.7	-42.3	79.0	7.5	-27.1	**-65.9**	-100.4	-141.2	-58.9	-410.3	583.4

	1988	PETRO	MAT	FOR	TROP	ANL	CER	**LAB**	CAP	MACH	CHEM	Balance	Sum Absolute
13	Costa Rica	-13.3	-5.1	-61.4	628.9	158.4	-68.9	**132.0**	-88.2	-206.0	-157.4	318.9	1519.5
11	China	4.6	1.8	-1.5	2.4	3.7	-0.2	**22.0**	-0.4	-15.1	-5.1	12.3	56.8
40	Mexico	170.1	26.2	-15.9	54.3	-4.1	-44.7	**20.3**	-26.6	-48.7	-39.1	91.7	450.0
18	El Salvador	-5.9	-5.5	-16.5	238.4	13.8	-66.6	**-1.4**	-15.7	-137.2	-56.6	-53.2	557.7
24	Honduras	-7.4	3.5	-8.5	327.8	82.8	-28.0	**-3.0**	-39.0	-134.0	-78.0	116.2	712.1
43	Nicaragua	-1.1	-0.1	-4.8	75.1	-22.7	28.9	**-6.9**	-43.0	-41.2	-31.3	-47.1	254.9
58	USA	-308.6	-29.4	-35.6	-87.3	-25.6	219.6	**-434.9**	-177.7	-487.8	84.6	-1282.7	1891.1
45	Panama	-96.2	4.5	-58.6	372.4	159.3	-114.5	**-587.6**	-172.9	-3643.5	-189.9	-4327.0	5399.6

Table E.2

Capital Accumulation Scenarios

Country	Average '81 - '90			Investment/GNP			Capital per Worker (Thousands)			
	Lab. Force Growth	Savings/ GNP	Investment/ GNP	(1)	(2)	(3)	1988	Projections (1)	(2)	(3)
COSTA RICA	2.9%	0.24	0.26	0.24	0.26	0.39	6.16	6.48	7.45	17.12
EL SALVADOR	1.5%	0.06	0.13	0.06	0.13	0.19	1.76	1.24	4.46	12.77
GUATEMALA	2.9%	0.09	0.13	0.09	0.13	0.19	2.32	1.37	2.07	4.22
HONDURAS	3.3%	0.11	0.15	0.11	0.15	0.23	1.88	1.89	3.37	9.07
NICARAGUA	3.5%	0.05	0.22	0.05	0.22	0.32	2.32	0.71	4.78	13.65
PANAMA	2.4%	0.19	0.17	0.19	0.17	0.26	6.11	6.88	5.75	11.76
MEXICO	2.2%	0.25	0.21	0.25	0.21	0.32	7.35	11.07	8.25	17.93

Scenarios: **(1) Savings Rate Only**
(2) Historical Investment Rate
(3) High Investment Rate

Table E.3

Projected Changes in Labor-Intensive Trade, Internal Comparison

Country	1988 GNP per Capita	Net Exports of Labor-Intensive Products per Worker				Net Exports of Labor-Intensive Products/GNP			
		1988	Scenarios			1988	Scenarios		
		Actual	(1)	(2)	(3)	Actual	(1)	(2)	(3)
COSTA RICA	1616	132.0	150.9	173.1	244.2	3.05%	3.49%	4.00%	5.65%
EL SALVADOR	1059	-1.4	69.4	191.8	373.3	-0.04%	2.04%	5.64%	10.99%
GUATEMALA	881	-7.1	37.7	65.9	138.9	-0.26%	1.39%	2.43%	5.13%
HONDURAS	859	-3.0	21.1	70.3	200.3	-0.11%	0.75%	2.51%	7.14%
NICARAGUA	813	-6.9	-107.1	4.3	90.5	-0.26%	-4.05%	0.16%	3.42%
PANAMA	1927	-587.6	-557.6	-581.6	-498.0	-10.89%	-10.34%	-10.78%	-9.23%
MEXICO	2023	20.3	88.4	47.9	95.4	0.35%	1.53%	0.83%	1.65%

Scenarios: (1) Savings Rate Only
(2) Historical Investment Rate
(3) High Investment Rate

Note: Net exports of labor-intensive goods per worker are in 1988 dollars.

Table E.4

Projected Changes in Labor-Intensive Trade, External Comparison

	Net Exports of Labor Intensive Products															
	1988 - Millions of dollars				% US IMPORTS				% MEXICAN IMPORTS				% MEXICAN CONSUMPTION			
	Scenarios				Scenarios				Scenarios				Scenarios			
Country	Actual	(1)	(2)	(3)	Actual	(1)	(2)	(3)	Actual	(1)	(2)	(3)	Actual	(1)	(2)	(3)
COSTA RICA	131.7	200.7	230.2	324.8	0.16%	0.24%	0.28%	0.39%	6 5%	10.0%	11.4%	16.1%	2.8%	4.2%	4.8%	6.8%
EL SALVADOR	-2.2	127.3	352.0	685.2	-0.00%	0.15%	0.43%	0.83%	-0.1%	6.3%	17.5%	34.0%	-0.0%	2.7%	7.4%	14.3%
GUATEMALA	-20.7	145.3	253.6	535.1	-0.02%	0.18%	0.31%	0.65%	-1.0%	7.2%	12.6%	26.5%	-0.4%	3.0%	5.3%	11.2%
HONDURAS	-4.4	43.4	144.6	412.1	-0.01%	0.05%	0.17%	0.50%	-0 2%	2.2%	7.2%	20.4%	-0.1%	0.9%	3.0%	8.6%
NICARAGUA	-7.7	-168.6	6.7	142.6	-0.01%	-0.20%	0.01%	0.17%	-0.4%	-8.4%	0.3%	7.1%	-0.2%	-3.5%	0.1%	3.0%
PANAMA	-485.9	-587.1	-612.3	-524.3	-0.59%	-0.71%	-0.74%	-0.63%	-24.1%	-29.1%	-30.4%	-26.0%	-10.2%	-12.3%	-12.8%	-11.0%
TOTAL CA	-389.3	-239.0	374.9	1575.5	-0.47%	-0.29%	0.45%	1.90%	-19.3%	-11.9%	18.6%	78.2%	-8.1%	-5.0%	7.8%	33.0%
MEXICO	595.6	3231.1	1750.7	3485.3	0.72%	3.90%	2.11%	4.21%	-	-	-	-	-	-	-	-

Scenarios: (1) Savings Rate Only
(2) Historical Investment Rate
(3) High Investment Rate

Table E.5

TOP TEN U.S. TRADE PARTNERS AND CENTRAL AMERICA

(Thousands of U.S. Dollars)

Top Ten Suppliers of U.S Imports

	1989	1993	*Share* 1993	Growth Rate
CANADA	89,323,483	113,148,331	18.94%	6.09%
JAPAN	95,107,558	109,153,793	18.27%	3.50%
MEXICO	26,947,371	39,432,557	6.60%	9.99%
CHINA	12,762,004	33,577,174	5.62%	27.36%
GERMANY	25,608,344	28,923,770	4.84%	3.09%
TAIWAN	25,498,565	26,170,053	4.38%	0.65%
UNITED KINGDOM	18,550,272	21,944,892	3.67%	4.29%
KOREA,SOUTH	20,410,085	17,639,935	2.95%	-3.58%
FRANCE	13,124,824	15,380,882	2.57%	4.05%
ITALY	12,556,742	13,649,148	2.28%	2.11%
Total Top 10 Suppliers	339,889,248	419,020,535	70.14%	5.37%
Central America	2848547	4887398	0.82%	14.45%
COSTA RICA	1,063,789	1,673,079	0.28%	11.99%
GUATEMALA	667,544	1,281,706	0.21%	17.71%
HONDURAS	531,657	984,769	0.16%	16.66%
EL SALVADOR	257,348	505,884	0.08%	18.41%
PANAMA	283,287	254,865	0.04%	-2.61%
NICARAGUA	34	134,434	0.02%	692.97%
BELIZE	44,888	52,661	0.01%	4.07%

Top Ten Purcharsers of U.S. Exports

CANADA	64,977,464	91,865,900	20.91%	9.04%
JAPAN	42,764,273	46,045,048	10.48%	1.87%
MEXICO	24,117,255	40,265,478	9.17%	13.67%
UNITED KINGDOM	19,642,736	24,497,314	5.58%	5.68%
GERMANY	16,069,190	17,946,800	4.09%	2.80%
TAIWAN	10,974,696	15,585,360	3.55%	9.16%
KOREA, SOUTH	13,207,742	14,358,535	3.27%	2.11%
FRANCE	10,919,097	12,462,697	2.84%	3.36%
NETHERLANDS	10,876,043	12,167,525	2.77%	2.84%
SINGAPORE	7,001,752	10,655,052	2.43%	11.07%
Total Top 10 Exposures	220,550,248	285,849,709	65.07%	6.70%
Central America	3,301,991	5,834,531	1.33%	15.29%
COSTA RICA	863,730	1,504,155	0.34%	14.88%
GUATEMALA	647,033	1,267,554	0.29%	18.31%
PANAMA	679,829	1,086,757	0.25%	12.44%
HONDURAS	504,992	867,033	0.20%	14.47%
EL SALVADOR	513,904	847,143	0.19%	13.31%
NICARAGUA	1,802	141,486	0.03%	197.67%
BELIZE	90,701	120,403	0.03%	7.34%

Total Trade

CANADA	154,300,947	205,014,231	19.78%	7.36%
JAPAN	137,871,831	155,198,841	14.97%	3.00%
MEXICO	51,064,626	79,698,035	7.69%	11.77%
GERMANY	41,677,534	46,870,570	4.52%	2.98%
UNITED KINGDOM	38,193,008	46,442,206	4.48%	5.01%
CHINA	18,537,482	42,196,484	4.07%	22.83%
TAIWAN	36,473,261	41,755,413	4.03%	3.44%
KOREA,SOUTH	33,617,827	31,998,470	3.09%	-1.23%
FRANCE	24,043,921	27,843,579	2.69%	3.74%
ITALY	20,198,271	19,782,192	1.91%	-0.52%

Source: National Trade Data Bank.

Table E.5
Continued

TOP TEN U.S. TRADE PARTNERS AND CENTRAL AMERICA
(Trade /GDP)

Top Ten Suppliers of U.S Imports

	1989	1992	Growth Rate
CANADA	0.16	0.18	2.9%
JAPAN	0.03	0.03	-6.7%
MEXICO	0.13	0.10	-8.3%
CHINA	0.03	0.06	27.5%
GERMANY	0.02	0.02	-10.0%
TAIWAN	0.17	0.12	-10.5%
UNITED KINGDOM	0.02	0.02	-4.7%
KOREA,SOUTH	0.10	0.06	-15.5%
FRANCE	0.01	0.01	-5.5%
ITALY	0.01	0.01	-10.6%
Central America			
COSTA RICA	0.20	0.24	5.6%
GUATEMALA	0.08	0.11	12.3%
HONDURAS	0.10	0.25	35.1%
EL SALVADOR	0.04	0.06	17.2%
PANAMA	0.06	0.04	-14.2%
NICARAGUA	0.00	0.04	953.4%
BELIZE	0.13	0.13	-0.5%

Top Ten Purcharsers of U.S. Exports

CANADA	0.12	0.15	7.2%
JAPAN	0.01	0.01	-5.6%
MEXICO	0.12	0.12	-0.4%
UNITED KINGDOM	0.02	0.02	-4.6%
GERMANY	0.01	0.01	-6.4%
TAIWAN	0.07	0.07	-2.0%
KOREA, SOUTH	0.06	0.05	-8.2%
FRANCE	0.01	0.01	-2.6%
NETHERLANDS	0.05	0.04	-5.6%
SINGAPORE	0.24	0.19	-6.8%
Central America			
COSTA RICA	0.17	0.21	7.6%
GUATEMALA	0.08	0.11	13.1%
PANAMA	0.15	0.17	3.9%
HONDURAS	0.10	0.24	34.2%
EL SALVADOR	0.08	0.11	12.8%
NICARAGUA	0.00	0.10	275.1%
BELIZE	0.27	0.24	-4.1%

Total Trade

CANADA	0.28	0.32	4.7%
JAPAN	0.05	0.04	-6.4%
MEXICO	0.25	0.22	-4.4%
GERMANY	0.04	0.03	-8.6%
UNITED KINGDOM	0.05	0.04	-4.7%
CHINA	0.04	0.08	21.9%
TAIWAN	0.25	0.19	-7.8%
KOREA,SOUTH	0.16	0.11	-12.5%
FRANCE	0.02	0.02	-4.2%
ITALY	0.02	0.02	-9.7%

Source: National Trade Data Bank and IMF International Financial Statistics

Table E.6
Trade Diversion Scenarios

ISIC	Product	Tariff	Total US Imports/ US Output	Mexican Import Share	Mexican Output/ U.S. Imports Current	Mexican Exports/ Mexican Output Current	Trade Diversion as Percentage of Total Imports (1)	(2)	(3)	(4)
313	Beverages	0.05	0.097	0.027	1.238	0.022	-0.01%	-0.13%	-1.27%	-0.01%
321	Textiles	0.12	0.074	0.019	1.065	0.018	-0.02%	-0.21%	-2.07%	-0.12%
322	Wearing A	0.24	0.332	0.018	0.142	0.125	-0.03%	-0.34%	-3.42%	-0.47%
323	Leather,P	0.17	0.422	0.014	0.448	0.030	-0.02%	-0.20%	-1.99%	-0.00%
361	Pottery,C	0.12	0.646	0.023	0.382	0.061	-0.03%	-0.25%	-2.50%	-0.02%
362	Glas,Prod	0.13	0.098	0.080	0.599	0.134	-0.09%	-0.93%	-9.25%	-0.31%

Scenarios (1) Inelastic Mexican Export Supply (0.1)
(2) Unit Elastic Mexican Export Supply (1)
(3) Elastic Mexican Export Supply (10)
(4) Spanish Export Supply Elasticity. Source: Donges (1980)

Table E.7.a
NAFTA Effects Under Different Supply Conditions

	Clothing Actual Data	(1)	Predicted Data	(2)	(3)	(4)	Glass Prod. Actual Data	(1)	Predicted Data	(2)
U.S. Import Demand										
Constant		7.5		7.5	7.5	7.5		7.5		7.5
Elasticity		-3.92		-3.92	-3.92	-3.92		-1.6		-1.6
Mexican Supply										
Constant		0.25		0.5	2	3		1.65		3.75
Elasticity		1.5		1.5	1.5	1.5		1.5		1.5
Mexican Demand										
Constant		0.3		0.45	1.25	1.25		2.675		4
Elasticity		-0.9		-0.9	-0.9	-0.9		-0.9		-0.9
R.O.W. Supply										
Constant		1		1	1	1		1		1
Elasticity		5		5	5	5		5		5
Tariff Level		24.0%		24.0%	24.0%	24.0%		13.0%		13.0%
Pre-NAFTA										
Mexican Share of U.S. Imports	1.8%	1.9%	8.8%	9.7%	42.5%	62.7%	8.0%	8.3%	40.2%	38.8%
ROW Share of U.S. Imports	98.2%	98.1%	91.2%	90.3%	57.5%	37.3%	92.0%	91.7%	59.8%	61.2%
ROW Export Share to Mexico		0.0%		0.0%	0.0%	0.0%		0.0%		0.0%
Mexican Net Exports / Production	12.5%	12.0%	31.2%	32.5%	47.1%	60.3%	13.4%	13.7%	33.5%	34.2%
Mexican Production / U.S. Imports	14.2%	15.6%	28.3%	29.7%	90.2%	104.0%	59.9%	60.4%	119.9%	113.5%
Post-NAFTA										
Bifurcated Equilibrium		0		0	1	1		0		1
U.S. Price Change		-0.6%		-1.2%	-4.0%	-6.5%		-1.6%		-9.5%
ROW Price Change		-0.6%		-1.2%	-3.1%	1.7%		-1.6%		3.4%
Effective Tariff		24.0%		24.0%	23.1%	15.8%		13.0%		0.1%
U.S. Import Change		2.6%		4.9%	17.2%	29.9%		2.6%		17.3%
Mexican Share of U.S. Imports		20.8%		38.3%	100.0%	100.0%		69.0%		100.0%
Mexican Production Change		36.8%		35.6%	29.9%	24.9%		17.3%		3.4%
ROW Share of U.S. Imports		79.2%		61.7%	0.0%	0.0%		31.0%		0.0%
ROW Export Change (Trade Creation)		-3.2%		-6.0%	-14.6%	9.0%		-7.7%		18.4%
ROW Earnings Change		-3.8%		-7.2%	-17.7%	10.7%		-9.3%		21.8%
ROW Exports to U.S. Change		-15.6%		-19.8%	-100.0%	-100.0%		-61.9%		-100.0%

Table E.7.b
NAFTA Effects Under Different Supply Conditions

	Pottery Actual Data	(1)	Predicted Data	(2)	(3)	(4)	Textiles Actual Data	(1)
U.S. Import Demand								
Constant		7.5		7.5	7.5	7.5		7.5
Elasticity		-2.85		-2.85	-2.85	-2.85		-1.14
Mexican Supply								
Constant		0.825		1.75	2.25	2.75		3.125
Elasticity		1.5		1.5	1.5	1.5		1.5
Mexican Demand								
Constant		1.2875		2.4	2.75	2.75		6.375
Elasticity		-0.9		-0.9	-0.9	-0.9		-0.9
R.O.W. Supply								
Constant		1		1	1	1		1
Elasticity		5		5	5	5		5
Tariff Level		12.0%		12.0%	12.0%	12.0%		12.0%
Pre-NAFTA								
Mexican Share of U.S. Imports	2.3%	2.4%	11.7%	11.6%	20.4%	33.5%	1.9%	1.8%
ROW Share of U.S. Imports	97.7%	97.6%	88.3%	88.4%	79.6%	66.5%	98.1%	98.2%
ROW Export Share to Mexico		0.0%		0.0%	0.0%	0.0%		0.0%
Mexican Net Exports / Production	6.1%	6.3%	15.3%	15.1%	21.9%	32.5%	1.8%	1.7%
Mexican Production / U.S. Imports	38.2%	38.3%	76.4%	76.9%	93.3%	103.2%	106.5%	105.8%
Post-NAFTA								
Bifurcated Equilibrium		0		0	1	1		1
U.S. Price Change		-0.8%		-1.6%	-2.3%	-4.5%		-8.2%
ROW Price Change		-0.8%		-1.6%	-1.5%	0.8%		1.0%
Effective Tariff		12.0%		12.0%	11.2%	6.7%		2.8%
U.S. Import Change		2.4%		4.6%	6.8%	14.1%		10.3%
Mexican Share of U.S. Imports		43.8%		85.1%	100.0%	100.0%		100.0%
Mexican Production Change		17.1%		15.8%	14.5%	10.6%		4.2%
ROW Share of U.S. Imports		56.2%		14.9%	0.0%	0.0%		0.0%
ROW Export Change (Trade Creation)		-4.0%		-7.5%	-7.2%	4.0%		5.0%
ROW Earnings Change		-4.8%		-9.1%	-8.7%	4.8%		6.0%
ROW Exports to U.S. Change		-39.6%		-79.7%	-100.0%	-100.0%		-100.0%

Table E.7.c
NAFTA Effects Under Different Supply Conditions

	Leather, P. Actual Data	(1)	Predicted Data	(2)	(4)	Beverages Actual Data	(1)
U.S. Import Demand							
Constant		7.5		7.5	7.5		7.5
Elasticity		-1.58		-1.58	-1.58		-1.64
Mexican Supply							
Constant		1.15		2.375	3		2.9675
Elasticity		1.5		1.5	1.5		1.5
Mexican Demand							
Constant		2.1125		4.0875	4.0875		5.775
Elasticity		-0.9		-0.9	-0.9		-0.9
R.O.W. Supply							
Constant		1		1	1		1
Elasticity		5		5	5		5
Tariff Level		17.0%		17.0%	17.0%		5.0%
Pre-NAFTA							
Mexican Share of U.S. Imports	1.4%	1.4%	6.8%	6.6%	22.4%	2.7%	2.5%
ROW Share of U.S. Imports	98.6%	98.6%	93.2%	93.4%	77.6%	97.3%	97.5%
ROW Export Share to Mexico		0.0%		0.0%	0.0%		0.0%
Mexican Net Exports / Production	3.0%	3.1%	7.6%	7.4%	21.5%	2.2%	2.4%
Mexican Production / U.S. Imports	44.8%	44.6%	89.7%	89.9%	104.1%	123.8%	105.7%
Post-NAFTA							
Bifurcated Equilibrium		0		1	1		1
U.S. Price Change		-1.6%		-4.1%	-8.6%		-4.0%
ROW Price Change		-1.6%		-1.9%	0.9%		1.0%
Effective Tariff		17.0%		14.8%	7.6%		0.0%
U.S. Import Change		2.5%		6.8%	15.2%		7.0%
Mexican Share of U.S. Imports		53.8%		100.0%	100.0%		100.0%
Mexican Production Change		23.6%		18.9%	10.7%		1.2%
ROW Share of U.S. Imports		46.2%		0.0%	0.0%		0.0%
ROW Export Change (Trade Creation)		-7.5%		-9.3%	4.4%		5.0%
ROW Earnings Change		-9.1%		-11.2%	5.3%		5.9%
ROW Exports to U.S. Change		-51.3%		-100.0%	-100.0%		-100.0%

Table E.8
Distance Within Which 50% of GNP-Adjusted Trade Takes Place

ISIC	1970 distance (miles)	1970 country per cent	1985 distance (miles)	1985 country per cent	1985: 1970
332 FURNITURE	645	4.9	645	4.5	1.0
353 PETR. REF.	1132	10.5	727	5.1	0.6
356 PLASTIC NEC	705	5.4	743	5.2	1.1
314 TOBACCO	776	7.0	743	5.2	1.0
380 METAL SCRAP	822	7.4	745	5.3	0.9
354 MISC. PETR. & COAL	1070	9.6	748	5.7	0.7
342 PRINTING	785	7.0	776	6.4	1.0
369 OTHER NON-METAL	910	8.2	794	6.6	0.9
381 METAL PRODUCTS	1012	9.2	794	6.5	0.8
362 GLASS	1070	9.6	1030	8.5	1.0
351 CHEMICALS	1354	13.8	1098	9.2	0.8
361 POTTERY	794	7.1	1168	10.2	1.5
385 PROF., SCI., MEAS. EQ	1191	11.5	1191	10.5	1.0
352 OTHER CHEMICALS	1452	14.5	1210	10.7	0.8
355 RUBBER	1168	11.1	1221	11.1	1.0
371 IRON & STEEL	1214	11.9	1265	11.7	1.0
313 BEVERAGES	1762	18.7	1266	11.8	0.7
321 TEXTILES	1421	14.2	1341	12.6	0.9
324 FOOTWEAR	840	7.6	1354	12.6	1.6
382 MACHINERY	1363	13.9	1363	12.8	1.0
384 TRANSPORT EQUIP.	1926	20.1	1363	12.8	0.7
331 WOOD	1485	15.3	1421	13.0	1.0
341 PAPER	1554	16.0	1472	13.8	0.9
383 ELECT. MACH.	1452	14.5	1551	14.5	1.1
322 APPAREL	705	5.4	1571	14.8	2.2
372 NON-FERROUS METAL	1579	16.5	2229	20.2	1.4
323 LEATHER	1098	10.0	2596	22.3	2.4
312 OTHER FOOD	3826	27.5	3539	24.5	0.9
390 OTHER MANUF.	1846	19.3	3918	27.0	2.1
311 FOOD	5647	43.5	3933	27.3	0.7

Note: These distances correspond to the distance between the pair of countries at which the cumulative ratio of GNP-adjusted exports is equal to 50% of the total. The country ratio corresponds to the percentage of pairs of countries among which these exports take place.

TABLE E.9
ADVANTAGE CONFERRED BY DISTANCE ON AMERICAN TRADE

ISIC		Dist. Elast.	Adj. Effect	US MARKETPLACE C.A./ Asia	Mex./ Asia	C.A./ Mex.	C.A./ N.Mex.	MEXICAN MARKET PLACE C.A./ Asia	Guat./ Asia
353	PETROLEUM REFINERIES	-2.60	0.5	16.7	14.6	1.1	0.0	126.9	66.9
341	MANUF. OF PAPER AND PAPER PRODUCTS	-1.59	1.0	5.6	7.3	0.8	0.1	19.5	18.7
380	METAL SCRAP FROM MANUF. OF FABRICATED METAL PRODS.	-1.59	11.3	5.6	85.9	0.1	0.0	19.2	217.7
314	TOBACCO MANUFACTURES	-1.52	2.6	5.2	18.1	0.3	0.0	16.9	44.0
372	NON-FERROUS METAL BASIC INDUSTRIES	-1.49	0.9	5.0	5.7	0.9	0.1	16.0	13.7
354	MISC. PRODUCTS OF PETROLEUM AND COAL	-1.49	3.8	5.0	25.3	0.2	0.0	16.0	60.5
371	IRON AND STEEL BASIC INDUSTRIES	-1.46	1.0	4.9	6.2	0.8	0.1	15.3	14.7
369	OTHER NON-METALLIC MINERAL PRODUCTS	-1.45	1.3	4.8	8.1	0.6	0.1	15.0	18.9
313	BEVERAGE INDUSTRIES	-1.35	0.9	4.3	4.9	0.9	0.1	12.3	10.7
322	MANUFACTURE OF WEARING APPAREL EXCEPT FOOTWEAR	-1.29	1.0	4.1	5.4	0.7	0.1	11.2	11.6
324	MANUF. FOOTWEAR EXCEPT RUBBER OR PLASTIC	-1.27	2.3	4.0	11.9	0.3	0.0	10.7	25.1
321	MANUFACTURE OF TEXTILES	-1.21	0.8	3.7	3.6	1.0	0.2	9.6	7.3
331	MANUF. WOOD, WOOD AND CORK PRODS., EXCEPT FURNITURE	-1.18	2.4	3.6	10.7	0.3	0.1	9.0	21.3
312	OTHER FOOD MANUFACTURING	-1.10	1.4	3.3	5.9	0.6	0.1	7.7	11.2
352	MANUFACTURE OF OTHER CHEMICAL PRODUCTS	-1.06	0.8	3.1	3.1	1.0	0.2	7.2	5.8
384	TRANSPORT EQUIPMENT	-1.03	1.4	3.0	5.1	0.6	0.1	6.8	9.4
332	MANUF. FURNITURE, FIXTURES EXCEPT PRIMARILY METAL	-0.98	3.7	2.9	12.9	0.2	0.1	6.2	22.9
355	RUBBER PRODUCTS	-0.96	2.1	2.8	7.1	0.4	0.1	6.0	12.4
362	GLASS AND GLASS PRODUCTS	-0.96	2.1	2.8	7.1	0.4	0.1	6.0	12.5
311	FOOD MANUFACTURING	-0.96	1.6	2.8	5.3	0.5	0.1	6.0	9.3
351	MANUFACTURE OF INDUSTRIAL CHEMICALS	-0.91	1.3	2.7	4.1	0.6	0.2	5.5	7.1
323	MANUF. PRODS LEATHER EXCEPT FOOTWEAR AND APPAREL	-0.90	1.4	2.6	4.3	0.6	0.2	5.3	7.3
361	POTTERY, CHINA AND EARTHWARE	-0.84	3.4	2.5	9.8	0.3	0.1	4.8	16.1
381	FABRICATED METAL PRODUCTS, EXCEPT MACH. AND EQUIP.	-0.82	2.1	2.4	6.0	0.4	0.1	4.6	9.7
382	MANUFACTURE OF MACHINERY EXCEPT ELECTRICAL	-0.77	1.0	2.3	2.7	0.9	0.3	4.2	4.2
342	PRINTING, PUBLISHING AND ALLIED INDUSTRIES	-0.76	2.5	2.3	6.7	0.3	0.1	4.1	10.4
356	PLASTIC PRODUCTS N.E.C.	-0.66	3.0	2.0	7.0	0.3	0.1	3.4	10.3
385	SCIENTIFIC, MEASURING AND CONTROL EQUIP.	-0.47	1.6	1.7	2.9	0.6	0.3	2.4	3.9
390	OTHER MANUFACTURING INDUSTRIES	-0.46	2.0	1.6	3.5	0.5	0.2	2.4	4.6
383	ELEC. MACHINERY, APPARATUS, APPLIANCES & SUPPLIES	-0.45	1.9	1.6	3.4	0.5	0.2	2.3	4.4

Distance Matrix

	US	CA	MEX	CHINA	N.MEX
US		2238	1843	6616	400
CA	2238		1199	8741	
MEX	1843	1199		7734	
CHINA	6616	8741	7734		

Table E.10
Tariff Equivalent of Distance

Elasticities								
Tariff		-2.2	-3	-0.5	-3	-0.5	-3	-0.5
Distance		-1.6	-1.5	-1.5	-1	-1	-0.5	-0.5
	1	0%	0%	0%	0%	0%	0%	0%
	1.5	34%	22%	238%	14%	125%	7%	50%
	2	66%	41%	700%	26%	300%	12%	100%
	2.5	95%	58%	1463%	36%	525%	16%	150%
	3	122%	73%	2600%	44%	800%	20%	200%
Distance	3.5	149%	87%	4188%	52%	1125%	23%	250%
Multiple	4	174%	100%	6300%	59%	1500%	26%	300%
	4.5	199%	112%	9013%	65%	1925%	28%	350%
	5	222%	124%	12400%	71%	2400%	31%	400%
	5.5	245%	135%	16538%	77%	2925%	33%	450%
	6	268%	145%	21500%	82%	3500%	35%	500%
	6.5	290%	155%	27363%	87%	4125%	37%	550%

Notes: The first column uses the elasticity estimates of Linneman et.al.

Distance Matrix: Miles

	US	CA	MEX	CHINA
US		2238	1843	6616
CA	2238		1199	8741
MEX	1843	1199		7734
CHINA	6616	8741	7734	

Distance Ratios

		Supplier		
		CA	MEX	CHINA
Market	US	1.2	1.0	3.6
	MEX	1.0		6.5

Table E.11
Comparative Avantage of Mexico Compared With China in U.S. Market
Mexican Closeness Offset by Chinese Wages

ISIC		Wage* Effect	Distance Effect	Combine	Mexico/ China	Mexico*/ China
311	Food	0.3	4.3	1.4	5.2	1.4
390	Other manufac.	1.4	2.0	2.8	0.0	2.0
312	Other food	0.6	5.3	3.0	7.5	2.4
322	Wearing App.	0.4	7.1	3.1	0.0	1.3
321	Textiles	0.5	6.3	3.4	0.0	1.0
324	Footwear	0.7	6.9	4.7	0.0	3.6
361	Pottery, china	1.6	3.6	5.7	0.2	5.7
331	Wood	1.0	6.0	6.3	0.1	7.3
314	Tobacco	0.8	10.0	7.6	11.6	8.5
323	Leather	2.3	3.9	8.8	0.3	4.3
332	Furniture	2.3	4.4	10.1	0.1	13.7
356	Plastics	4.9	2.7	13.4	0.2	15.2
381	Fabricated met	5.9	3.4	20.2	0.1	16.7
355	Rubber	4.8	4.3	20.6	0.1	15.8
369	Other non-met	2.4	9.0	21.4	0.4	9.1
352	Other chem.	6.1	4.9	29.9	0.5	9.3
385	Prof. & Scien.	15.5	2.0	31.5	0.5	20.7
362	Glass	7.8	4.3	33.2	1.6	21.3
342	Printing	11.1	3.2	35.2	1.0	33.8
383	Elec. mach.	19.8	2.0	39.3	1.8	29.1
351	Ind. Chemicals	10.0	4.0	39.9	4.2	18.7
380	Metal scrap	6.9	11.0	76.2	304.1	479.6
384	Transport equip	19.9	4.7	94.4	4.3	40.6
372	Nonferrous met	11.2	9.5	106.7	16.9	37.3
382	Machinery	42.6	3.2	136.3	1.7	53.5
341	Paper	27.6	11.2	307.8	21.0	139.8
313	Beverage	41.2	7.7	316.9	39.5	119.9
371	Iron & steel	40.3	9.2	370.1	8.5	110.3
354	Misc. petro	60.2	9.5	570.7	512.3	749.7
353	Petroleum	13.4	51.1	682.8	26.5	100.8

NOTES: Wage effect include per capita GDP change (holding fixed GDP)
Mexico* removes the Latin American Effect

TABLE E.12: CENTRAL AMERICA AND ASIA
TERMS OF TRADE UNCERTAINTY

EQUATION: LNTOT = a + b*LNTOT(-1)
PERIOD 1970-1990

COUNTRY	COEFFIC. LNTOT(-1)	SE OF REGRES	1-YEAR FCAST ER	5-YEAR FCAST ER	R^2 BAR
EL SALVADOR	0.50 *	0.18	0.20	0.23	0.17
NICARAGUA	0.79 *	0.12	0.13	0.20	0.61
GUATEMALA	0.71 *	0.13	0.14	0.20	0.45
HONDURAS	0.66 *	0.11	0.12	0.16	0.39
COSTA RICA	0.52 *	0.11	0.12	0.14	0.27
PANAMA	0.24	0.09	0.09	0.10	0.00
MEXICO	0.76 *	0.13	0.14	0.21	0.55
INDONESIA	0.79 *	0.19	0.21	0.34	0.74
MALAYSIA	0.57 *	0.10	0.11	0.13	0.29
HONG KONG	0.84 *	0.07	0.07	0.12	0.68
KOREA	0.75 *	0.06	0.06	0.09	0.77
TAIWAN	0.84 *	0.05	0.05	0.09	0.79
CHINA	0.66 *	0.06	0.06	0.08	0.40
SINGAPORE	0.76 *	0.05	0.05	0.08	0.76

* Significant at 5% level

SOURCE: IMF, INTERNATIONAL FINANCIAL STATISTICS
WORLD BANK, WORLD TABLES

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