



OFFICE OF ECONOMICS WORKING PAPER

U.S. International Trade Commission

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July 2002

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Abstract

The few empirical studies which examine the effects of preferential trade liberalization on growth find no direct relationship between membership in a PTA and growth across countries. This is somewhat surprising, given the large literature which argues that trade liberalization is likely to encourage more rapid growth. However, sensitivity analysis has shown that this link between freer trade and growth may be indirect, as freer trade strongly increases investment, and higher investment strongly increases growth. This paper tests for both direct and indirect effects of preferential trade liberalization on growth and investment, by examining the impact of the Caribbean Basin Economic Recovery Act--a non-reciprocal PTA implemented by the U.S. in 1984 to encourage growth and development in Caribbean and Central American countries. A two-equation simultaneous system is estimated, using pooled data on twelve beneficiary countries, from 1970-1998. Results suggest that CBERA *did not* result in any "trade-induced investment-led growth." It may have had a direct impact on growth in the region, but the effect was small, and significant only when combined with trade and foreign exchange reforms on the part of the beneficiary countries themselves. However, preferential trade liberalization through the production-sharing program, and unilateral and regional trade reforms in beneficiary countries and in the US *did* lead to investment-led growth, and to higher growth directly, in the CBERA countries.

DO PREFERENTIAL TRADE AGREEMENTS PROMOTE GROWTH?

An Evaluation of the Caribbean Basin Economic Recovery Act¹

I. Introduction

There are very few empirical studies which analyze the effects of preferential trade liberalization on growth.² Those that do find little evidence of a direct relationship between membership in a preferential trade arrangement (PTA) and more rapid growth. DeMelo, Montenegro, and Panagariya (1992), for example, test whether or not membership in any of six different integration schemes³ helps explain differences in growth across 101 countries. Using a dummy variable to represent membership in an integration scheme, they find that no significant relationship between membership and growth. An earlier study by Brada and Mendez (1988) uses dummy variables to examine the impact of six integration schemes⁴ on both investment and on growth in the member countries, using pooled data over 26 years. They find that while all six integration schemes do not affect growth directly, they do have a significant positive influence on investment, and investment has a strong and significant effect on growth.

These results are somewhat surprising, given the large literature which argues that trade liberalization is likely to encourage more rapid growth.⁵ In most of this literature, freer trade is assumed to increase the total factor productivity of an economy through such channels as improved access to new information, improved efficiency due to global competition, and freer access to foreign investment which

¹ This paper builds on earlier work done by the author for the US ITC *Caribbean Basin Economic Recovery Act*, Publication 3447, Sept. 2001 (chapter 4). I am grateful to Nannette Christ for extraordinary assistance with tables and data. Thanks are also due to Tom Jennings, Diane Manifold, Michael Barry, Arona Butcher, Sharon Greenfield, and colleagues in the USITC research division.

² See Baldwin and Venables, 1996; Panagariya 2000.

³ European Community, the European Free Trade Area, the Central American Common Market, the Latin American Free Trade Area, the Southern African Customs Union, the East African Economic Community.

⁴ European Community, the European Free Trade Area, the Central American Common Market, the Latin American Free Trade Area, the East African Common Market (EACM), and the Council for Mutual Economic Assistance.

⁵ See surveys by US ITC (1997) and Edwards (1993).

often embodies more efficient technologies. However, in a provocative sensitivity analysis of cross-country growth regressions, Levine and Renelt (1992) found that the link between trade openness and growth was not robust to changes in measures of openness, nor to the inclusion of varying sets of explanatory variables. Instead, they found that freer trade strongly increased investment, and that higher investment strongly increased growth. These results were robust, and suggest an indirect link between trade liberalization and growth via investment.

Recent papers by Baldwin and Seghezza (1996a, 1996b) place greater emphasis on the indirect link between freer trade, investment, and growth. They argue that freer trade may increase the return to capital, generating “trade-induced investment-led growth” through such channels as: reductions in the cost of imported intermediates; increased demand for investment goods (assuming tradables are relatively capital-intensive compared to non-tradables); procompetitive effects in investment goods, tradables, and/or the financial sector. Baldwin and Seghezza (1996b) empirically investigate whether or not trade openness explains differences in growth and investment rates across countries, using a two-equation simultaneous model of growth and investment, and weighted average ad valorem import charges to measure trade restrictions. They find evidence that reductions in trade barriers *at home and abroad* generate higher rates of investment, which lead to higher income growth. However, they find no significant direct link between trade liberalization and growth.⁶

This paper tests for both direct and indirect dynamic effects of PTAs by examining the impact of the Caribbean Basin Economic Recovery Act (CBERA).⁷ The CBERA is a non-reciprocal PTA implemented by the US in 1984, to encourage growth and development in Caribbean and Central

⁶ Baldwin and Seghezza (1998) extend this theoretical analysis to reciprocal trade liberalization within PTAs. They find some indications that Ireland, Spain, and Portugal may have experienced investment-led growth as a result of joining the EU. However, in their 1997 study of the EU as a whole, the membership dummy variable showed no significant effect on either growth or investment.

⁷ Originally called the Caribbean Basin Initiative (CBI). Hereafter, this Act is referred to as CBERA.

American countries (US ITC 2001). To achieve this, the CBERA granted these countries⁸ duty-free entry and reduced-duty entry for a large number of goods exported from the region to the US.⁹ Although the US ITC has evaluated the effects of CBERA on the US annually since 1984, the impact on the beneficiary countries has not been formally analyzed.¹⁰

Early assessments of CBERA suggested it would have minimal effects. Pelzman and Schoepfle (1988) estimated net trade creation from the Act, and argued that it would be small. Ray (1987) found that CBERA had little impact on the US pattern of imports across industries in its initial years. Clark and Zarrilli (1994) argued that CBERA would have little effect because: (1) most goods eligible for CBERA already entered duty-free under MFN or GSP; (2) goods in which these countries had a significant comparative advantage were excluded¹¹; (3) eligible goods had very low tariffs, so the margins of preference were small; (4) non-tariff measures (NTMs) restraining eligible goods were left in place. In addition to this problem, it is difficult to disentangle the effects of CBERA from other trade reforms. Significant multilateral, regional, and unilateral trade reforms took place in the beneficiary countries (and the US) after 1984.¹² Another significant U.S. preferential trade programs—the production-sharing program (PSP), along with the related guaranteed access levels program (GALS)—ran concurrently with

⁸ The following countries are presently beneficiaries: Antigua, Aruba, Bahamas, Barbados, Belize, British Virgin Islands, Costa Rica, Dominica, Dominican Republic, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Montserrat, Netherlands Antilles, Nicaragua, Panama, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago.

⁹ In 1991, this preferential program was extended indefinitely, and was revised to include additional countries and products. In October 2000, the Caribbean Basin Trade Partnership Act (CBTPA), Title II of the Trade Act of 2000, extended benefits to certain goods (e.g. apparel) which had been previously excluded from the program. Approximately 5925 8-digit HTS items are eligible for this program. See study cited in note 1 for a complete description of the program.

¹⁰ See note 1.

¹¹ Textiles/apparel, leather, canned tuna, petroleum and derivatives, certain footwear, certain watches/parts.

¹² The CBERA countries have all undergone significant unilateral trade liberalization since 1984. Both the Central American Common Market (CACM) and the Caribbean Community and Common Market (CARICOM) were reactivated during the 1990s. In addition, nearly all countries in the region had joined the WTO by 1994, with at least 10 joining after CBERA was implemented

CBERA, and granted preferential trade on products like apparel, which were excluded from CBERA.¹³ Finally, the implementation of NAFTA in 1994 may have diverted trade and investment from the region, diminishing any dynamic benefits CBERA might have had.

This paper develops a simple two-equation simultaneous model of growth and investment. As in the Baldwin/Seghezza studies, trade liberalization is assumed to affect investment directly, and thereby indirectly affect growth. However, freer trade is also assumed to affect growth directly, through its effects on technological change. Trade liberalization itself includes measures of individual countries' trade reforms, as well as CBERA, PSP, and NAFTA. This system is estimated using pooled data on twelve beneficiary countries, from 1970-1998.

Results suggest that the CBERA program may have had a direct impact on income growth in the region, but that effect was small, and significant only when combined with trade and foreign exchange reforms on the part of the beneficiary countries themselves. Investment in the region appears unaffected by the CBERA program. On the contrary, results show that the PSP, the beneficiary countries' unilateral and regional reforms, and U.S. trade reforms have had a significant positive impact on *both* growth and investment in the region. NAFTA appears to have significantly reduced those effects, however, most likely through trade diversion from the CBERA region to Mexico.

II. Growth, Investment, and Trade in the Beneficiary Countries

Table 1 presents selected macroeconomic indicators for the CBERA beneficiary countries in 1999.¹⁴ The group includes middle-income and low-income developing countries, with a wide variation in real GDP per capita and foreign direct investment inflows, but fairly similar rates of gross domestic

¹³ Under the production-sharing provision, U.S. importers receive a partial-duty exemption for articles assembled abroad in whole or in part of U.S. components. Under the GALS, in addition to the reduced duties, a country receives virtually unlimited market access for its apparel assembled from fabrics wholly made and cut in the United States. For more detail on these programs see US ITC (2001).

¹⁴ Due to lack of data, Aruba, Montserrat, British Virgin Islands, and Netherlands Antilles were omitted from the analysis.

investment. Dependence upon trade, as measured by the ratio of exports to GDP, is consistently high, with ratios in the Caribbean region generally at or above 50 percent.

Figure 1 shows annual real income growth and gross domestic investment (as a share of GDP) for 13 years prior to CBERA (1970-83) and fourteen years after CBERA (1984-98). For many of the CBERA countries, annual real income growth has averaged 3 percent or higher over the entire twenty-nine year period (1970-98). However, it is noteworthy that no distinct change appears in the average annual growth rates after the inception of CBERA. This lack of distinction after the inception of CBERA is also seen with respect to gross domestic investment as a share of GDP. Significant changes do appear, however, with respect to both FDI and export growth. As figure 2 shows, in four of the six Central American countries, FDI as a ratio of GDP is between 50 percent and 200 percent higher than in the earlier period. All countries but Honduras show more rapid rates of real export growth post-1984. In the Caribbean region six countries show remarkably higher average ratios of FDI inflows to GDP in the later period.¹⁵ In addition, all but two Caribbean countries show rapid real export growth (5 percent or higher) after 1984, and six show dramatic increases in export growth rates.

Evidence with respect to export diversification is even more noteworthy. Table 2 shows the structure of exports for both regions, using five standard UNCTAD classifications, for 1980 and 1998. Food products were the largest component of exports for the Central American countries in 1980, and still are as of 1998. However, with the exception of Nicaragua, there has been a significant increase in manufactures as a share of exports. Similar shifts in export concentration appear in the Caribbean countries. In eight of these countries food shares in total exports ranged between 36 percent and 92 percent during the early 1980s, while manufactures represented between 8 percent and 53 percent. Six of these eight countries show a marked shift away from food exports and towards manufactures.

¹⁵ Note that some differences are exaggerated as data in the earlier period are limited for some countries.

For virtually all these beneficiary countries, the period between 1970 and 1998 includes a long phase of import-substitution industrialization characterized by highly protectionist regimes, followed by a distinct shift toward more open, liberalized regimes. In Costa Rica, Trinidad, Jamaica, and Guyana this transformation took place as early as the mid- to late 1980s. The other Central American and Caribbean countries began major reforms in the early to mid-1990s. For the CBERA region as a whole,¹⁶ most reform periods included macroeconomic stabilization measures, significant deregulation of the foreign exchange market, and trade reform. In general, trade reforms were characterized by removal of quantitative restrictions, reductions in the levels and ranges of tariffs, removal of export taxes, and implementation of incentives for foreign direct investment (e.g., establishment of free trade zones, privatization of industries). Between 1986 and 1999, nearly all CBERA beneficiary countries had also become members of one or more regional integration agreements, and had joined the WTO.¹⁷

Table 3 presents data on tariff and quantitative restrictions for Central America and the Caribbean for 1986-87 and 1998. This reflects the results of unilateral, preferential, and multilateral trade liberalization during the years since implementation of CBERA. Average nominal (unweighted) tariffs in Central America were about 20 percent in the mid-1980s, with a maximum of 100 percent.¹⁸ By 1998, average nominal tariffs were below 10 percent, and the maximum had shrunk to about 50 percent. With the exception of El Salvador, the coverage of quantitative restraints has also been reduced, in most cases to 3 percent or less of tariff lines. For most Caribbean countries, average nominal (unweighted) tariffs were between 12 percent and 17 percent--generally lower than Central America--and tariff ranges were

¹⁶ For detailed studies of the trade reforms in this region, see the WTO *Trade Policy Reviews* and IMF *Staff Country Reports*.

¹⁷ The CACM was reactivated about 1993. In 1998, the Dominican Republic entered into a trade agreement with the CACM. In addition, all Central American countries negotiated (or began negotiating) preferential trade agreements with Mexico during the 1990s. CARICOM was revitalized in 1991. Trade among CARICOM members is now essentially free, and the CET range has been reduced successively since 1991. In 1993, 1994, and 1998, CARICOM entered into various trade agreements with Venezuela, Columbia, and the Dominican Republic, respectively.

¹⁸ This does not include additional surcharges and duties on imports, which raise the maximum tariff figure significantly.

about 0 to 70 percent. By 1998 nearly all these countries had reduced average tariff rates to about 9 percent, and nearly half had reduced the range of tariffs considerably. Quantitative restriction usage was disparate in the mid-1980s, with at least six countries maintaining NTBs over more than 10 percent of tariff lines. By 1998 at least ten countries had eliminated the use of NTBs altogether.

III. Model

Trade-induced investment-led growth, as modelled by Baldwin and Seghezza has at its core a direct link between trade liberalization and investment. Assuming that traded goods are manufactured goods, and are relatively capital-intensive, freer trade will increase the derived demand for capital goods, and, therefore the return on capital. This effect is magnified if the cost of imported intermediates falls with trade liberalization. The increased rate of return induces higher investment, which, in turn, raises income growth. In the present case, the assumption that tradables are relatively capital-intensive may not be appropriate. As table 2 indicates, most of the countries in this region were not predominantly trading manufactured goods at the start of the sample period. Even by 1999, though the share of manufactures in trade grew rapidly, food products remained a large proportion of overall trade for many countries. In addition, this period includes regime shifts away from import-substitution industrialization. Thus, freer trade will not necessarily imply a net increase in the demand for capital goods. For this reason, this paper uses a somewhat simpler specification than Baldwin-Seghezza to test for trade-induced investment-led growth.

Annual real income growth is specified as a function of growth in the factors of production (low-skilled labor (L), high-skilled labor(H), and capital (K)), and technological change (\hat{A}).

$$\hat{Y} = \hat{A} + \alpha_1 \hat{L} + \alpha_2 \hat{H} + \alpha_3 \hat{K} \quad (1)$$

where “ $\hat{}$ ” indicates proportionate change, and α_j is the share of input j (j=L, H, K) in total output.

Trade barriers are assumed to slow down technological change by: limiting access to goods embodying new technologies; restricting foreign investment, and thus, knowledge transfer from foreign

firms; reducing incentives to improve technology in order to remain competitive on world markets.¹⁹ Following Edwards (1992), suppose that the world's stock of knowledge (W) grows at a rate ω , i.e., that $W_t = W_0 e^{\omega t}$. A country's ability to access that knowledge is inhibited by its own trade restrictions as well as its trading partners' restrictions, (TR). Thus it absorbs the world's knowledge at rate $\beta(TR)\omega$, where $0 < \beta < 1$, and $\beta' < 0$. Knowledge accumulation also occurs at the rate δ due to local innovation. For simplicity, assume that δ is given.²⁰ With these assumptions, (1) may be written as:

$$\hat{Y} = \delta + a_1 \hat{L} + a_2 \hat{H} + a_3 \hat{K} + \beta(TR)\omega \quad (2)$$

TR is affected by unilateral trade barriers in the beneficiary countries and in the United States, and by trade preference programs (CBERA, the PSP (or GALs), and NAFTA).

The investment equation used here begins with a simple accelerator model. The desired capital stock in any period is assumed to be a linear function of income. Thus, investment today is a linear function of the difference between income next period and income today:

$$I_t = (K^* - K_t) = h(Y_{t+1} - Y_t) \quad (3)$$

where * indicates desired level of capital in period t+1, and $0 < h < 1$.²¹ Dividing through by income yields

$$I_t / Y = h(\hat{Y}_{t+1}) \quad (4)$$

¹⁹ See Edwards (1993, 1992), Harrison (1996), Levine and Renelt (1992).

²⁰ Edwards assumes a rate which increases the larger the gap between local knowledge and world knowledge. Though this is likely to be true, the pooled specification used here does not allow this effect to be isolated from other country-specific effects.

²¹ Allowing for partial adjustment in any given period, (3) can be rewritten as:
 $I_t = g(K^* - K_t) = g \cdot h(Y_{t+1} - Y_t)$, where $0 < g < 1$.

Since income growth next period is unknown, investment decisions today must be based on expectations of future growth, \hat{Y}_{t+1}^e . If trade liberalization is expected to stimulate growth then:

$$\hat{Y}_{t+1}^e = \gamma_1 \hat{Y}_t + \gamma_2 \hat{TR}_t \quad (5)$$

According to (5), expected growth next period is equal to actual growth this period plus an adjustment for changes in trade restrictiveness today, with $\gamma_1 > 0$, $\gamma_2 < 0$. Thus, (4) becomes:²²

$$I_t / Y = h\gamma_1 \hat{Y}_t + h\gamma_2 \hat{TR}_t \quad (4)N$$

IV. Data and Estimation

The income growth and investment equations were estimated using pooled data for 6 Central American countries (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama) and pooled data for 6 Caribbean countries (Belize, Dominican Republic, Guyana, Haiti, Jamaica, and Trinidad) for the years 1970-98.²³ For all 12 countries this time period contained major changes in trade restrictions, and shifts from increasingly protectionist to much more outward-oriented regimes. The impact of such major policy changes can best be captured using annual data (Harrison, 1996). However, annual data often contain short-term spurious changes that can blur long-term relationships. Pooling the data across

²² Of course, the fraction h in equation (4) may not be a constant, but instead a function of the return to capital and the rate of depreciation, $h=h(r, d)$. If, as in Baldwin and Seghezza, trade liberalization raises the return to capital, we have:

$$I_t / Y = h(TR_t)\gamma_1 \hat{Y}_t + h(TR_t)\gamma_2 \hat{TR}_t \quad (4)O$$

where $\delta h / \delta TR = (\delta h / \delta r)(\delta r / \delta TR) < 0$. Attempts at interacting GDP growth with the measures of own country and US openness did not reveal any significant interactive effects, and did not alter the results presented below.

²³ These countries were chosen based on data availability. Data post-1998 were not available for all variables for all countries. Complete data for Panama and for Belize were only available from 1980-98.

countries in each region helps diminish these country-specific spurious effects, and reveals more of the regional relationships (though it does mask some important differences across countries).

The econometric specification of the simple model in (1)-(5) was modified somewhat due to data limitations, and non-random shocks. Data on skilled labor, or proxies such as enrollment in secondary education, were not available for all 12 countries over the entire time period. Hence, L was redefined as the total labor force. In addition, radical changes in the prices of several commodity exports caused wide short-run fluctuations in growth in the CBERA region during the time period evaluated. Thus (2) was modified to include changes in the purchasing power of exports (the ratio of export revenues to import prices). Dummy variables were also introduced to control for many country-specific and time-specific shocks (e.g., a military coup in Guatemala in 1982, a U.S. trade embargo against Haiti 1992-94, the war in El Salvador, the debt crisis in the early 1980s).

$$\hat{Y}_{it} = \delta_i + a_1 \hat{L}_{it} + a_2 \hat{K}_{it} + \beta (TR_{it}) \omega + \eta_{it} + \varepsilon_{it} \quad (2)N$$

and

$$\eta_{it} = a_3 \hat{X}_{it} + a_4 DT_{it} + a_5 CR_{it} + a_6 WR_{it} \quad (6)$$

where: η are specific shocks, X is export capacity to import, DT are debt crisis years, CR represents political-economic crises, WR represents war years, and ε is a random error.

The restrictiveness of the trade regime is affected by unilateral trade reforms, as well as trade preference programs, and the interactions between them. Three types of interactions are specifically anticipated. First, any advantage conferred by a trade preference program such as CBERA is likely to diminish the more open the US market becomes (e.g., through multilateral reductions in barriers in the Uruguay Round). Hence, all trade preference variables are entered alone as well as interacted with US openness. Second, the implementation of NAFTA in 1994 may have diminished the effects of the trade

preference programs directed at the CBERA countries, through both investment diversion and trade diversion. Third, the countries' own reforms may have influenced the impact of CBERA. To capture these two effects, all trade preference program variables are interacted with a time dummy for 1994-1998, and a time dummy for each country's reform periods. The TR variable is therefore:

$$TR_{it} = c_1 T_{it} + c_2 T_{us} + (c_3 CB_j + c_4 CB_j \cdot T_{us}) + R_{it} \cdot N(c_5 CB_j + c_6 CB_j \cdot T_{us}) + (c_7 PR_k + c_8 PR_k \cdot T_{us}) + R_{it} \cdot N(c_9 PR_k + c_{10} PR_k \cdot T_{us}) + c_{11} R_{it} + c_{12} N \quad (5)$$

where: CB is the CBERA program, PR are other trade preference programs, T_{it} is the openness of a beneficiary country, T_{us} is the openness of the US, R_{it} are the reform years in a CBERA country, and N represents the presence of NAFTA.

As is well known it is difficult to find measures for the openness (or restrictiveness) of a country's trade regime (Harrison, 1996). Due to data availability, the ratio of trade to GDP is used to represent the level of openness in both beneficiary countries and the United States. In addition, a country-specific dummy variable is included for the periods of major reforms in the trade and foreign exchange regime in each of the beneficiary countries.

CBERA is represented by two alternative measures, calculated at the regional level.²⁴ The first is the ratio of U.S. imports benefitting exclusively from the CBERA program to total U.S. imports from the CBERA region ("CBERA Trade"). This measure gives some indication of changes in the importance of the CBERA program over time in overall trade between the region and the United States. The second is the ratio of U.S. imports entering duty-free under the CBERA program to total U.S. imports eligible for CBERA duty-free status from the region ("CBERA Utilization"). This latter measure gives an indication of the utilization of the program by beneficiary country exporters. Utilization may be less than 100

²⁴ Use of a regional measure avoids the problem of simultaneity bias between the CBERA variable and the dependent variables.

percent for a number of reasons: some goods are also eligible for duty-free status under GSP, exporters may lack information about their eligibility for CBERA benefits, or exports may not meet the regional content requirements to qualify. As figure 3 shows, CBERA trade has grown over time, but in 1998 was still only about 10 percent.²⁵ However, CBERA utilization has risen from 54 percent to about 70 percent. This most likely reflects the well-documented shift over time from using GSP to using CBERA.

The PSP is represented by the ratio of U.S. imports from the region entering under HTS heading 9802 (previously 807) to total U.S. imports from the region (“PSP”). There has been enormous growth of U.S. imports from the CBERA region under the production-sharing program since the mid-1980s—particularly in apparel. Figure 3 shows that the share of U.S. imports from CBERA countries entering under HTS 9802 has more than doubled between 1987 and 1998. The GALs are represented by the ratio of U.S. imports from the region entered under HTS heading 9802.00.8015 (previously 9802.00.8010 and 807A) to total U.S. imports from the region (“GALs”). Trade using the GALs has also dramatically increased, from less than 2 percent of total U.S. trade with the region in 1987 to about 11 percent in 1998.

The simultaneous relationship between income growth and investment, along with the likelihood that countries in the region experienced similar contemporaneous shocks (e.g., hurricanes, droughts, collapses in commodity prices) required the use of three-stage least squares to estimate the income growth equation. Testing suggested that the investment equation only required correction for contemporaneous shocks, and thus a seemingly unrelated regression technique was used. These equations were also corrected for first-order serial correlation and groupwise-heteroskedasticity. Country-specific effects were included in both equations to capture the influence of non-measurable country characteristics which would likely influence both investment and growth. Variable definitions and data sources are presented in the data appendix.

²⁵ The shares of imports benefitting exclusively from the CBERA program are 6.6 percent and 9.4 percent, respectively—about one-half of the total imports entering under the program in both years.

V. Results

Central American Countries

Table 4a shows the results for investment equation (4) for Central American countries. All four specifications show fairly good fits, with R^2 ranging from about .40 to .80. As anticipated, the ratio of investment to GDP for the pooled sample of six countries showed a strong, statistically significant positive relationship to GDP growth. A one- percentage-point increase in the rate of annual GDP growth raised annual investment relative to GDP by approximately 0.35 percent. Both Central American trade reform and U.S. trade reform also had a consistently significant positive effect on investment. On average, Central American countries had between 1.5 percent and 2.6 percent higher investment during the years of major trade reforms than they did during the period as a whole. In addition, a one- percentage-point increase in the openness of a country's own market raised the ratio of investment to GDP by approximately 0.20 percent. An increase in the overall openness of the U.S. market by one percentage point raised the ratio of investment to GDP by about 0.45 percent.

The size of the impact of CBERA and the PSP on investment in Central America varies with the alternative measures used. However, some clear patterns do emerge. First, when estimated alone (columns (a) and (c)), the CBERA program does seem to have a positive effect on investment, and this effect does diminish as the U.S. market becomes more open. For example, column (a) shows that at any point in time, the net effect of a percentage-point-increase in CBERA utilization is 0.28 percent minus $0.02 \cdot \text{U.S. Openness}$. Since the US market became progressively more open during this time period, these results would suggest that the net effect of CBERA diminished over time.

The second important pattern is seen in columns (b) and (d). When PSP variables are included in the specification, the CBERA program loses its significance, and production-sharing has a positive significant effect on investment. Results in column (b) imply that at any point in time, a percentage point

increase in PSP trade increases investment by 0.76 percent minus 0.04·U.S Openness.²⁶ The same pattern emerges in column (d), but is not statistically significant.²⁷ This result corresponds to anecdotal evidence from discussions with producers in CBERA countries, who stressed the significance of apparel exports and the PSP for their country's investment, employment, and growth.²⁸

Table 4b shows two specifications of income growth equation (2) for Central America. With the exception of Honduras, the model explains growth fairly well, with R² ranging from about .50 to .90.²⁹ Real income growth is (as expected) significantly related to growth in factors of production. An increase in investment of one percentage point raised GDP growth by about 0.32 percent, while a percentage point increase in labor force growth raised GDP growth by 0.33 percent. Major political-economic shocks were also important in explaining annual income growth in these six countries. The debt crisis of the early 1980s reduced growth rates in these six countries by, on average, about 6.5 percent, while other major crises (such as military coups) tended to reduce growth rates by about 7 percent. Changes in the purchasing power of exports also had a highly significant effect on growth. On average, a percentage-point drop in the purchasing power of exports decreased GDP growth by .04 percent.

Tables 4a and 4b, together, show strong evidence of trade-induced investment-led growth. The direct impact of preferential trade liberalization on Central American GDP growth is conditional on the presence of other trade reforms. The net impact of a percentage point increase in CBERA trade is -9.51 percent plus 0.51·U.S Openness. That is, CBERA appears to have a negative impact on income growth

²⁶ Specifications with the alternative combinations of CBERA measures and GALs revealed the same pattern, but with lower levels of statistical significance.

²⁷ Specifications using CBERA utilization in general tend to show weaker results. This may be indicative of a multicollinearity problem.

²⁸ When asked how the CBERA had impacted their country, a number of exporters and government officials from the Dominican Republic and Guatemala began to discuss apparel exports and the production-sharing program.

²⁹ A recent IMF study has reported on the inability of standard economic variables to explain Honduras' growth performance over the past few decades. See V. Juan-Ramon, "Honduras Growth Performance During 1970-1997," *IMF Policy Discussion Papers* PDP/99/1.

for the period as a whole, though this impact is lessened by the opening of the US market. However, during the period of trade reforms in these countries, the CBERA program has a positive effect on GDP growth (CBERA·Reform). The net effect becomes -1.01 percent plus 0.04·U.S Openness. This suggests that once Central American countries begin to liberalize their own trade regimes, the CBERA program's effect is generally positive, though the magnitude is small.³⁰

In contrast, the PSP has a positive effect on growth in Central America. A percentage-point-increase in PSP trade raises GDP growth by 2.46 percent minus 0.13·U.S Openness throughout the period. Anecdotal evidence from interviews with Central American manufacturers suggested that NAFTA diverted much apparel trade toward Mexico, and that this diversion hurt the Central American economies.³¹ If PSP is interacted with NAFTA (not shown), the effect of the program on growth is diminished. However, when PSP is interacted with both NAFTA and the reform period (table 4b), this tendency appears, but is statistically insignificant. These results suggest that NAFTA did depress the impact of the PSP on GDP growth, but this was mitigated somewhat by countries' own trade liberalization. Note that the same patterns for both CBERA and PSP appear when CBERA utilization is used, but the effects are not significant.³²

Caribbean Countries

Table 5a reports the results for investment equation (4) for the Caribbean countries. Each regression again showed a fairly good fit. With the exception of the Dominican Republic, R^2 ranged from about .40 to .90. As anticipated, the ratio of investment to GDP for the pooled sample of six

³⁰ Reform (shown), T_{it} nor T_{US} (not shown), individually, had no statistically significant impact on income growth in (2)

³¹ Evidence from interviews with AGEXPRONT and an apparel manufacturer in Guatemala, June 15 and June 18, 2001.

³² Specifications using GALs showed similar patterns but weaker results for all preference program variables. This may be due to the fact that only 3 countries in the Central American group had GALs arrangements for any length of time during the sample period.

countries showed a positive relationship to GDP growth. For all specifications, a one-percentage-point increase in the rate of annual GDP growth raised annual investment relative to GDP by approximately 0.07 percent. Though these results are at best marginally significant, lags appear to be an import factor. In some specifications (not shown), investment was positively and significantly related to both GDP growth this period and GDP growth lagged one period. The effects of unilateral trade reforms are also consistently important. Caribbean countries' investment was 1.4 percent higher, on average, during the trade reforms of the 1990s than during the period overall. In addition, a one-percentage-point increase in the openness of a country's own market raised the ratio of investment to GDP by 0.12 percent. Unlike Central America, the openness of the U.S. market appears to have no direct effect on investment in the Caribbean.

The CBERA program has a positive effect on investment, which again diminishes as U.S. openness increases. However, for the Caribbean group there was no specification where these effects were statistically significant (with or without other preference program variables). In contrast, PSP and the GALs have strongly significant effects on investment in the Caribbean. Using results in column (a), at any point in time, a percentage-point increase in PSP raised investment by 1.28 percent minus 0.07·US Openness. A similar pattern appears when CBERA utilization and GALs are used in the same specification (column (b)).³³

The effect of NAFTA on investment in the Caribbean is also quite crucial. In interviews, Caribbean exporters spoke about the trade-diversion and investment-diversion effects experienced when NAFTA was implemented, particularly in the apparel industry.³⁴ As table 5a shows, NAFTA had a strong and significantly negative, direct effect on investment in the region (with size depending upon the specification). In addition, NAFTA diminished the impact of the production-sharing program on

³³ Alternative combinations of CBERA and production-sharing measures produced similar but much weaker results. The GALs would be expected to have a strong effect in the Caribbean group, since 4 countries in the this group had GALs agreements beginning in 1986.

³⁴ Evidence from interviews with : several apparel manufacturers in Dominican Republic, June 6, 2001; two apparel manufacturers and several government officials in Trinidad, June 11-13, 2001.

investment (though this effect is only significant in column (b)). For example, column (b) suggests that the positive impact of the GALs on investment was essentially reduced to zero during the NAFTA years.

Table 5b shows two specifications of income growth equation (2) for the Caribbean countries. The model explains growth fairly well, with R^2 ranging between .40 to .80 (with the exception of Costa Rica). Real income growth is (as expected) significantly related to growth in factors of production. An increase in investment of one-percentage-point raised GDP growth by an average of 0.15 percent, while a percentage-point increase in labor force growth raised GDP growth by 0.28 percent. The debt crisis of the early 1980s reduced growth rates in these six countries by, on average, 7 percent, while other major crises (such as military coups) tended to reduce growth rates by about 6 percent. Changes in the purchasing power of exports also had a highly significant effect on growth. A percentage-point drop in the purchasing power of exports decreased GDP growth by 0.025 percent. In addition, structural changes in the U.S. quota system for sugar implied a reduction in growth in Belize and the Dominican Republic by 4 percent and 2 percent respectively.

Tables 5a and 5b, together, show strong evidence of trade-induced investment-led growth. The results regarding the impact of the trade preference programs on growth again reveal the interrelationship between various important trade reforms which occurred simultaneously. As in the Central American case, the CBERA program has a negative significant effect on growth in the Caribbean for the period as a whole, but the effect diminishes as the U.S. market becomes more open. A percentage-point increase in CBERA trade at any point in time would lower Caribbean growth by -9.05 percent plus $0.44 \cdot US$ Openness. When interacted with the period of trade reforms in these countries, however, the CBERA program has a positive effect on GDP. A percentage-point increase in CBERA trade during the reform years, raised Caribbean growth by 2.82 percent minus $0.11 \cdot US$ Openness. Results in the second two columns show that this effect shrinks, and is no longer significant, when alternative measures are used.³⁵

³⁵ Again similar patterns emerged using GALs, but the results were much weaker.

As in Central America, the PSP has a strong statistically significant effect on growth in the Caribbean. Using the results in the first two columns, a percentage point increase in PSP at any point in time raises GDP growth by 2.80 percent minus $0.14 \cdot \text{US Openness}$. When PSP is interacted with NAFTA, a negative effect appears, actually reversing the impact of the program on growth. Both columns show a reduction in the effect of PSP on growth during the NAFTA years, though this result is only significant in the first specification. Unlike the Central American case, unilateral reform did not appear to mitigate these effects (not shown in tables). These results suggest that, the presence of NAFTA tended to depress the impact of the production-sharing program on GDP growth, despite on-going Caribbean trade liberalization.³⁶

Unilateral trade reforms did have a direct significant effect on income growth, however. During the trade reforms conducted by the Caribbean countries in the 1990s, GDP growth was about 2 percent higher than during the period overall. In addition a percentage-point increase in U.S. openness raised Caribbean growth by about 0.2 percent. Both specifications showed this strong direct relationship between trade liberalization, in the United States and in the Caribbean, and Caribbean growth.³⁷

V. Conclusion

This paper tested for both direct and indirect effects of preferential trade liberalization on growth, by examining the impact of the CBERA on growth and investment. Several limitations of this analysis should be noted when drawing any overall conclusions. The model appears to be fairly good at explaining growth and investment in the region as a whole, but clearly fits some countries' experience much better than others. In addition, not all results are robust to changes in proxies for CBERA or for other trade preference programs. The regional proxies for CBERA and the other trade programs may fall short of capturing the importance of these programs in individual countries. The model is also, by necessity, simplified. For example, it omits any explicit estimation of the role of foreign direct

³⁶ Specifications using GALs showed similar patterns but weaker results for all preference programs.

³⁷ T_{it} (not shown) had no statistically significant impact on income growth in (2)N

investment, nor its interaction with trade preference programs. It also does not model individual components of countries trade reforms, such as privatization. Despite these (and other) limitations, some consistent strong patterns emerge.

The econometric analysis also shows strong evidence of trade-induced investment-led growth. Unilateral trade liberalization--on the part of both the United States and the beneficiary countries--accelerated growth and investment. Trade reforms on the part of Central American and Caribbean countries significantly raised their investment as a share of GDP. U.S. trade liberalization had a significant, positive impact on Central American investment. Because investment proved strongly related to income growth, trade liberalization indirectly raised this growth.

The impact of preferential trade liberalization on investment (and thereby on growth) depended upon the specific PTA. The analysis shows no evidence that CBERA had any direct impact on investment in the beneficiary countries once the presence of other preferential programs was taken into account. However, there was a consistent positive impact of the production-sharing program on investment in the region. This evidence corresponds to reports from direct interviews with Central American and Caribbean exporters, who consistently emphasized the importance of production-sharing--particularly in the apparel industry--for investment, employment, growth, and exports in the region. The importance of this program is also seen in the significant negative impact that NAFTA had on the region. In direct interviews, CBERA manufacturers and industry representatives discussed the diversion of apparel trade and investment from the CBERA region to Mexico after 1994. Though only the Caribbean shows evidence of a direct reduction in aggregate investment due to NAFTA, there is evidence that the impact of the production-sharing program on investment in the region was reduced beginning in 1994.

There is also some evidence that preferential trade liberalization had a direct impact on growth in the region. CBERA may have had a small positive effect on growth in the beneficiary countries. However, this effect only occurred during the years in which the beneficiary countries were liberalizing

their own trade and foreign exchange regimes. In addition, as expected, this effect diminished in importance as the U.S. trade regime became more open. In contrast, the PSP had a consistently strong positive impact on growth in both regions, throughout the period (though its magnitude, too, diminished as the US market became more open). NAFTA appears to have reduced the beneficial effects of PSP in both Central America and the Caribbean, however, unilateral reforms in Central America mitigated this effect. Unilateral reforms in the Caribbean and increased US openness appear to have directly increased Caribbean growth.

REFERENCES

- Baldwin, R. and E. Seghezza (1996a). "Trade-Induced Investment-Led Growth," NBER Working Paper 5582.
- _____ (1996b). "Testing for Trade-Induced Investment-Led Growth," NBER Working Paper 5416.
- _____ (1997). "Growth and European Integration: Towards an Empirical Assessment," CEPR Discussion Paper No. 1393.
- _____ (1998). "Regional Integration and Growth in Developing Nations," *Journal of Economic Integration*, 13, pp. 367-399.
- Baldwin, R. and A. Venables (1996), "Regional Economic Integration," in G. Grossman and K. Rogoff, eds., *Handbook of International Economics Vol. 3*, Amsterdam: Elsevier Science.
- Brada, J. and J. Mendez (1988), "An Estimate of the Dynamic Effects of Economic Integration," *Review of Economics and Statistics*.
- Clark, D. and S. Zarrilli, "Non-Tariff Measures and the U.S. Imports of CBERA-Eligible Products," *Journal of Development Studies*, 31(1) 214-224, 1994.
- DeMelo, J., C. Montenegro, and A. Panagariya (1992), "L'integration Regionale Hier et Aujourd'hui," *Revue D'Economie du Developpement*.
- Harrison, A. (1996). "Openness and Growth: a Time-Series, Cross-Country Analysis for Developing Countries," *Journal of Development Economics* 48:419-447.
- Levine, R. and D. Renelt (1992), "A Sensitivity Analysis of Cross-Country Growth Regressions," *American Economic Review* 82 (4) pp. 942-963.
- Panagariya, A. (2000). "Preferential Trade Liberalization: The Traditional Theory and New Developments," *Journal of Economic Literature* 38 (2), 287-331.
- Pelzman, J. and G. Schoepfle, "The Impact of the Economic Recovery Act on Caribbean Nation's Exports and Development," *Economic Development and Cultural Change*, 36(4) 753-791, 1988.
- Ray, E. "The Impact of Special Interests on Preferential Tariff Concessions by the United States," *Review of Economics and Statistics*, 69 (2) 187-193, 1987.
- USITC (1997) *The Dynamic Effects of Trade Liberalization: an Empirical Analysis*. Publication 3069.
- _____ (2001). *The Impact of the Caribbean Basin Economic Recovery Act*. Publication No. 3447.

Table 1. Macroeconomic Indicators for the CBERA Region (1999)

Country	GDP per capita (1995 \$)	Gross Domestic Investment (% of GDP)	FDI Net Inflows (% of GDP)	Exports (% of GDP)
<i>Central American Countries:</i>				
Costa Rica	3994	17.3	4.4	53.7
Panama	3246	32.5	0.23	32.9
El Salvador	1752	16.3	1.9	24.8
Guatemala	1545	17.4	0.85	19.0
Honduras	689	32.9	4.3	42.9
Nicaragua	472	43.0	13.2	33.6
<i>Caribbean Countries:</i>				
Bahamas	13214	23.2 ⁴	2.4 ¹	18.8 ³
Antigua	73	29.8	--	71.1
Barbados	7963	19.4	0.7	50.4
St. Kitts	6676	37.4	25.6	48.3
Trinidad	4936	20.9	9.2	49.6
St. Lucia	3956	26.4	13.3	57.9
Grenada	3553	41.0	11.7	48.9
Dominica	3354	29.1	4.9	57.8
Belize	2768	24.2	0.5	48.8
St. Vincent	2732	32.6	7.6	51.9
Dominican Republic	1916	25.1	7.7	30.4
Jamaica	1691	26.3	7.6	48.9
Guyana	843	24.5	7.1	98.9
Haiti	371	11.0	0.7	12.4

¹ 1996. ² 1997. ³ 1998. ⁴ 1995.

Source: All data are from the World Bank World Development Indicators, 2001, except unemployment and Central American inflation. Unemployment data from ILO, LABORSTAT 2000 (Guatemala unemployment from IDB Statistical and Quantitative Analysis Database). Central American Inflation data are from the IMF International Financial Statistics (Antigua inflation from ECLAC Statistical Yearbook 1999).

Table 2. The structure of CBERA countries' exports

Country	Food		Agricultural raw materials		Fuels		Ores and metals		Manufactures	
	1980	1998	1980	1998	1980	1998	1980	1998	1980	1998
----- <i>Percent of total</i> -----										
<i>Central American Countries:</i>										
Costa Rica	64	39	1	4	1	0	0	1	28	56
Panama	67	77	0	0	23	4	1	2	9	17
El Salvador	47	47	12	1	3	4	3	2	35	47
Guatemala	53	61	16	4	1	2	5	1	24	33
Honduras	75	79	5	2	0	0	6	2	12	17
Nicaragua	75	88	8	3	2	1	1	1	14	8
<i>Caribbean Countries:</i>										
Bahamas	1 ^g	70 ^{f,g}	0	2	95	--	0	27	4	1
Antigua	17 ^a	--	6	--	0	--	0	--	77	--
Barbados	47	39 ^b	0	0	0	3	0	0	53	57
St. Kitts	72 ^c	66 ^f	0	0	0	0	0	0	28	34
Trinidad	2	11	0	0	94	45	0	0	4	44
St. Lucia	66 ^c	74 ^b	1	0	0	0	0	0	22	25
Grenada	92	79 ^f	0	0	--	0	--	22	9	5
Dominica	57 ^c	49 ^e	0	0	0	0	0	2	43	49
Belize	--	86 ^f	--	2	--	0	--	0	--	13
St. Vincent	--	87 ^f	--	0	--	0	--	0	--	13
Dominican Republic ¹	73 ^g	19 ^{d,g}	0	0	0	0	3	0	24	78
Jamaica ²	14	24 ^f	0	0	2	0	79	54	6	22
Guyana	50 ^c	--	2	--	0	--	44	--	4	--
Haiti	36 ^b	16 ^f	1	0	0	0	12	0	38	84

^a 1978. ^b 1979. ^c 1981. ^d 1995. ^e 1996. ^f 1997. ^g From WDI 2000. Dates apply across all export sectors. Percentages may not sum to 100 due to rounding. 0 represents no trade as well as trade that rounds to 0.

¹DR 1996-1998 statistics contain substantial "unallocated" percentages (~80%).

²WB WDI percentages for Ores & Metals (1980: 21%; 1998: 54%) and Manufactures (1980: 63%; 1998: 70%).

Source: Central America: Trade shares are from the World Bank, World Development Indicators, 2000. Caribbean Countries: from UNCTAD Handbook of Trade Statistics CD-Rom 2000, Supplement (1987); from World Bank World Development Indicators, 2000 where indicated.

Table 3. CBERA Countries: Trade Liberalization

Country	Average tariff ^a		Tariff Range Maximum/minimum		Quantitative restrictions (Coverage ratio)	
	1987	1998	1987	1998	1987	1998
<i>Central American countries:</i>						
Costa Rica	21.1 ^b	7.2 ^c	100/1	253/0 ^{c,h}	0.8 ^b	1.6 ^c
Panama	--	9.2	--	--	--	0
El Salvador	21.1	5.7	100/1	40/0	19.2	33.9
Guatemala	22.8	8.4	100/1	28/0	7.4	2.9
Honduras	--	7.8 ^d	--	70/0 ^d	--	0.1 ^d
Nicaragua	22.1	5.9	100/1	195/0	27.8	5.6
<i>Caribbean countries:</i>						
Bahamas	32.3	32.0 ^f	160/0	--	0.1	--
Antigua	12.0 ^b	9.0	70/0	--	2.5 ^b	--
Barbados	17.3 ^b	9.7	70/0	70/0	11.9 ^b	0
St. Kitts	12.9	9.2	70/0	70/0 ^d	13.0	0 ^d
Trinidad	17.3 ^e	9.2	70/0	40/0	23.4 ^e	1.8
St. Lucia	12.0	9.7	70/0	70/0	4.6	0
Grenada	12.0	9.3	70/0	40/0 ^d	9.1	0 ^d
Dominica	12.8	9.0	70/0	45/0 ^f	0.2	0 ^f
Belize	17.3 ^b	9.2	70/0	70/0 ^d	10.2 ^b	0 ^d
St. Vincent	17.3 ^b	9.2	70/0	40/0	6.8 ^b	0 ^d
Dominican Republic	--	14.5 ^d	--	40/3	--	0 ^f

^a Nominal unweighted average tariff.

^b1986. ^c 1999. ^d 1997. ^e 1988. ^f 1996. ^g 1995.

^h Excluding live animals and processed foods, range for Costa Rica is 50/0.

Source

1980s data: UNCTAD Handbook of Trade Control Measures of Developing Countries, Supplement, 1987.

Tariff range is max/min within and between all 2-digit SITC categories.

1990s data: World Bank, World Development Indicators 2000 CD-Rom; World Bank Trade and Development Website, Tariff Database; IADB Quantitative and Statistical Analysis Database 2000; TRAINS 2001.

Table 4a. The Effect of CBERA on Investment in Central America

	(a) ¹	(b) ¹	(c) ¹	(d) ¹
GDP Growth	0.33 (6.02) ²	0.37 (7.43)	0.35 (7.12)	0.38 (7.77)
Openness	0.19 (7.06)	0.20 (8.28)	0.20 (8.08)	0.20 (8.16)
US Openness	0.28 (2.14)	0.42 (3.64)	0.46 (4.15)	0.46 (4.17)
CBERA trade	0.86 ³ (1.54)	-0.59 (-0.93)	—	—
CBERA utilization	—	—	0.28 (3.09)	0.04 (0.15)
CBERA*US Openness	-0.05 ³ (-1.85)	0.02 (0.63)	-0.02 (-3.63)	-0.01 (-0.39)
Reform period	1.28 (1.58)	1.54 (1.68)	2.63 (3.25)	1.84 (2.04)
PSP	-----	0.76 (3.04)	-----	0.64 (1.36)
PSP*US Openness	-----	-0.04 (-3.28)	-----	-0.03 (-1.09)
NAFTA	-0.82 (-0.71)	1.21 (1.05)	0.66 (0.58)	1.15 (1.03)
Obs.	158	158	158	158
	R² DW-statistic	R² DW-statistic	R² DW-statistic	R² DW-statistic
Costa Rica	0.42 1.97	0.43 1.77	0.52 1.87	0.52 1.70
El Salvador	0.65 1.75	0.69 1.77	0.66 1.79	0.69 1.78
Guatemala	0.73 2.14	0.72 2.09	0.77 2.07	0.74 2.13
Honduras	0.73 1.70	0.75 1.72	0.73 1.74	0.73 1.74
Nicaragua	0.60 1.75	0.61 1.71	0.60 1.75	0.61 1.71
Panama	0.78 1.51	0.80 1.57	0.80 1.52	0.79 1.64

¹Includes fixed effects.²t-statistics in parentheses.³3SLS estimation produced coefficients for CBERA of similar magnitude, but significant at the 10% and 5% levels.

Table 4b. The Effect of CBERA on Growth in Central America^{1,2}

	<i>CBERA = CBERA Trade</i>		<i>CBERA = CBERA Utilization</i>	
	<i>Coefficient</i>	<i>t-statistic</i>	<i>Coefficient</i>	<i>t-statistic</i>
GDI	0.32	(5.25)	0.33	(5.52)
Labor Force Growth	0.35	(2.81)	0.32	(2.53)
Debt Crisis	-6.67	(-9.01)	-6.43	(-8.30)
Export Capacity to Import (% change)	0.04	(3.04)	0.04	(3.19)
Crisis	-7.38	(-9.92)	-7.38	(-9.72)
NAFTA	7.34	(0.64)	7.69	(0.65)
Reform	-8.81	(-1.33)	-5.03	(-0.83)
CBERA	-9.51	(2.09)	-0.84	(-0.83)
CBERA *US Openness	0.51	(2.10)	0.05	(0.85)
CBERA *reform	8.42	(1.56)	0.47	(0.31)
CBERA *US Openness*Reform	-0.47	(-1.72)	-0.04	(-0.48)
PSP	2.46	(1.59)	1.29	(0.57)
PSP*US Openness	-0.13	(-1.68)	-0.08	(-0.64)
PSP*Reform	0.64	(0.20)	2.66	(0.54)
PSP*US Openness *Reform	0.00	(0.03)	-0.08	(-0.39)
PSP*Reform*NAFTA	-2.99	(-1.23)	-3.49	(-1.21)
PSP*US Openness *Reform*NAFTA	0.13	(1.25)	0.15	(1.18)
Obs. = 158				
	R2	DW-statistic	R2	DW-statistic
Costa Rica	0.68	2.06	0.69	2.10
El Salvador	0.92	2.01	0.91	2.12
Guatemala	0.60	1.55	0.58	1.54
Honduras	0.25	1.84	0.24	1.88
Nicaragua	0.68	1.96	0.69	1.91
Panama	0.53	1.80	0.54	1.83

¹ Includes fixed effects.

² Also includes dummies for the war years in Nicaragua and in El Salvador, and the interaction between the Nicaraguan war and Costa Rican labor force growth (due to migration from Nicaragua to Costa Rica). The latter two variables significantly reduced growth in both specifications.

Table 5a. The Effect of CBERA on Investment in the Caribbean

	(a) ¹		(b) ¹	
GDP growth	0.07		GDP growth	0.06
	(1.68) ²			(1.45)
Openness	0.12		Openness	0.12
	(7.19)			(6.18)
US Openness	0.09		US Openness	-0.06
	(0.50)			(-0.28)
CBERA trade	0.23		CBERA utilization	0.05
	(0.30)			(0.30)
CBERA trade*US Openness	-0.01		CBERA utilization*US Openness	-0.003
	(-0.32)			(-0.42)
Reform period	-2.05		Reform period	-1.83
	(-2.08)			(-1.66)
Reform period post 1990	3.51		Reform period post 1990	3.21
	(2.52)			(2.11)
PSP	1.28		GALS	10.34
	(2.25)			(1.83)
PSP*US Openness	-0.07		GALS*US Openness	-0.50
	(-2.59)			(-1.91)
PSP*NAFTA	-0.96		GALS*NAFTA	-11.50
	(-1.43)			(-1.93)
PSP*US Openness*NAFTA	0.07		GALS*US Openness*NAFTA	0.56
	(2.69)			(2.03)
NAFTA	-21.04		NAFTA	-6.45
	(-2.56)			(-2.90)
Obs.	158		158	
	R²	DW-statistic	R²	DW-statistic
Belize	0.53	1.44	0.69	1.92
Dominican Republic	0.18	1.52	0.26	1.65
Guayana	0.43	1.79	0.37	1.81
Haiti	0.91	2.08	0.91	1.99
Jamaica	0.68	2.00	0.72	2.17
Trinidad	0.69	1.64	0.69	2.03

¹ Includes fixed effects.

² t-statistics in parentheses.

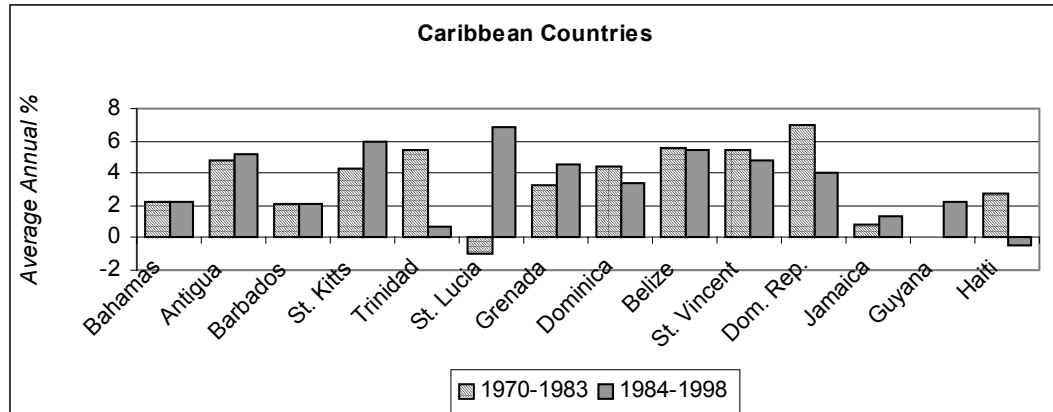
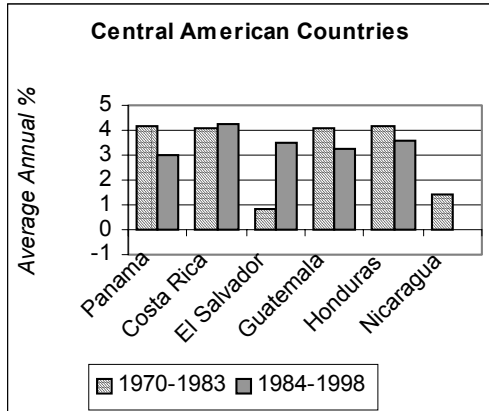
Table 5b. The Effect of CBERA on Growth in the Caribbean^{1,2}

	<i>CBERA = CBERA Trade</i>		<i>CBERA = CBERA Utilization</i>	
	<i>Coefficient</i>	<i>t-statistic</i>	<i>Coefficient</i>	<i>t-statistic</i>
GDI	0.18	(3.17)	0.13	(2.28)
Labor Force Growth	0.28	(1.79)	0.29	(1.84)
Debt Crisis	-7.08	(-6.83)	-7.30	(-7.29)
Export Capacity to Import (% change)	0.02	(2.34)	0.02	(2.07)
Crisis	-5.60	(-7.13)	-5.76	(-7.60)
US Openness	0.21	(1.91)	0.24	(2.28)
NAFTA	0.68	(0.08)	0.22	(0.02)
Reform	2.34	(2.42)	3.17	(3.19)
Sugar Regime-Belize³	-4.17	(-1.78)	-4.14	(-1.71)
Sugar Regime-DR³	-2.32	(-1.50)	-2.62	(-1.64)
CBERA	-9.05	(-2.62)	-1.82	(-2.32)
CBERA *reform	11.87	(1.68)	1.67	(1.00)
CBERA *US Openness	0.44	(2.43)	0.09	(2.14)
CBERA *US Openness*Reform	-0.55	(-1.68)	-0.08	(-1.00)
PSP	2.80	(2.33)	3.28	(1.91)
PSP*NAFTA	-4.11	(-1.99)	-3.89	(-1.22)
PSP*US Openness	-0.14	(-2.35)	-0.17	(-1.89)
PSP*US Openness*NAFTA	0.19	(1.99)	0.18	(1.22)
Obs. = 158				
	R2 DW-statistic		R2 DW-statistic	
Costa Rica	0.36	2.09	0.21	2.18
El Salvador	0.51	2.35	0.45	2.26
Guatemala	0.62	1.88	0.64	1.72
Honduras	0.73	1.81	0.76	1.84
Nicaragua	0.79	1.64	0.78	1.84
Panama	0.42	1.95	0.45	1.95

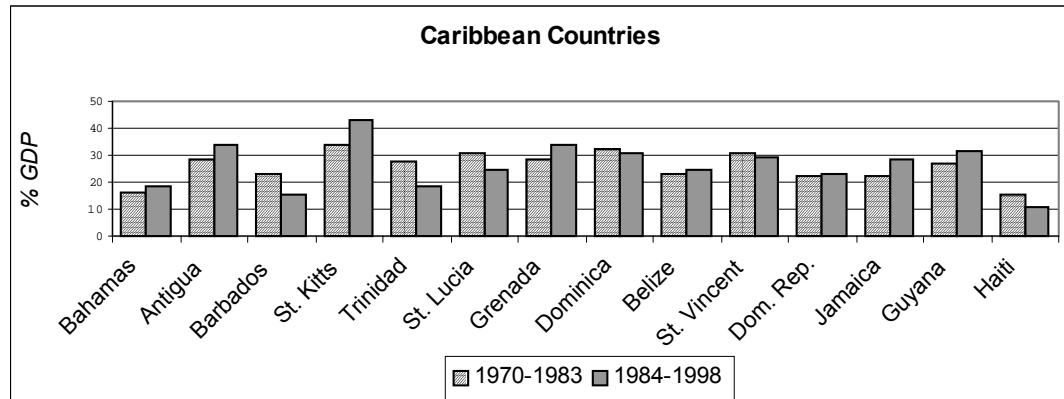
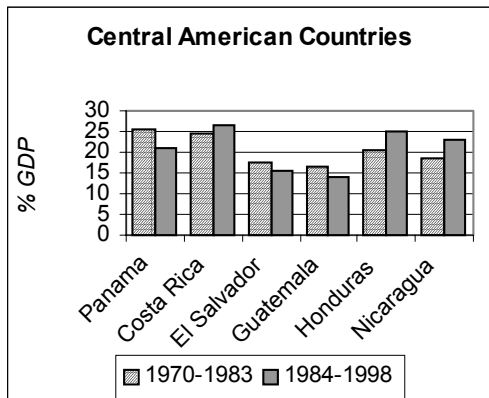
¹ Includes fixed effects.² Includes: dummy for Trinidad's early reform years, which coincided with major debt restructuring and other macroeconomic problems; dummy for Jamaican positive growth shock with newly elected government in 1972.³ Dummy for years in which the US changed the structure of its sugar quota scheme.

Figure 1: Real Income Growth and Investment in CBERA Region

Real Income Growth (Average Annual %)^a



Investment (% GDP)^b

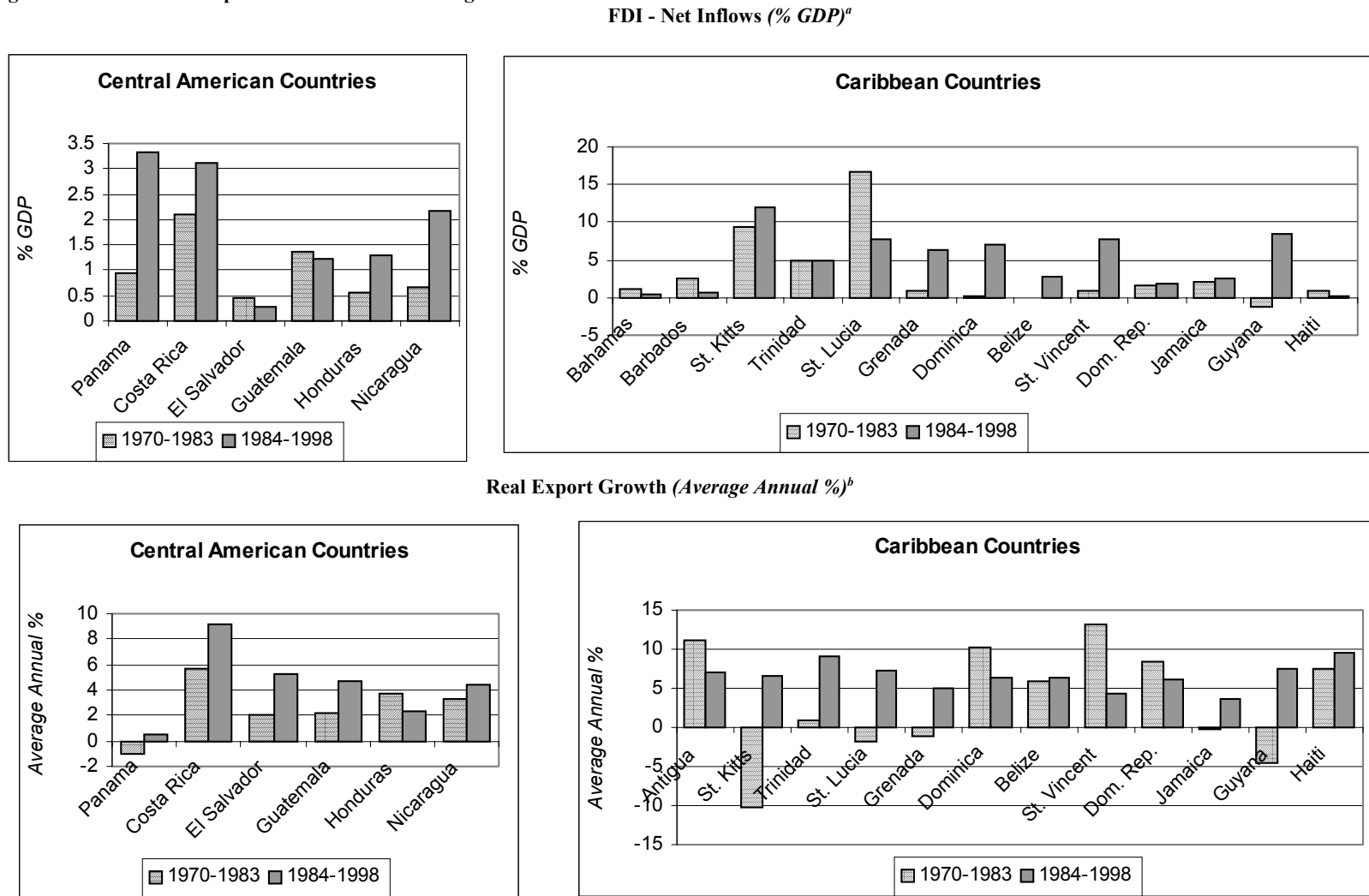


^aFor: Antigua, St. Kitts, Grenada, Dominica, St. Vincent, the initial year is 1978; Bahamas, the final year is 1995.

^b For: Panama, St. Lucia, Belize, the initial year is 1980; Antigua, St. Kitts, Grenada, Dominica, St. Vincent, Bahamas, the initial year is 1977; Bahamas, the final year is 1987.

Source: Author's calculation, using data from sources cited in Table 1.

Figure 2: FDI and Real Export Growth in CBERA Region

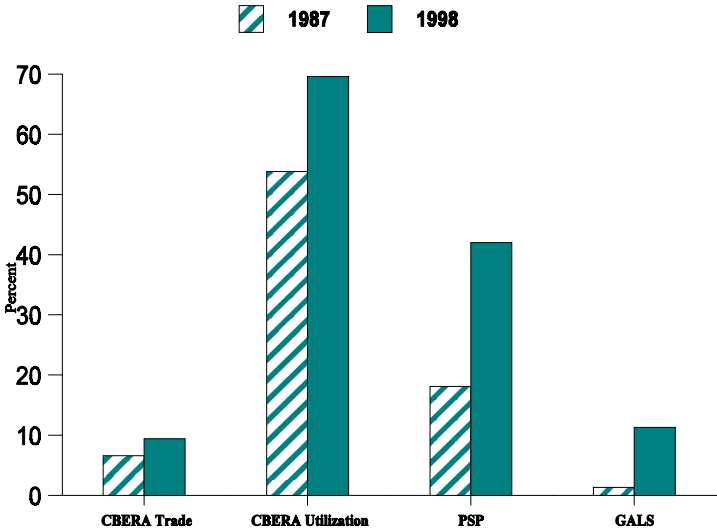


^a For: St. Kitts, St. Lucia, Dominica, the initial year is 1981; Grenada, St. Vincent, the initial year is 1977; Bahamas, the initial year is 1976 and the final year is 1996.

^b For: Panama, St. Lucia, Belize, the initial year is 1981; St. Kitts, the initial year is 1982; Antigua, Grenada, Dominica, St. Vincent, the initial year is 1978.

Source: Author's calculations, using data from sources cited in Table 1.

Figure 3. The Importance of U.S. Trade Preferences in CBERA-US Trade



Notes: Variables are defined in text.
Source: Compiled from official statistics of the US Department of Commerce.

DATA APPENDIX

Variable Name	Measure	Source
Y: Income	GDP in 1995 US dollars	World Bank, World Development Indicators 2000
I: Investment	gross domestic investment/GDP (percent)	World Bank, World Development Indicators 2000
L: labor force	total labor force (thousands)	World Bank, World Development Indicators 2000
X: export capacity to import	export revenue/import price index	World Bank, World Development Indicators 2000
CB ₁ : CBERA trade	US imports exclusively eligible for CBERA program/US imports from CBERA region (percent)	US ITC data
CB ₂ : CBERA utilization	US imports under CBERA program/US imports eligible for CBERA program (percent)	US ITC data
PR ₁ : Production Sharing	US imports from CBERA under HTS heading 9802 (807)/US imports from CBERA region (percent)	US ITC data
PR ₂ : GALS	US imports from CBERA under HTS heading 9802.00.8015 (807A)/US imports from CBERA region (percent)	US ITC data
T _{it} : openness of country	value of country's exports plus imports/country's GDP (percent)	World Bank, World Development Indicators 2000
T _{us} : openness of US	value of US exports plus imports/US GDP (percent)	World Bank, World Development Indicators 2000
DT: debt crisis years	country specific dummy variable	constructed by author
CR: domestic crisis years	country specific dummy variable	constructed by author
WR: war years	dummy variable for El Salvador and Honduras	constructed by author
δ, b_{10} : country fixed effects	dummy variables	
R _{it} : reform years	country specific dummy variable	constructed by author
N: NAFTA	dummy variable for 1994-1998	