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The Economic Implications of Puerto Rico's Status Options Second Part: Scenarios and Simulations

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editor

In the preceding bulletin (April-June 1997) was published the first combined summaries of the book of essays concerning the economic implications of Puerto Rico's status options, that will be published soon by the Internamerican University. The summaries of the essays try to encompass the Congressional debate, the industrial policies, the contributive incentives and the sensitivity of the 936 type businesses to changes in contributive credit.

In this bulletin are gathered summaries of those essays that contain the scenarios and simulations. A brief summary is presented of the themes of essays that are published on this issue:

- The potential impact of the repeal of Section 936 and the compensatory actions to be taken to confront it (Angel Ruiz and Edwin Meléndez).
- Net transfers (transfer payment less federal taxes) under different status options (Jaime Bofill).
- Income distribution and industrial policy (Jaime del Valle).
- Economic flows between the Puerto Rican and the U.S. economies (Angel Ruiz and Fernando Zalacaín).
- The migration between Puerto Rico and the United States (Carlos Santiago).

Moreover, in the earlier issue was mentioned that a brief description of the more important premises, the scenarios, and some commentary of the methodology would be included in this issue. We start with the premises.

In this number:

The Economic Implications of Puerto Rico's Status Options: Second Part Scenarios and Simulations	1
The Potential Impact of the Repeal of Section 936 on Puerto Rico's Economy: Summary	4
The Impact of Federal Disbursements and Taxes on the Puerto Rican Economy Under Different Status Options	11
Income Distribution and Industrial Policy: An Assessment of the Implications of Political Status Options on Industrial Profitability	16
The Economic Relation of the United States and the Puerto Rican Economies: An Interregional Input-Output Approach	19
Political Status, Minimum Wages, and Puerto Rican Migration	25

The Economic Implications of Puerto Rico's Status Options

assumptions on the proposals presented by the Island's political parties and Congress during the 1981-1991 Congressional hearings regarding Bill S. 712. For example, some of the more important assumptions related to transfer payments and federal taxes under Statehood are:

- At the moment of incorporation as a state all federal taxes and programs apply to Puerto Rico.
- Federal income taxes become effective from January 1, 1994 with the exception provided by Section 936 which will be gradually eliminated over a five year period.
- The U.S. Treasury will transfer to Puerto Rico those funds paid as federal taxes from Puerto Rico during 1994 and 1995.
- Federal excise taxes will begin to be enforced in 1994 and will be returned to Puerto Rico until October 1998.
- Beginning in 1994, all federal programs will extend to Puerto Rico.

In general, the essays partake of some basic parameters in the definitions and design of their scenarios (up to the point where their data and models allow). For this reason it is important for the reader to analyse in detail the premises of each essay and its methodology. For example, in the case of professors Ruiz and Meléndez, they specify the following scenarios to be utilized with an input-output model:

- Base scenario: Continuation of the Commonwealth's trend in growth rate until year 2,000.
- Scenarios 1: Repeal of 936 without compensatory action from government and private sector.
- Scenarios 2: Wage credit without compensatory action.
- Scenarios 3: Repeal of 936 with

compensatory action.

- Scenarios 4: Wage credit with compensatory action.

The result of these scenarios are very valuable and interesting. They offer a new dimension to the role of compensatory action that government and the private sector can play confronted with the repeal of Section 936. However, the situation with Section 936 has changed, hence, when analysing these results or comparing them with other studies, much caution is needed.

The repeal of Section 936 by Congress has increased anxiety concerning the deterioration of the industrial base and the reduction of potential economic growth in Puerto Rico. It ought to be noted that the companies operating in Puerto Rico under Section 936 have been given a ten-year grace period under Section 30A. Even so, an anxious preoccupation persists in the those sectors with new factories or new lines of production that have been excluded from the extension, and the unanswered questions that arise from the unknown economic reality of a post-936 Puerto Rico.

Various basic scenarios can be constructed that describe the overall features of post-936 Puerto Rico. The first among these is the Section 901 scenario. This partakes from the premise that the relevant contributive provisions (repeal of Section 936) will be maintained for a period of time and that Section 901 covered in Puerto Rico during this time.

A wage credit after year 2001 constitute the second scenario of post-936 Puerto Rico. In concrete terms, the scenario consists in the extension of wage credit of 40 or 60 percent after 2001. This is one of the alternatives that possibly will arise in Congress in the coming years. To compare the contributive rates for the two wage credit options (40 or 60 percent), with the credit rates for earnings of 40 percent (which will be relevant in 1998) demonstrate, for many sectors, that the resulting differences in wage and income credit are not as different as perceived. This second scenario is the closest one to the world of 936 that we know before the repeal in August 1996. Section 901 coexists in this scenario of wage credit such as found in the time period of 936 with its wage credit and earnings credit.

Unidad de Investigaciones Económicas

The Implications of Puerto Rico's Status Options

The crucial point of this scenarios is the number and importance of the 936 businesses that decide to relocate their operations or postpone their future investment in the Island, as well as the efficiency of these incentives in attracting new investment. Moreover, the steps taken by the government and the private sectors to compensate for the uncertainty that surrounds the problem of investing in Puerto Rico are very important. The absence of comparative studies of investment yields between our national competitors and Puerto Rico make it difficult to analyze these scenarios, particularly the analysis related to net migration (establishing and shutting down) of type 936 businesses. In the light of these concerns about the repeal of Section 936, it seems that the contrast regarding the scenarios of these essays and those of post-936 Puerto Rico, may be less stark than it seems to appear.

Finally, we can now turn to comment briefly on the methodological issues. Some of the principal methodological issues have been remarked upon by Nazrul Islam (1995) in an interesting piece of work. He proposes an alternative methodology to modeling these issues (a computable general equilibrium model that will allow for the simultaneous interplay of the different issues) that ought to be looked over, particularly by those who are continuing to do research concerning these topics. In sum, the essays presented in this forthcoming book constitutes the best collection of research available on the economic implications of Puerto Rico's status options.

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**The Potential Impact of the Repeal of Section 936
on Puerto Rico's Economy: Summary**

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Introduction

The foundation for the Puerto Rican economy's growth over the last four decades was laid in the 1940's. The year 1948 marks the year that Puerto Rican Government initiated the economic development program better known as "Operation Bootstrap", designed to encourage private business investment, both local and foreign to accelerate the island industrial development. The 1947 tax exemption law, as amended several times afterwards, emerged as a key element in the new program. Tax holidays were complemented by the Federal income tax exemption of possessions corporations' earnings. Under section 931 of the U.S. Internal Revenue Code a U.S. company that obtained at least 80% of its gross income in a three year period from sources in U.S. possessions and 50% or more was derived from the active conduct of a trade or business there, may go through a tax free liquidation if certain conditions of ownership and distribution of assets are met. The response to these tax incentives over the next three decades was spectacular. The Island was transformed from an impoverished agrarian economy to a technological advanced industrial country. Notwithstanding what Baer called " a successful development program"¹ the possessions corporation tax provisions, at present Section 936 and formerly Section 931, have been the subject of strong and increasing criticisms. In most instances tax benefits have been considered excessive, especially by the GAO,² as compared with the number of jobs created by the possessions corporations.

The introduction of legislation (S.712) calling for a referendum on the Political Status of Puerto Rico has, once again, directed considerable attention to the tax exemptions granted by Section 936 of the Internal

Revenue Code to subsidiaries of U.S. Corporations operating in Puerto Rico. The legislation calls for a referendum in which the people of Puerto Rico will choose among Independence, absorption into the Union as the fifty-first state, or a redefinition of the current Commonwealth arrangement. The first two alternatives will phase-out federal tax exemption under Section 936 in a 5 to 10 year transition period. Discussion of the subject in Congress raises the possibility of substantial modifications, or elimination, of tax advantages for U.S. corporations even under the current Commonwealth status. Recently, the debate over the proposals to phase out 936 legislation focuses its attention on a loss of more than \$2 billions dollars in tax revenues to the US Treasury under this legislation. It also focuses on the pharmaceutical companies (one of the main 936 industry in Puerto Rico) excessive prices and huge profits. At the local level the economic impact of a change in Section 936 is viewed in terms of jobs loss and a reduction of the liquidity of the financial system, both having adverse impacts on the economic development of the island.

There is little dispute about the benefits of Section 936 for the U.S. subsidiaries in Puerto Rico, particularly for a handful of high-tech industries (pharmaceutical, electronic machinery; and professional and scientific instruments) which enjoy the bulk of the tax credits. What is in dispute, however, is the relative importance of 936 corporations and how the elimination of these tax benefits will affect the Puerto Rican economy. Very few empirical studies have been conducted to assess the effects of 936 firms on the Puerto Rican economy (Booz, Allen & Hamilton, 1985; Lane, 1985; Nathan and Associates, 1987; Marwick, 1990; McKee, 1990). The Congressional Budget Office (CBO) has conducted the only independent study of the effects of a change in status (and tax exception under Section 936) on the Puerto Rican economy³. One of the main conclusion of the study is that the elimination of Section 936 would:

“lead to a loss of between 37 percent and 47 percent of the capital and production of 936 corporations, in that year, under the current status” (p.17).

1. Baer, Werner (1959) "Puerto Rico: An Evaluation of a Successful Development Program," **The Quarterly Journal of Economics**, November.

2. General Accounting Office (1993) **Tax Policy, Puerto Rico and the Section 936 Tax Credit**, Washington, June.

3. Congressional Budget Office (1990) **Potential Impacts of Changes in Puerto Rico's Status Under S. 712**, Washington, D.C., April.

This sizable loss in production is predicted based on an attrition rate similar to historical experience and that the "remaining firms would invest only enough to offset depreciation and maintain their capital stock" (p. 17). The CBO conclusions are based on several key premises discussed elsewhere but perhaps the most troublesome of all the assumptions is that the CBO study implicitly assumes that no compensatory action will be undertaken by the government and the business community in Puerto Rico. In terms of industrial growth, this means that the demise of 936 manufacturing as a growth pole will not be substituted for the other manufacturing and non-manufacturing industries. It is unreasonable to assume that no compensatory action will be taken by the government and the business community if such an important change in the policy environment occurs in Puerto Rico. According to McKee et.al. (1990), a statehood economic program will diversify the economy focusing on the expansion of other non-936 manufacturing, services, tourism, and export diversification in agriculture. An independence economic program may emphasize import-substitution strategies in goods producing industries, particularly agriculture, and tourism. However, even under an enhanced Commonwealth, all of the proposed strategies are viable. In fact, most of the economic reforms proposed to cope with the uncertainty of 936 corporations are not exclusively tied to anyone political formula.

The Puerto Rican economy is a highly open economy mostly based on the import of U.S. capital and in which much of the output produced is exported to U.S. markets. This economic model is highly sensitive to external economic fluctuations and the uncertainty caused by congressional tax and regulatory reforms. Sudden repeal of Section 936 represents a scenario that may have adverse economic consequences of unknown proportions if not accompanied by a package of other incentives to substitute those existing under current legislation. A more reasonable policy approach may be a managed interdependence in which Puerto Rico and the U.S. Congress agree to phase out 936 over a reasonable period of time and assist on the diversification of the Puerto Rican economy, including policies directed to preserve the operation of 936 corporations in the context of a different federal tax exemption arrangement. A managed interdependence approach could combine policies proposed by all the political alternatives, including the diversification of

exports and import substitution in agriculture, industry and services, and the expansion of tourism.

To assess the effects of changes or a repeal of Section 936, we estimate three scenarios with two possibilities each scenario using an Input-Output Model for the Puerto Rican Economy. One of the scenarios take into account the pessimistic possibility of reductions in 936 investment and other components of final demand (mainly exports) if Puerto Rico becomes state of the Union or, alternatively, under the present political status with the wage credit amendments to Section 936, as recently approved by the US Congress⁴. Of the scenarios estimated one reproduced the CBO assumption of reduction in gross investment and exports if 936 tax benefits are eliminated under statehood. The other scenario is related to the wage credit proposal (16.4% reduction in the final demand of four 936 industries). The baseline scenario uses the Puerto Rico Planning Board projections of the growth rate of GDP by industrial sector for the year 1997 (and projections of this author for year 2000) and apply the rates of growth of this variable to the output of the input-output accounting. Finally, an enhanced scenario of growth in non-936 manufacturing industries, selected service sectors, and agriculture were constructed for year 2000. The final demand of this latter scenario was combined with the reduced final demand of 936 firms to obtain what we called "compensatory scenarios".

The most important finding of our scenarios is that the Puerto Rican economy could assimilate a decline in production in the 936 sector with less severe consequences than the ones predicted by the CBO macroeconomic model. Our results also show that,

4. Under the present amendments the tax credits to 936 firms will be reduced to 60% in 1994, 55% in 1995, 50 % in 1996, 45 % in 1997, and to 40 % after 1998. A wage credit of 60% of 115 5 of salaries (15% of fringe benefits) was also approved. Firms that choose the wage credit the first year have to remain with that incentive. On the other hand, firms that choose the income tax credit on profits can eventually change to wage credit with no possibility of change afterward, (Omnibus Budget Reconciliation Act, OBRA, 1993).

The Potential Impact of the Repeal of Section 936

even in the best case scenario, industrial policies targeting the manufacturing sector alone can not compensate for the loss of 936 activity. These results suggest that more comprehensive industrial policies may be able to induce a diversification of the economy and that, in just one decade, the Puerto Rican economy can move from the uncertainty of 936-based industrialization to a more secure path of growth.

Table 1

Some Basic Indicators of Manufacturing Sector, Fiscal Year 1991

(output and value added in thousand 1982 dollars)

	Basic Indicators: Manufacturing Sector		
	Total	936 Firms	None-936
Number of firms	2,318	521	1,797
Direct Employment	16,4121	107,350	56,771
Value Added:			
Wages and Salaries	2,414,000	1,790,857	623,143
Other Value Added	8,236,000	8,116,573	119,427
Total	1,065,000	9,907,431	742,569
Gross Output	21,761,887	17,324,109	4,437,778

Baseline and Reduction of 936 Scenarios

Table 2 summarizes the results of baseline and reduction scenarios.

Table 2

Input-Output and Macroeconomic Indicators for Fiscal Year 1993 and Scenarios of Simulated Reduction in 936 Final Demand Industrial Sectors for Year 2000 (1982=100)

	Base Fiscal Economy 1993	Baseline Scenario Year 2000	37% Reduction in 936 Firms Final Demand	16.4 % Reduction in 936 Firms Final Demand
Input-Output Results and Unemployment				
Final Demand (in thousand dollars)	37,489,815	48,226,138	45,036,785	47,776,431
Gross Output (in thousand dollars)	58,300,256	75,974,717	65,379,275	72,454,844
Labor Income (in thousand dollars)	10,927,209	13,872,013	12,381,242	13,432,466
Employment	999,000	1,198,066	1,107,207	1,169,770
Estimates of labor force	1,201,000	1,374,079	1,374,079	1,374,079
Unemployment Rate (Percentage)	16.82	12.81	19.42	14.87
Macroeconomic Variables				
Gross National Product (in million \$)	16,673.70	20,041.00	17,144.27	18,992.76
Gross Domestic Product (in million \$)	27,183.57	34,587.36	30,061.64	31,607.36
Rates of Growth From Base Year				
Gross National Product	-----	2.66%	0.40%	1.88%
Gross Domestic Product	-----	3.50%	1.45%	2.18%
Employment	-----	2.63%	1.48%	2.28%

The rate of growth of GNP in of our baseline scenario is somewhat lower than the rate of growth for the period between 1983 and 1992. Gross National Product will grow 2.66 percent from 1993 to the year 2000 while the rate of growth in GNP during 1983 to 1992 was 3.05 percent. This rate of growth implies an unemployment rate of 12.81% for the year 2000. Projecting the present structure of the Puerto Rican economy to year 2000 suggests that it will be highly difficult to reduce the unemployment rate under the 10% mark.

The strong economic dependence on 936 firms is highlighted in our two scenarios of reduction in 936 investment (and other components of final demand). In

these scenarios 936 investment and other final demand are reduced by 37% (estimates of CBO in their study of the Puerto Rican economy) and 16.4% in four 936 industries . A reduction of 37% in 936 final demand will reduce gross output from \$75,974,717 to \$65,379,275 millions, a decline of 14% over the baseline scenario. This implies that the rate of growth of the economy (measured by changes in GNP) will be reduced from 2.66% per year to 0.40% per year from 1993 to 2000 (around two full percentage point less).

Employment will be reduced from 1,198,066 estimated for the baseline scenario to 1,107,207 a net loss of 90,859 jobs. Consequently, the unemployment rate projected to be around 12.81% by the year 2000

The Potential Impact of the Repeal of Section 936

using the baseline scenario, will increase to 19.42%, or 6.6 percentage points higher.

Under the 1993 amendments to Section 936 (OBRA) the investment of only four industries will be affected. In this case the investment will be reduced by only 16.4%. In terms of possible changes in political status, these scenarios mean that under Statehood the impact of the reduction in 936 investment will not be as drastic as the estimates of the CBO.

By the same token under the present political status, and taking into consideration the recent changes in 936 legislation, the investment of only four industries will be affected (OBRA, 1993). In this latter case the rate of growth of GNP will be reduced from 2.66% (baseline scenario) to 1.88% and the unemployment rate will increase from 12.81 to 14.87 percent by year 2000. In case of a repeal of Section 936, the relocation of firms 936 will imply a slower rate of growth of GNP, 1.3% from 1993 to 2000. The unemployment rate will increase from 12.8 to 19.4%.

Enhanced Scenarios

The reduction scenarios discussed above were built under the assumption of no response on the part of Puerto Rican authorities to a reduction in 936 activity. These scenarios are an unlikely outcome since even now steps have been taken to restructure the economy, promoting local capital in non-936 manufacturing, agriculture services and tourism⁵. By the same token in a paper written for this project by Jaime Bofill⁶, it is argued that during the transition period, under the independence, the decreasing real value of the block grant given to the island by the federal government, and the eventual cessation of the same by year 2000, will put the independence under disadvantage compared to other status options.

However the paper does not discuss measures to counteract the possible reduction in economic growth

generated by the reduction in transfer payments⁷. Also, the CBO scenario do not take into consideration any possible defensive measures on the part of Puerto Rican authorities during the phase out period (in the case of statehood). Taking this limitation in mind, it was necessary to estimate one last scenario that we called an "enhanced" scenario. The last scenarios that we have estimated assume that measures will be taken to counteract reductions in 936 output. As explained before, the enhanced scenarios assume an aggressive promotion of tourism, agriculture, non-936 manufacturing firms, selected industries in the service sector, as well as a continuing support to remaining 936 firms. Table 3 shows a summary of the results.

An examination of table 3 reveals interesting findings. The gross output for the economy as a whole will not be fully compensated, since output will not reach the level of \$76.0 billions reached in the baseline scenario. However, employment will be greater when combining the enhanced scenario with 16.4% reduction in 936 final demand, namely 1,237,062 compared to 1,198,066. These results imply that under the present political status unemployment could be reduced to 9.97% compared with 14.8% under the scenario of reduction of 16.4% in 936 investment without enhancement. It is worth observing that the lower rate of unemployment is accompanied by a slower rate of growth in GNP and GDP from 1993 to year 2000, compared to the baseline scenario. The main reason for this phenomenon is that under the enhanced scenarios the industries experiencing higher rates of growth are more labor intensive and with higher ratio of labor value added to output. On the other hand, 936 firms are more capital intensive and have a high ratio of intermediate inputs to gross output. In addition, these industries, as explained before, are characterized by a high ratio of profit to value added.

5. In fact this is the basic justification for the transition period.

6. See Jaime Bofill, "The Impact of Federal Disbursements and Taxes in the Puerto Rican Economy"

7. Scenarios taking into consideration possible defensive economic policies to counteract reduction in economic activity caused by relocation of 936 firms or reduction in Federal Grants (in the case of independence) were beyond the scope of Dr. Bofill paper.

Table 3

**Input-Output and Macroeconomic Indicators for Fiscal Year 1993
and Enhanced Scenarios of Growth for Year 2000 (1982=100)**

	Base Year Economy 1993	Baseline Scenario Year 2000	With 37% Reduction in Final Demand	With 16.4 % Reduction Final Demand
Input-Output Results				
Final Demand (in thousand dollars)	37,489,815	48,226,138	43,080,323	47,518,082
Gross Output (in thousand dollars)	58,300,256	75,974,717	67,990,734	75,067,693
Labor Income (in thousand dollars)	10,927,209	13,872,013	12,878,376	13,931,342
Employment	999,000	1,198,066	1,173,404	1,237,062
Estimates of Labor Force	1,201,000	1,374,079	1,374,079	1,374,079
Unemployment Rate (Percentage)	16.82	12.81	14.6	9.97
Macroeconomic Variables				
Gross National Product (in million \$)	16,673.70	20,041.00	17,934.94	19,801.74
Gross Domestic Product (in million \$)	27,183.57	34,584.36	30,949.66	34,171.12
Rates of Growth From Base Year				
Gross National Product	-----	2.66%	1.05%	2.49%
Gross Domestic Product	-----	3.50%	1.87%	3.32%
Employment	-----	2.63%	2.32%	3.10%

In summary, one important conclusion derived from our results is that If we change the economic incentives to favor non-936 manufacturing industries, selected service sectors, agriculture, and tourist activity, the unemployment rate could be reduced below the 10% mark but other macroeconomic indicators will experience somewhat slower rates of growth than under the baseline scenario. In the specific case of the enhanced scenario with only 16.4% reduction in the final demand of four 936 industries, the rate of unemployment could be reduced to 9.97% by the year 2000 compared with 12.81% under the baseline scenario and 14.6% under the CBO scenario of 37% reduction in 936 activity.

Conclusions

There is little doubt among economists, planners and policy makers in that industrial policy through tax exemption has been the keystone of economic planning in Puerto Rico since the legislature

enacted the Industrial Incentives Act of 1948. Total tax exemption from the Puerto Rican government, as amended through the years, has been complemented by section 262 of the Revenue Act of 1921, section 931 of the Internal Revenue Code of 1954, and section 936 of the Tax Reform Act of 1976 to offer tax advantages to U.S. "possessions corporations" operating in Puerto Rico. Because of these policies, the Puerto Rican economy is highly integrated to the U.S. economy and policy decisions by Congress have and enormous impact on the island. There is no question, that a complete elimination of the tax benefits without a package of alternative incentives and within a reasonable transition period, will cause some dislocation of the local economy. What is in contention is how large this external shock could be, what measures could be enacted to counterbalance the adverse economic consequences of such action, and whether the phase-out of section 936 could lead to an alternative set of policies that would promote a more diversified economy.

We have found that 936 corporations have a significant impact in the manufacturing sector of the economy. These firms accounted for 67.5 percent of the direct employment, 79 percent for production, and 72 percent of direct income in the manufacturing sector. Despite the significant importance of 936 corporations for the manufacturing sector, the impact of 936 corporations in the rest of the economy is relatively low. For instance, the 936 corporations output multiplier type 1 was only 1.7 and employment multiplier 1.56 during fiscal year 1992. If one allows the induced effect of consumption the multipliers type 2 increase to 2.29 and 1.918 respectively, still low compared to the usually published figures. The estimated effects of 936 corporations in production, employment and income are significantly lower than those estimated in previous studies. On the other hand, output and employment multipliers are higher for non-936 firms. The possibility of promoting industries in non-936 sector should be explore.

The most important finding of our scenarios is that the Puerto Rican economy could assimilate a decline in production in the 936 sector with less severe

consequences that the ones predicted by the CBO macroeconomic model. The promotion of non 936 manufacturing will require a clearly different set of industrial policies and the abandonment of tax exemption as the exclusive tool of economic planning. This is not to say that tax incentives should not be an important part of an industrial promotion package. But obviously federal tax exemption play a less significant role in the development of non-936 sector. Among alternative policies that could be explored by policy makers are export diversification and import substitution in agriculture and manufacture, the promotion of services and communication industries, and the expansion of tourism. These and other policies could focus on firms with greater linkages to the local economy which would promote economic stability even if Section 936 continues in operation, or prepare the Island for the adversity that would result when and if the U.S. Congress modifies or eliminates Federal tax exemption for possessions corporations.

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**The Impact of Federal Disbursements
and Taxes on the Puerto Rican
Economy Under Different Status Options**

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Introduction

The U.S. Congress has been considering legislation to facilitate the choice of political status in Puerto Rico. Economic changes -- most notably, the fiscal relations between Puerto Rico and the federal government -- will result from any change in status. The aim of this study is to quantify the impact that changes in Puerto Rico's political status would have on the economic growth and other macroeconomic variables, as a result of changes in the fiscal relations (taxes and transfer payments) between Puerto Rico and the United States for the period 1994-2000. The interaction between additional federal funds, the number of Section 936 firm relocation, and federal taxes would affect the revenues and expenditures of both the U.S. and the Puerto Rican governments as well as aggregate demand in Puerto Rico. This in turn would induce changes in the economic growth, employment and wages. The Commonwealth status option will serve as the base case for comparison.

The study reviews several studies that deal with the subject of equal treatment for Puerto Rico in federal programs and with the extension of federal income taxes to Puerto Rico under various political status options. These studies can be divided into two basic groups, depending on their methodology. The first group consists of several studies which describe the initial impact but ignores the secondary effects arising from the interrelationship among the variables. Of particular significance here is the relationship between manufacturing investment and the fiscal effects that a status change entails. Studies in the second group make use of a quantitative model in which the variables dealing with the relocation effect and fiscal changes are interrelated so that the models can deal with the effect of the interplay among them. Two modeling approaches have been used to analyse this issue. The Policy Economic Group used an income tax model¹.

1. Policy Economic Group, Peat Marwick: 1990. *Economic and Fiscal Impacts of Puerto Rico Statehood*. Washigton, D.C.

The income tax model is a straight forward income tax calculator that includes a decision making capability. Income tax returns are read from a data base and results are accumulated and classified in different ways. The model focuses primarily on quantifying the effects on the revenues and expenditures of both the United States and Puerto Rico and on Puerto Rican aggregate demand. The Congressional Budget Office study² uses a macro-econometric model which aims primarily at quantifying how growth will be affected under different status options as a result of changes in the relationship between the fiscal variables (net transfer) and relocation of Section 936 firms.

The critical role is played by the number and importance of the Section 936 companies that decide to relocate their operations or preclude future investment in Puerto Rico. There is an absence of detailed studies comparing returns to investors by site (Puerto Rico vs. Mexico, Ireland, Singapore). Several recent studies deal with this issue, but they are incomplete and somewhat contradictory³. In the absence of concrete evidence, it is necessary to simply assume various scenarios dealing with the relocation of Section 936 firms. The Congressional Budget Office (CBO, 1990) and the Policy Economic Group (1990) studies are limited because they only deal with one type of Section 936 company relocation. That is, relocation is exogenous and it is assumed that there will be a significant exodus of firms. Before specifying the scenarios, a brief description of the economic implications of Statehood and Independence is presented using the Commonwealth as the base case.

Economic Implications of Statehood and Independence

Statehood or Independence will bring changes in net transfers to Puerto Rico in several ways. Under

2. Congressional Budget Office: 1990. *Potential Economic Impacts of Chages in Puerto Rico's Status under S172*. Washington, DC: CBO.

3. Policy Economic Group: 1992. *The Effects of the North American Free Trade Agreement on the Economy of Puerto Rico*. Government Development Bank for Puerto Rico; and Price Waterhouse: 1992. *Plant Location*, Vol. II. San Juan, PR: Economic Development Administration.

the Statehood option: the participation of Puerto Rican residents in the Food Stamp program, Medicaid, Medicare, and Aid to Families with Dependent Children (AFDC) would increase; Puerto Rican residents would be eligible for Supplemental Security Income (SSI), but their eligibility for Aid to the Aged, Blind and Disabled program would end; and Puerto Rican residents, both individuals and firms, would become liable for federal income and excise taxes. Individuals would, however be eligible for the earned income tax credit.

The income leakage caused by individuals and companies in Puerto Rico paying taxes to the U.S. Treasury under Statehood, could be more than compensated by greater federal transfer payments to island residents and government agencies. Assuming that no other major economic changes take place and that Section 936 firms are unaffected by U.S. tax rates (i.e., that non-tax advantages in Puerto Rico offset taxes), the net fiscal benefits, measured in terms of higher growth, lean toward Statehood rather than Independence or the current Commonwealth status. However, the loss of Section 936 tax incentives could lead to major changes in the structure of the Puerto Rican economy.

The Puerto Rican budget could be significantly affected by the loss of economic activity with the relocation of Section 936 companies, as well as by the redistribution of income resulting from the new tax constraints and federal entitlement program opportunities confronting Puerto Rican residents. On the one hand, reductions in government expenditures may occur as residents become eligible for federal government programs. On the other hand, tax revenues could be reduced in Puerto Rico in several ways.⁴ Hence, the public sector could be forced to cut back on its services and employment in order to remain competitive with other states in terms of taxation.

The critical issue is the extent to which existing operations would relocate, future investment

4. For example: The toll-gate tax would be repealed. Corporate relocations would reduce income tax revenues - both individual and corporate. Financial institutions would be down-sized and would pay lower taxes. Individual income tax revenues would be reduced.

curtailed, and compensating action taken by the government and the business community to cope with the uncertainty affecting Section 936 corporations.

Independence could have many short-term economic effects in Puerto Rico. Changes in the net fiscal flow between Puerto Rico and the United States is one of them. The net effect of these changes would be a decrease in federal revenues. This shortfall, compared to the amount Puerto Rico would receive if it maintains its current political status, can be expected to have two effects in Puerto Rico: reduced availability of financing via federal transfer for any current account deficit in Puerto Rico's balance of payments; and reduced stimulus of aggregate demand. Section 936 benefits would no longer be available to U.S. corporations, but a suggested tax scheme combining tax-sparing treaties and local subsidies could approach the attractiveness of the current Section 936 benefits (Negrón Rivera 1993).

Hence, the interplay of changes cause by the flow of federal funds, the relocation of Section 936 firms and federal taxes, plays a crucial role in the growth equation under the different status options.

Specification of Scenarios and Methodology

It is evident from the above discussion that transfer payments, federal taxes, and relocation of Section 936 firms are the three key variables of our macro-econometric model. As in previous studies, several scenarios were designed to examine the fiscal impacts of Statehood and Independence using the Commonwealth status as the base-line. However, these scenarios are different to those presented in the CBO and Policy Economic Group studies. The main assumptions regarding the transition period for Statehood and Independence are basically the same as those described in Senate Bill 712, the time periods are different.

Based on the proposed legislation, the study assumes that: Puerto Rico would become a state on January 1, 1992, that at the moment it became a state, all federal taxes and programs, with some exceptions, would apply immediately. Federal taxes would become effective January 1, 1994, except for those related to Section 936. The credit allowed by this section would be eliminated gradually over a five-year period. In 1994, the credit would be 80% and would be reduced

by 20% each year for the following four years until it is eliminated completely. The project also proposed that the U.S. Treasury would transfer to Puerto Rico the federal tax revenues collected from Puerto Rico for 1994 and 1995. Federal excise taxes would become effective in 1992 and would be returned to Puerto Rico until October 1998. And, beginning in 1992, all federal programs would be extended to Puerto Rico with the exception of Supplemental Security Income (SSI) which would begin in 1994.

The first scenario assumes that the rate of retention and attrition of Section 936 companies is the same under all three status options. It is assumed that Section 936 companies remain in Puerto Rico independently of political status. Therefore, the rate of growth in exports, investment in machinery and equipment and construction will be the same for all three status options for the period 1994-2000.⁵

The key variables in Scenario I are federal transfer payments and federal taxes. It is assumed that under Commonwealth federal transfer payments will continue at the same rate as in recent years. Note that under Statehood, with respect to federal taxes, there exists a transition period in which funds are returned to the government of Puerto Rico for several years (cover-overs).⁶ Puerto Rico will be receiving an additional \$1.3 billions in net transfers as a result of statehood during the year 2000. This result is the difference between change in total spending and the net flow of taxes from local sources (\$3.5 - \$2.2). In the case of Independence, change in net transfers are decreasing for one period 1994-2000. In the year 2000 net transfers under Independence will be \$598 million less than under Commonwealth.

Scenarios II and III entail relocation of 936 companies, but are calculated from different perspectives. In both scenarios (II and III) the

5. These are the main exogenous variables of the model, in addition to net transfers and relocation of Section 936 firms.

6. It is important to note that the taxes, which will be paid by Section 936 companies, are not included in the calculations of federal taxes paid by Puerto Rico presented in Table 5. The dividends flow primarily to non-residents of Puerto Rico.

relocation margin is calculated for Statehood and Independence, taking Commonwealth as the base. That is to say, the relocation margin is assumed to be an endogenous variable and not exogenous as in the studies carried out by the CBO (1990) and the Policy Economic Group (1990) and as in Scenario I.

The objective of Scenario II as distinct from Scenario I, is to calculate the relocation margin measured through exports under Statehood and Independence with respect to Commonwealth. Commonwealth GNP is taken as the base figure for calculating the relocation margin. If in any given year, the relocation margin of a given status is positive, it means that its corresponding GNP is greater than Commonwealth, and if it is equal to zero then its corresponding GNP is equal to or less than Commonwealth. The difference in GNP between any status and Commonwealth is translated into exports, which is used as a proxy for relocation. Export is a good proxy for relocation because of the exporting nature of most Section 936 firms. Hence, the relocation margin, as measured by exports, is an indicator of the degree of flexibility any status has compared to Commonwealth in terms of relocation of Section 936 firms. In addition, in those cases where the relocation margin is zero and the difference in GNP between any status and Commonwealth is negative, the additional resources necessary to arrive at the level of GNP generated by Commonwealth, measured in terms of exports or in terms of relative GNP, is also computed. This is the additional resources indicator. Hence, in Scenario II the key variables are net transfers, relocation of Section 936 firms, exports and GNP growth. The scenario is examined for the year 2000, which falls out of the transition period, 1994-98.

Scenario III entails relocation of companies in which the relocation margin variable is endogenous. Scenario III is very similar to II, except that Commonwealth is awarded parity in federal funds through several federal programs in the year 2000.

For the three scenarios the levels of transfer payments and federal taxes used, for the period 1994-2000, were those calculated by the CBO and the U.S. Treasury Department. Detailed estimates of changes in net transfer as a result of Statehood were prepared by the CBO and the Department of Treasury. Net transfer is an exogenous variable equal to transfer payments less tax payments from local sources. Change in revenues

from local sources consists of new excise taxes, custom duties, rum excise tax, and personal and corporate income tax. Total changes in revenues from local sources to the federal government amounts to \$2.2 billion in the year 2000. On the other hand, changes in total spending by the federal government in Puerto Rico is estimated to reach \$3.5 billion by the year 2000. Thus, Puerto Rico will be receiving an additional \$1.3 billion in net transfers as a result of Statehood during the year 2000.

Change in net transfers to Puerto Rico as a result of Independence was also prepared by the CBO and the Department of Treasury⁷. Change in net transfer is defined as change in total spending plus change in revenues from local sources. Change in net transfers to Puerto Rico under Independence is decreasing for the period 1994-2000. This is a direct result of Puerto Rico losing the benefit of the rum excise tax cover-over and the reduction in total spending by the federal government in Puerto Rico. Under Independence Puerto Rico has been offered an annual federal block grant for a period of nine years fixed in nominal terms. This will reduce federal spending in Puerto Rico when compared to the Commonwealth base case. In the case of the rum excise tax, losing this source of income represents around \$250 million per year for Puerto Rico. Federal payments for U.S. bases in Puerto Rico will partly compensate for this short fall in federal spending in Puerto Rico. In the year 2000, the \$1268 million short fall in net transfers to Puerto Rico will be partly compensated by the \$670 million federal payments for U.S. base in Puerto Rico, resulting in a net deficit of \$598 million.

Results and Conclusions

The findings of this study confirm that the critical issue is the relocation and future investment of existing Section 936 operations. In the absence of detailed studies comparing returns to investors by site (Puerto Rico vs. other countries), three scenarios were designed, to examine the fiscal effects of Statehood and

Independence, taking the Commonwealth as the basis for comparison.

In the first scenario relocation as an exogenous variable is the same under Independence, Statehood, and Commonwealth. In scenarios II and III relocation becomes endogenous. The objective of Scenario II as distinct from Scenario I, is to calculate the relocation margin through exports under Statehood and Independence with respect to Commonwealth. Scenario III presents the results of Commonwealth incorporating the addition of parity in several federal programs. The key variables in all scenarios are federal transfers payments, federal taxes, relocation of Section 936 firms and real gross national product growth (GNP).

The main conclusions that emerge from the analysis of the three scenarios are the following. Assuming no firm relocation under any of the three status options (Scenario I), the transition measures favors Statehood over Commonwealth and Independence. If net transfer payments favors Statehood and if the industrial structure of Commonwealth and Statehood are very similar (no relocation of Section 936 firms), the total amount of GNP will favor Statehood. The results pertaining to the transition period, 1996-1998, suggests that the time frame of the study must be extended beyond the year 2000.

In the year 2000, given the assumptions of Scenario II, Statehood has a relocation margin of 10.8 percent in terms of exports. Any reduction in exports beyond 10.8 percent places Statehood at a lower level of GNP than Commonwealth. The GNP of Independence in the year 2000 is less than Commonwealth, and therefore its relocation margin is zero. Note that although the reduction of 10.8 percent in exports under Statehood implies equal GNPs under both options (Statehood and Commonwealth), the composition of their GNP is different. The role of manufacturing is greater under Commonwealth than under Statehood, while commerce and services have a greater weight under the latter.

7. Data related to federal payments for U.S. bases in Puerto Rico is taken from: Price Waterhouse. (1991). *Section 936 Report. Volume I*. Puerto Rico-USA Foundation.

Parity in several federal programs for Commonwealth can compensate for the net addition in federal funds received by Puerto Rico under Statehood, bringing the Commonwealth's GNP to the same level as that of Statehood. In this case, the relocation margin under Statehood is zero. A significant reduction in the manufacturing base resulting from the loss of Section 936 benefits under Statehood entails a net GNP loss relative to Commonwealth with parity in certain federal programs. Hence, net transfers is the key variable determining the magnitude of the relocation margin. The bigger the difference in net transfers, other things equal, the bigger the relocation margin. In summary, the degree of relocation of Section 936 firms, the total amount of net federal transfers payments Puerto Rico will receive, and the transition measures negotiated are crucial in determining the macro-economic benefits of any status.

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**Income Distribution and Industrial Policy:
An Assessment of the Implications of Political
Status Options on Industrial Profitability**

*Jaime L. del Valle Caballero**

Introduction

The prospect of a change in the political status of Puerto Rico has kept busy almost every sector of society, each one trying to analyze the implications of such political transformation on various orders of life in Puerto Rico. For our part, economists have focused primarily on issues identified with section 936, personal taxes, transfer payments, as well as industrial policy, output, employment and migration among others.

It is the purpose of this paper to assess the impact of the possible changes in the way income is socially distributed on industrial profitability, based on the technical conditions of production and the distributive variables. What we will do is to establish a relationship, based on the technological structure of the different industries, between profitability of the different industries and the value added generated by them. Central to our analysis is the argument that the relative success or failure of *any* industrial policy can be measured in terms of the profitability it represents for the different sectors of the economy. Status considerations will be dealt with insofar as they affect, in different ways, the social distribution of income, and with this industrial profitability.

We will use the recent developments in capital accounting based on the notions of production prices, wage shares and profit rates. With this framework we should be able to direct the income distribution-oriented policy of the different status options towards specific sectors that are more capable of generating what we could call "social income", while compromising the least their profitability. By social income we mean the value of the net output that is distributed to all sectors of society *once profits have been paid*. This is the equivalent of a two sector analysis in which society is divided in two "classes": workers and capitalists; with the main difference that we are not restricting all non-profit income to go directly to wages. Nevertheless we deem appropriate to analyse income distribution in terms of profits and social income, because it provides a direct link to any consideration about the profitability of the different industries.

Moreover, we should make clear that our analysis assumes that, although it is possible that the various industries change their level of output as a result of status options (Meléndez & Ruiz: 1993), they do not change their *technique of production*. In this way we can isolate changes in the functional distribution of income from changes in the technical methods of production.

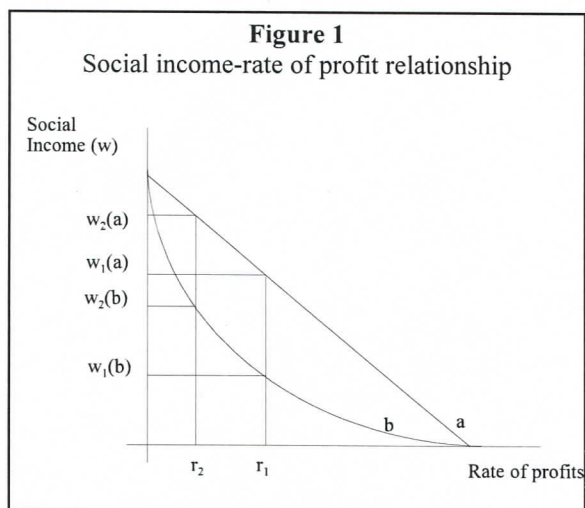
Finally we should state at this early stage that our measure of profitability is based on what we could term the "base line" profit rate. That is, profits that are enough to reproduce the initial conditions of production in a steady state situation, independent of the specific institutional arrangements that are present in each sector. The measures that we put forward are not intended to corroborate the ones obtained by the accounting practices of balance sheet analyses. Note, however, that these rates still allow us to reproduce the *actual* vector of value added.

Methodology

We begin by considering the basic input-output accounting expression $v = p(I - A) = aw + prA$ where v , p , I and A are the vectors of value added, production prices (Sraffa: 1960) and the identity and technical coefficients matrix respectively, for the 93 sectors of the 1982 input output matrix of the Puerto Rican economy. From the right hand side of this equation we can solve for the vector of prices of production $p = a(I - (1+r)A)^{-1} w$. Choosing any commodity as *numéraire* we can obtain a functional relationship between the wage rate (social income) and the rate of profits in term of that sector's value of production as $w^i = \frac{1}{a(I - (1+r)A)^{-1} e_i}$, where e_i is an

i -th unit vector. (See Figure 1)(Marzi & Vari: 1977; Petrovic: 1991)

From Figure 1 we can see that if we have two industries that produce the same output, but one is more labour intensive (industry a) than the other, which is more capital intensive (industry b), then we can see that a reduction in the rate of profits from r_1 to r_2 , for



example, implies a bigger increase in social income from industry **b** (from $w_1(b)$ to $w_2(b)$) as compared to industry **a** (which changes from $w_1(a)$ to $w_2(a)$). This is what we did industry on an by industry basis.

Given that this last result is specific to the sector used as numéraire, we repeated this procedure for the 93 sectors taking each sector as numéraire. Once we had the 93 wage profit relationships, with the actual (r,w) data we ran a regression¹ to use the estimated coefficients in our simulation of the impact of an industrial policy which would transfer income from profits to “society” on the profitability of the particular industry. To be able to establish the actual distribution of income we noted that $r = \frac{P}{K} = \frac{P}{Y} \cdot \frac{Y}{K}$. In this way

we can approximate the “actual” rate of profits by taking, from the vector of value added, the profit *share* $\left(\frac{P}{Y}\right)$, while the output-capital ratio $\left(\frac{Y}{K}\right)$ can be

1. See the Appendix in del Valle (1993) for the 93 social income-rate of profit graphs, and for the regression results. For the regressions we ran first simple regressions in the form $w = a + br$. In case the R^2 were less than 0.90, we made a new regression, but in a quadratic form $w = a + br + cr^2$. Finally for those results with an adjusted R^2 still less than 0.90 we ran a new regression in the cubic format. After those regressions no function was found with an adjusted R^2 less than 0.90.

directly obtained, without any recourse whatsoever on any index measure, from this same system of equations as the maximum rate of profit (Pasinetti: 1977; Sraffa: 1960). Moreover this disaggregation of the profit rate, viewed as the product of the profit share and the output-capital ratio, allows us to focus on industrial policy aimed at raising the profitability through economic measures that redistribute income or increase the productivity of capital.

Finally, to estimate the impact of the various status options on the overall profitability we estimate the changes in industries’ total profits, as would be accounted for in the vector of value added. These benefit losses were computed by calculating the amount of taxes that the various industries would have to pay as a percentage of the tax benefits that the industries enjoyed under section 936. This information comes from the Government Development Bank (1993), Puerto Rico Planning Board (various years), the Congressional Budget Office (1990), KPMG Peat Marwick (1991), and some considerations by other authors like Meléndez and Ruiz (1993), Colón (1993), Green (1993) and Negrón (1993). For the independence option we will weight the relationship between taxes and subsidies.

Results and Conclusions

From the data presented in our paper, and the results of our model, we can conclude that, compared to “Non-bank US Foreign Affiliate Corporations” (IRS: 1990; US Department of Labour: 1992), and even to the average rate of return on investment of US foreign direct investment in several Asian countries (Economic Development Board of Singapore: 1993), most industries in Puerto Rico would still be more profitable under both Statehood or Commonwealth, while the Independence option will be bounded by the effective profit rate of the other two status options. Only in a few cases would the Commonwealth option be at least as profitable as the comparable measure for the US foreign affiliates, while the Statehood option would become less profitable. This is the case, for example of the construction, milk and dairy products and the alcoholic beverages industries. On the other hand industries such as petrochemicals, drugs and pharmaceutical, non electric an electric machinery, metals, telephones, telegraphs and cable, and others would still be more profitable under any status option. This is so because these industries have a highly elastic wage-profit curve

which allows income to be redistributed from profits to social income without considerable reductions in the profit rate.

Take for example the case of the beverages industry, since the Government Development Bank estimated this sector's benefit losses to be one of the biggest (-47.2% benefit loss in 5 years. del Valle: 1993, p. 11)) This reduction in total profits would reduce their profit *share* from 108.74% to 57.41%, and this will imply a profit *rate* of 26.41% (down from an approximate 50.02%). From the 1982 input-output matrices, we have that this redistribution of income from profits to the rest of the economy (social income as we have called it) will increase the value of net output per unit of direct and indirect worker that flows to society from \$101 to \$4,174.² This same procedure is the one we suggest for each and every industrial sector, for which we present the specific results in our paper. For reasons of space, we will not present all the results here, but will refer the interested reader to the appendices of the paper.

In all cases, it is important to realize that, in the long run, the profitability of the various industries will also be affected by technological changes that allow industries to increase their output-capital ratio and/or their output-labour ratio in such a way as to increase their profitability. Once we are able to recognize those sectors whose profitability are more affected by changes in the distribution of income, then industrial policy should be oriented towards those sectors which have the capacity to increase what we have called "social income" while compromising the least their profitability. The policy options that should be developed are related to the technical methods of production, productivity and the degree of

2. Given that the regression form of this sector's wage-profit curve is $w = 8.73 - 17.25 r$, we have that a reduction of 47.2% in total profits means a new profit share of 57.41% (new total profits of \$198,345 ÷ 345,457). At an output-capital rate of 0.46, we get a new profit rate of 26.41% (0.5741×0.46). Inserting these values in our regression ($\$4,174 = 8.73 - 17.25 * 0.2641$ and $0.101 = 8.73 - 17.25 * 0.5002$) we get the estimated results presented above. See also Ayala: 1989 for an excellent discussion of these measures. (Note that data presented ins in thousand dollars.)

mechanization. Noting again that $\frac{P}{K} = \frac{P}{Y} \cdot \left(\frac{Y}{L} \frac{L}{K} \right)$,

where $\left(\frac{P}{Y} \right)$ is "status dependent", then we address the issue of profitability in terms of economic policy intended to increase output per labour and the efficiency of capital. (Green 1993)

Although the technical methods of production chosen in each industry limit their responsiveness to changes in the profit rate (and that is independent of status considerations), it is through institutional measures, which are basically status independent (Green: 1993), that these industries could respond by implementing measures that increase the productivity of capital and labour (workers training programmes, adoption of new technologies, increase in the capacity utilization and efficiency, etc.) Status considerations alter the relative distribution of functional income. In this way we can view the profitability of an industry as the result of the interplay of three factors: (i) the profit share, (ii) the degree of mechanization in that particular industry, and (iii) labour productivity. Considering that we are interested in policy options that do not require "income oriented" policies (like taxes or subsidies), this framework shows that under *any* status, the increase in the profitability of that sector, it is necessary to either increase the "efficiency of capital" or increase the productivity of labour, or a combination of both. It is noteworthy that these ratios have been computed on an industry by industry basis, thus enabling the policy maker to devise policies particular to each industry, depending on which of these variables is more flexible in each sector. In this particular Ayala (1989) found that for the 1972-1982 period out of 43 industries she studied, only 8 showed a decrease in productivity levels, as measured by the ratio of net output to direct and indirect labour requirements (that is "sectoral" as opposed to "industrial" productivity). Thus, industrial policy should take advantage of those sectors which have shown a rapid and strong increase in (labour) productivity, while at the same time devise economic policy instruments aimed at enhancing productivity in the other lagging sectors of the economy.

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**The Economic Relation of the United States
and the Puerto Rican Economies:
An Interregional Input-Output Approach**

Angel L. Ruíz*
Fernando Zalacain**

Introduction

The recent discussions on the issue of the political status of the island have brought to the surface, once again, the subject of the economic relations between Puerto Rico and the United States. Quite few number of studies have been commissioned by the political parties representing different status options for the island¹. Some other studies or research papers have approached the subject with a more or less objective view and still some others were prepared by Federal Government Agencies². Unfortunately most of the works dealing with economic impacts analysis approach the subject from an unilateral point of view. In other words, the analysis is bias toward the benefits

the economy of the island has derived from the economic integration of both economies, paying little

1. See for instance, KPMG Peat Marwick, Policy Economics Group, **Economic and Fiscal Impacts of Puerto Rican Statehood**, prepared for the Governor of Puerto Rico, February 1990; Price Waterhouse, **Benefits and Costs of Section 936**, work prepared for the Puerto Rico, U.S.A. Foundation volumes 1 and 2, May 1991; Mckee, Michael., **The Economic Consequences of Puerto Rican Statehood**, work prepared for the New Progressive Party, June 1990.

2. Congressional Budget Office, **Potential Economic Impacts of Changes in Puerto Rico's Status**, Washington, D.C., April 1990; General Accounting Office, **Tax Policy, Puerto Rico and the Section 936 Tax Credit**, Washington, D.C., June 1993; Department of the Treasury, **The Operation and Effect of the Possessions Corporation System of Taxation, Sixth Report**, Washington. D. C., March 1989; Finn Bertram, "The Implications of Statehood", in Jorge Heine (editor), **Time for Decision: the U. S. and P. R.**, Lanham, MD: North-South Publishers. 1983.

attention, or completely neglecting, the economic impact of locally generated economic activity in the U.S. economy.

The purpose of this work is to estimate and analyze the economic impact of the different economic flows between the Puerto Rican and United States economies. The impact of Puerto Rico's economy on the United States economy (and vice-versa) have been measured in terms of output, employment and labor income. These flows have been classified as transfer payments to the government and to persons, external trade transactions, tourist expenditures, expenditures of federal agencies in Puerto Rico, and investment flows. These balance of payment accounts are analyzed bilaterally, except in the case of investment and expenditures of the federal government on the island.

**The Results
Impacts of Trade Between the Two Economies**

In this section of the study we will select key elements of the interregional flows between the United States and Puerto Rico and evaluate the impacts on the Puerto Rican economy. The main flows between the two economies could be classified under external trade, transfer payments, tourism and investment.

The Aggregate Impact of the United Sates Economy

In this exercise all our exogenous variables will be added in order to measure the impact of the United States economy on the Puerto Rican economy and this latter impact on the U.S. economy. The aggregated impact will be described in terms of gross output, employment and wage income.

The six types of flows considered in this analysis generated 33 per cent of total employment in Puerto Rico. Total employment impact in Puerto Rico was 322,295 in 1992 compared to 209,100 in 1977⁴.

3. There are, of course, direct investment of local residents in the U.S. economy. However, these flows are quite difficult to quantify. By the same token, our estimates of the economic impacts are underestimated, especially the impact of our economy in the U.S. economy since we are not including the repatriation of profits of U.S firms operating in Puerto Rico (and vice-versa).

In the following table we have summarized the aggregate impact including U.S. investments impact on the P.R. economy.

The leakage effects are also of considerable importance. These leakages are reflected in considerable output impact in the United States. In the next section, the analysis will emphasize these aspects of the relationship between the two economies. We first consider the impact of six different flows in gross output of both economies.

4. See Fernando Zalacaín (1981) unpublished Ph.D. dissertation, University of Illinois, Urbana Champaign, Illinois.

TABLE 1

IMPACT ON GROSS OUTPUT OF FLOWS BETWEEN THE U.S. AND PUERTO RICAN ECONOMIES IN 1992 (in million dollars, 1982=100)

	Impact on Goss Output	
	In Puerto Rico	In United States
Exports	19,463.88	22,556.57
From Puerto Rico to the United States	19448.78	4,150.07
From United States to Puerto Rico	15.10	18,406.50
Transfer Payments	5,472.34	4,529.92
From Puerto Rico to the United States	2.36	2,469.23
From United States to Puerto Rico	5,469.98	2,060.69
Tourits Expenditures	1,026.47	1,644.51
From Puerto Rico Residents in the United States	1.84	1,004.56
From United States Residents in Puerto Rico	1,024.63	639.95
Investment in Machinery and Equipment	1,555065	1,539.54
Expenditures of Federal Agencies in P. R.	730.80	31.37
Income on Externally Held Investment	10.70	9,479.90
Total Impact	28,259.84	39,781.81

Table 1 summarizes the results.

An examination of Table 1 shows that the U.S

The Economic Relation of the United States and Puerto Rico

economy generated \$28,259.8 million of output in the Puerto Rican economy during fiscal year 1992. This figure represents an estimate of 50.5 per cent of total output for the total economy for this year.

The impact of Puerto Rican economy in the U.S. economy is substantially higher, or \$39,781 million. Exports is the final demand component of

greater impact on the output of both economies followed by transfer payments.

The main impact of exports is on the gross output of manufacturing sector. Transfer payments impact on output is more evenly distributed favorably affecting some important service industries and trade. In the case of the U.S. economy, income on investment generated in Puerto Rico is the second major source of output.

TABLE 2
IMPACT ON EMPLOYMENT OF FLOWS BETWEEN THE U.S. AND
PUERTO RICAN ECONOMIES (1982=100)

	Impact on Employment	
	In Puerto Rico	In United States
Exports	172,064	236,874
From Puerto Rico to the United States	171,932	43,868
From United States to Puerto Rico	132	193,006
Transfer Payments	82,501	66,061
From Puerto Rico to the United States	19	44,436
From United States to Puerto Rico	82,482	21,625
Tourists Expenditures	17,004	21,742
From Puerto Rico Residents in the United States	19	14,692
From United States Residents in Puerto Rico	16,985	7,050
Investment in Machinery and Equipment	26,359	15,065
Expenditures of Federal Agencies in P. R.	24,278	336
Income on Externally Held Investment	89	147,654
Total Impact	322,295	487,732

Table 2 shows the employment impact of flows between the two countries. An examination of the summarized table on employment impact shows, without any doubt, that the island economy has a considerable impact on the employment in U.S. economy. During fiscal year 1992, economic flows between the two economies generated 487,732 direct and indirect jobs in the U.S. economy. Once again, most of the employment was generated by the trade flows between the two countries followed by the employment generated by the income on investment. The employment impact of the U.S. economy in P.R., although considerable, falls short of the one generated

there by our economy. The major source of employment in P.R. comes from the output generated by the trade relations of both countries. The second major source of employment generation comes from transfer payments from the U.S. to Puerto Rico, or 82,482.

Finally we will present the aggregated results of the impact on wage income of the six above mentioned flows. These results are of great importance since the labor income is the value added that remains on the island and one of the main sources for increasing the welfare of our people.

TABLE 3
IMPACT ON WAGE INCOME OF FLOWS BETWEEN THE U.S. AND
PUERTO RICAN ECONOMIES IN 1992 (in million dollars, 1982=100)

	Impact on Labor Income	
	In Puerto Rico	In United States
Exports	2,362.75	6,783.81
From Puerto Rico to the United States	2,361.10	1,375.51
From United States to Puerto Rico	1.65	5,408.30
Transfer Payments	878.43	1,675.82
From Puerto Rico to the United States	0.26	1,091.73
From United States to Puerto Rico	878.17	584.09
Tourists Expenditures	144.70	406.69
From Puerto Rico Residents in the United States	0.22	252.44
From United States Residents in Puerto Rico	144.48	154.25
Investment in Machinery and Equipment	276.82	473.98
Expenditures of Federal Agencies in P. R.	374.76	9.39
Income on Externally Held Investment	1.20	3,155.42
Total Impact	4,038.66	12,505.11

Table 3 shows the income generated in both economies by the exogenous vectors analyzed in this work. An analysis of the table shows that direct and indirect wage income induced by the economic flows of both countries amounted to \$4,038.7 million during fiscal year 1992. In that year total wages and salaries in Puerto Rico amounted to \$10,132.9 million, in 1982 prices. These data reveal that 39.8% of these wages were induced by the six flows discussed in this work. By the same token, 58.5% out of a total of \$4,038.7 million in wages were generated by trade flows between the two countries. It is worth observing that wages generated by our economy in the U.S. economy are three times as high as those generated by that economy in the island economy. In the U.S. also most wage generation comes from trade flows.

Looking at the aggregate impact by major industrial sectors and some specific industries, we can have a more integral view of the impacts of the various flows analyzed in this work (see table of aggregates by industrial sectors in Ruiz and Zalacain, 1993). An analysis of the data shows that, for fiscal year 1992, the U.S. economy generated 109,734 manufacturing jobs in the economy of Puerto Rico, or 66.9% of total manufacturing employment on the island. Looking at the same sector, we observe that the specific manufacturing industries most benefited by the bilateral relation are industries such as: food and kindred products, apparel and accessories, drugs, electrical and electronic equipment and professional instruments. In the case of impact in the U.S. economy, industries such as: food, textile mill products, rubber and plastics, electrical and non-electrical machinery, and transportation equipment are among the most benefited in terms of employment. One important result is the impact of the relation on the service sector. In the case of Puerto Rico, as well as in the case of United States, industries such as: trade, transportation, personal and repair services, business services and health services create a great number of jobs. For instance, the number of jobs created in the Puerto Rican and the U.S. economies in the trade sector, in 1992, amounted to 60,195 and 59,180 respectively. The corresponding figure for business services were 29,195 and 50,074 respectively.

Some Concluding Remarks

Most of the works dealing with impact analysis of the United States-Puerto Rico economic relations approach the subject from an unilateral point of view. The analyses are bias toward the benefits the economy of the island has derived from the economic integration of both economies. Little attention (if at all), is given to the important impact of locally generated economic activity in the U.S. economy. In this work we tried to start remedying this lack of information.

The purpose of our work has been to estimate and analyze the economic impact of the different economic flows between the Puerto Rican and United States economies. The flows were taken from the balance of payment and other national accounting. The impact of the Puerto Rico's economy on the United States economy (and vice-versa) was measured in terms of output, employment and labor income, as endogenous vectors. The exogenous vectors were the transfer payments to the government and to persons, external trade transactions, tourist expenditures, expenditures of federal agencies in Puerto Rico, investment in machinery and equipment and income flows derived from the direct investment of U.S. firms in Puerto Rico. These balance of payment accounts are analyzed bilaterally. However, in the case of investment and expenditures of the federal government on the island, the impact on U.S. economy was not taken into consideration.

The economic impact of bilateral flows in both economies was estimated using an interregional input-output model. The construction of an interregional input-output model using the Leontief-Isard formulation was the main empirical methodological tool used in this study. Some of the major problems encountered in constructing the model were: the construction effort involved in the elaboration of the export matrix for Puerto Rico (R^{21} in the model), the modification of the existing import matrix, and the work related to the compatibility of the coefficient matrices of Puerto Rico and the United States. Another major problem was that the U.S. 1982

input-output table was constructed using different methodological procedures. The new methodology adopted for the 1982 input-output model of the U.S. was based on the United Nations' recommended procedure which has not yet been adopted on the island.

The main characteristic of the model is that the input-output tables are computed on a commodity by commodity base. Since the model for Puerto Rico was constructed using the usual industry by industry approach, then the U.S. model had to be transformed to industry by industry in order to make it compatible with the P.R. input-output accounting.

Our results show that the U.S impact in our economy, especially concerning employment creation, is considerable. The 322,295 jobs created on the island account for 33% of total employment during fiscal year 1992. However, the employment generated by our economy in the United States was considerably higher, 487,731. Although this latter figure is minimal when compared with U.S. total employment, it can be of great significance for specific states or regions of that economy, especially in the eastern part of that country.

One of the most interesting results of our analysis was the fact that the flows from Puerto Rico to the United States economy, like for instance, exports from the island to the U.S. economy, create a considerable number of jobs not only locally but in that economy, while the reverse situation does not apply in

the case of flows from the U.S economy to Puerto Rico. In other words, that the U.S. economy not only benefits from the demand for goods and services originating in Puerto Rico but also from their own demand for goods and services produced in Puerto Rico.

Looking at figures of value added in the form of wage income generated by the bilateral relation, we found that the wage income generated by our economy in the U.S economy was three times as large as the wage income generated by that economy in our economy.

Finally, the great impact on employment and output originating by trade and transfer payment flows is somewhat worrisome, since most exports to the U.S. are generated by firms under Section 936 of the U.S. Internal Revenue Code which, at present to say the least, is a controversial issue. By the same token, the great dependence on transfer payments for job creation, as shown by our results, is not a solid base for the long term economic growth of the Island, especially under the great uncertainties concerning our political status.

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**Political Status, Minimum Wages,
and Puerto Rican Migration**

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Introduction

Any discussion regarding changes in the political/economic relationship between the United States and Puerto Rico must address its impact on labor migration. Labor migrates freely between the United States and Puerto Rico and is sensitive to socioeconomic changes in both areas of origin and destination. Moreover, the Puerto Rican migration decisions do not need to exclude the possibility of return migration, as often happens in the case of political refugees. In fact, as the discussion below suggests, labor migration between the Island and the United States may be exhibiting circular or commuter-like characteristics.

The issue of Puerto Rican migration is central to debates regarding changes in the political and economic relationship between Puerto Rico and the United States. The interest in the topic is more than academic, inasmuch as Puerto Rican communities have grown considerably in the United States and ties to the Island remain strong. Likewise, any changes that affect the continuous migration between Puerto Rico and the United States will also be of considerable interest to the broader society as one can attest by the current discussions regarding U.S. immigration. Just as the immigration debate is plagued by myth and misconception, so are the discussions regarding the determinants and consequences of Puerto Rican migration as a result of changes in the Island's political status.

Puerto Rican migration is truly a post-World War II phenomenon. It was not until after the Second World War that substantial numbers of migrants left the Island. They were prompted, for the most part, by deteriorating economic conditions in the countryside and growing employment opportunities in urban centers, both on the Island and in the United States. The role of the Puerto Rican government in promoting and stimulating the migration of agricultural labor over this period must also be underscored. Clearly, government reduced much of the uncertainty of the decision to migrate by providing information on job opportunities and subsidizing certain aspects of the move. It is also clear that passenger movement has

turned more volatile in the postwar period as exhibited by its increasing variance.

The net migration rate is a good indicator of the relative size of the Puerto Rican migration stream. The net migration rate is defined as the difference between the number of individuals entering Puerto Rico at a particular point in time minus the number of individuals leaving Puerto Rico during that same period, divided by the total civilian non-institutional population. Net emigration slowed considerably during the 1960s and has remained lower than during the 1950s, but still affects the Puerto Rican labor market in a fundamental way. One important feature of Puerto Rican migration is that gross in- and out-migration rates are considerable in size—attributed largely to tourists and visitors to the Island. Gross flows dominate, by far, any net migratory movement. Another feature of the Puerto Rican migration is that gross in- and out-migratory flows mirror each other, reflecting the short-term nature of tourist and visitor traffic. For these reasons, the net migration rate is a better indicator of labor migration than gross migration rates. Nonetheless, net migration also has seasonal and recurring features that must be included in our model. A major limitation of empirical work in this area is that the econometric work does not sufficiently account for some of these factors. This study will take particular care to incorporate these elements into the structure of the empirical model.

Although much has been written on the subject of Puerto Rican migration from a socioeconomic and historical perspective, published econometric research is extremely scarce. Noteworthy exceptions to this are the early works of Fleisher (1963), Friedlander (1965), and Maldonado (1976). These studies empirically support the proposition that economic factors are important determinants of Puerto Rican migration, particularly wages and employment conditions. Although appropriate at the time, advances in the theory and method of time series analysis allow us to model the temporal stochastic structure of these relations more appropriately. Additional useful literature (Baer 1960, Alameda 1979) empirically relates economic activity in Puerto Rico to changes in the U.S. business cycle. Despite these influential pieces, there has never been any major debate on or discussion of the range of elasticities of migratory response to labor market variables.

More recent studies (Santiago 1991, 1993) find that Puerto Rican migration is sensitive to variations in Island minimum wages. These links were established after it was determined that changes in the U.S. statutory minimum wage, as applied to Puerto Rico, had considerable influence on the Puerto Rican labor market, particularly by slowing employment growth, keeping unemployment rates high, and dampening labor force participation. The substantive reason why the effects are so dramatic in the Puerto Rican case is that the minimum wage ratio—the statutory minimum wage as a percentage of average manufacturing wages—is twice as large in Puerto Rico as it is in the United States.

In the mid-1970s the structure of Island wages changed dramatically as minimum wages were increased to achieve parity with the U.S. federal statutory minimum wage. The labor market ramifications were felt dramatically on the Island because the ratio of minimum wages to manufacturing wages was pushed to extremely high levels, contrary to the United States experience. Net emigration slowed considerably during the 1970s in response to the higher minimum wage rates, but surged again as the wage gains were eroded during the 1980s. Although there was some discussion on the Island of a potential brain drain, this was never verified—just the opposite seemed to be occurring as the migration stream consisted largely of low wage labor (Rivera-Batiz 1987, 1989, Ortiz 1987). The significance of these findings is that they illustrate the extent to which the Puerto Rican and United States labor markets are integrated and that they are becoming similar at the lower end of the wage-occupational locus.

It has also been argued (Hernández-Cruz 1985, Rodríguez 1988-89, Tienda 1989) that among the Puerto Rican population, migration between the Island and the United States, particularly New York City and other parts of the Northeast, has turned circular or commuter-like. Circular migration is fundamentally different from more common types of labor migration such as place-to-place migration or sequential migration. The main difference is that circular migration consists of repeated moves by the same individual, or groups of individuals, between places of origin and destination. This results in a continuous migratory stream with the emergence of significant populations of migrants in what were originally areas of source and destination.

Although the subject of circular migration is obviously important for policy purposes, it also weights heavily in the simulations undertaken in this paper. Variations in both U.S. and Puerto Rican labor markets lead to decisions regarding migration which are made at different points over the life cycle and over one's period of labor force participation. An exogenous shock to one or more labor market could result in migratory decisions that might be reformulated over time as circumstances change. Thus, a single shock could lead to net out- and in-migratory cycles over time. This is important given the ease of migration between Puerto Rico and the United States and it needs to be incorporated in the empirical analysis.

II A Temporal Approach to Studying Migration Dynamics

Puerto Rican migration has historically responded to relative economic conditions in regions of origin and destination. Nonetheless, this simple fact is often ignored in discussions regarding Puerto Rican migration and the status issue. This is partly due to the limited understanding of the manner in which economic factors mediate in the migration decision. In particular, the dynamics of labor market change and migration are not well specified in empirical work, and hence, are often ignored in policy circles.

Despite the considerable volume of research on general aspects of Puerto Rican migration, few studies have attempted to model its temporal behavior with the intent of producing an adequate forecasting tool. This is primarily due to the traditional emphasis on establishing behavioral relations between labor migration and other socioeconomic phenomena, often with little concern for the underlying stochastic structure of the model. Hence, its usefulness as a forecasting device is limited.

This study analyzes Puerto Rican labor migration from an alternative perspective. Emphasis is placed on modeling a few variables with the objective of producing a useful forecasting and predictive tool. An earlier version of the model can be found in Santiago (1990, 1993). The endogenous variable of primary interest is the net migration rate, although the temporal movement of both out- and in-migration rates is examined. The data used in the analysis are collected on a monthly basis by the Puerto Rico Planning Board, spanning the time period 1962 - 1987. Aggregate

migration is captured by the difference between the number of individuals arriving in Puerto Rico and the number of individuals leaving Puerto Rico in a given month. The difference in gross flows is divided by total civilian population (16 years of age and older) in Puerto Rico to obtain the net immigration rate. The out-migration rate is captured by the ratio of gross passenger outflow to total civilian population while the in-migration rate is represented by the ratio of gross passenger inflow to total civilian population.

The exogenous variable represents the wage distribution in Puerto Rico and is captured, in uni-dimensional terms, by the ratio of the minimum wage to the average manufacturing wage. A minimum wage increase will have a dual effect on the wage distribution. Initially it will truncate the distribution from below, reducing its variance, and later, it will push the average wage upwards. Likewise, theoretically, an increase in the minimum wage ratio will result in a slowdown in employment growth, an increase in unemployment, and a decline in labor force participation. The opposite occurs with a decline in the wage ratio. (Santiago, 1992). Thus, movements of the uni-dimensional minimum wage ratio reflect substantive changes in the Puerto Rican labor market, all of which have potential repercussions on Puerto Rican immigration and emigration.

Sharp jumps in the minimum wage ratio are due to increases in the statutory minimum wage. After an increase in the minimum wage, the wage ratio declines consistently as average manufacturing wages continue an upward trend. Another noteworthy feature is that the wage ratio remains high, never falling below 0.60. The model suggests that Puerto Rican net immigration will increase (either because in-migration increases and/or out-migration falls) as the mean wage rises in Puerto Rico and as its variance declines. An increase in the minimum wage ratio represents both an increase in the mean wage and a decline in variance, and thus, should be associated with an increase in Puerto Rican net immigration.

Time series analysis is not often used in international migration studies because of the difficulty of simulating conditions of free labor mobility and the lack of appropriate data. An examination of the Puerto Rican case is unique in this sense because legal barriers to migration to the United States do not exist and a sufficiently long time series is available to conduct

rather sophisticated statistical tests. Although theory provides a guide to the empirical work, the time series techniques of this study place a considerable weight upon the data to model the migration process. Thus, few *a priori* restrictions are placed on the model and a three stage process of model identification is employed.

In the first stage, Dickey-Fuller unit root tests are applied to endogenous and exogenous variables. Secondly, standard Box-Jenkins univariate autoregressive-moving average (ARMA) models are identified. Finally, transfer functions relating exogenous and endogeneous variables are estimated with appropriate lag length.

III Simulation Results

The first step in forecasting the net migration rate is to project the minimum wage ratio. Clearly, the statutory minimum wage rate is exogenous and determined by Congressional action. We will consider this the policy instrument, which will vary depending upon the status option chosen. On the other hand, the denominator of the minimum wage ratio, average manufacturing wages, can be estimated using a univariate model.

In the model used to forecast net migration between Puerto Rico and the United States forecasts are obtained for the 1987:7 to 2000:12 period. **First**, nominal monthly average manufacturing wages in Puerto Rico is forecasted between 1987:7 and 2000:12. **Second**, the policy instrument—the statutory minimum wage rate—is changed to provide projections of the minimum wage ratio. For all three of the status options, the federal minimum wage rate is changed in 1991:4 to capture the actual change in the minimum wage from \$3.80 on April 1, 1990 to \$4.25 on April 1, 1991. For the Independence option, no other revisions are made to the minimum wage after April 1991. Thus, the Independence option is characterized by a continuously declining minimum wage ratio. For the Statehood option the minimum wage is revised upward in January 1995 to \$5.00 per hour, while the Commonwealth option includes a revision in January 1995 of \$4.50 per hour. The Commonwealth option increases the statutory minimum wage by an amount less than the Statehood option to reflect exemptions to U.S. statutory minimum wage that are granted under conditions of greater autonomy to the Island government. **Third**, monthly net migration rates are forecast between

1987:6 and 2000: 12, while incorporating the projections of minimum wage ratios (as the independent regressor) over that period under the three status options. **Fourth**, monthly estimates of the net migration rate are converted into average annual values. **Finally**, the annual net migration rate is multiplied by population estimates to produce annual estimates of passenger movement between 1987:7 and 2000:12.

The analysis suggests that net emigration will continue under all three options during the 1990s. Only after 1994 will there be evidence of a differential affect on migration resulting from the three status options. This is due to the different assumptions made about the timing of the minimum wage revisions. Clearly, net emigration will be highest under the Independence option, less so under the Commonwealth option, and lowest under the Statehood option. Net migration for the period 1990 - 2000 totals -342, 845, -302,915, and -223,053, under Independence, Commonwealth, and Statehood options, respectively. Net migration was -188, 806 from 1960-1970. From 1970-1980 net migration declined to -173,701 and then increased dramatically from 1980-1990 to -303,619. Under the Commonwealth option, net migration for 1990-2000 will approximate its 1980-1990 level. With Independence, net emigration will increase by only 40,000 from that level while under Statehood net emigration will be lower by approximately 80,000 individuals from 1990-2000.

An important implication of the analysis is that unemployment will be lower on the Island to the extent that the federal statutory minimum wage rate is not binding. Although the wage rate itself will be lower than in the scenarios where the minimum wage is increased, net emigration will be higher. Thus, these results suggest that minimum wage hikes in Puerto Rico primarily serve as incentives for people to return to or remain on the Island. The unemployment effect of the upward movement of the statutory minimum wage is not sufficiently strong to reduce the inflow or cause labor to leave the Island.

These results imply that the impact of changes in the wage distribution in Puerto Rico, brought about by changes in the policy instrument will definitely affect migration between the Island and the United States. These changes, however, will not be all that dramatic compared to historical rates of net migration for Puerto Rico. Certainly, migration between Puerto Rico and the United States can be induced by other factors, many of them difficult to quantify. Remember that the objective of the analysis was to develop a model primarily for forecasting purposes. A number of important variables have been omitted from the empirical model, particularly those representing changes in the wage distribution in those areas of Puerto Rican residence in the United States. This limitation invites a wide variety of speculations on the response of Puerto Rican migration to changes in political status. The nature of political transition invites migratory responses from the population at large. Decolonization throughout the world after World War II provides only limited guides to understanding the Puerto Rican case. The fact that there is a substantive Puerto Rican community residing in the United States will undoubtedly serve as a mediating influence in whatever form the transition process will take.

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Table 1

Simulations of Net Passenger Movement Between Puerto Rico and the United States

Under Alternative Status Options (1990-2000)

Year	(1) Independence Status	(2) Commonwealth Status	(3) Statehood Status
1990	-37,483	-37,483	-37,483
1991	-9,815	-9,815	-9,815
1992	-7,843	-7,843	-7,843
1993	-32,957	-32,957	-32,957
1994	-32,996	-32,996	-32,996
1995	-34,163	-30,256	-22,440
1996	-35,297	-21,302	-6,687
1997	-36,812	-32,018	-22,431
1998	-37,466	-32,221	-21,730
1999	-38,503	-32,757	-21,264
2000	-39,510	-33,267	-20,781
Project Total 1990 - 2000	-342,845	-302,915	-223,053

Notes: The latest minimum wage revision was on April 1, 1991 with a new standard set at \$4.25 per hour.

The simulations assume that under status option (2) the minimum wage ratio (ratio of the U.S. statutory minimum wage to average manufacturing wages) follows its historical path with no shocks.

Under status option (3) a shock of \$5.00 per hour is set in 1995 and under status option (1), exemptions to the federal minimum wage standard provides for a \$4.50 per hour shock in 1995.

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BOLETÍN DE ECONOMÍA

NOTA DE LOS EDITORES

La Junta Editora desea expresar su agradecimiento al profesor Ángel L. Ruiz, decano de la Escuela de Economía y Administración de Empresas de la Universidad Interamericana, Recinto Metropolitano y co-editor del libro de próxima aparición, *The Economic Implications of Puerto Rico's Status Options*, por habernos permitido publicar estos resúmenes de los ensayos del libro en el Boletín de Economía.

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