NBER WORKING PAPER SERIES

WHY DON'T MORE PUERTO RICAN MEN WORK? THE RICH UNCLE (SAM) HYPOTHESIS

María E. Enchautegui
Richard B. Freeman

Working Paper 11751
http://www.nber.org/papers/w11751

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
November 2005

Why Don't More Puerto Rican Men Work? The Rich Uncle (Sam) Hypothesis
María Enchautegui and Richard B. Freeman
NBER Working Paper No. 11751
November 2005
JEL No. J4, J6

ABSTRACT

Puerto Rico has an extraordinarily low employment rate for men. We document the low employment rate using Census of Population and labor force survey data and offer "the rich uncle (Sam) hypothesis" that the connection of the relatively poor economy of Puerto Rico to the wealthier US has created conditions that generate low employment. In support of the hypothesis, we show: 1) that GNP and GDP have diverged on the island, distorting the relationship between GDP and employment, due potentially to federal tax benefits to companies operating in Puerto Rico; 2) transfers to Puerto Rican families funded mainly by the federal government, which account for about 22 percent of personal income; 3) open borders to the U.S. that give men with high desire for work incentive to migrate to the US, and potentially creates a lower bound to wages on the island; (4) a wage structure with relatively higher earnings in low paid jobs; and (5) employment in the informal sector, which is unmeasured in official statistics. We note that other regional economies with rich "uncles", such as East Germany with West Germany, Southern Italy with Northern Italy, have comparable employment problems.

María E. Enchautegui
University of Puerto Rico
Department of Economics
PO Box 23345
San Juan, PR 00931
mariaenchautegui@aol.com

Richard B. Freeman
National Bureau of Economic Research
1050 Massachusetts Avenue
Cambridge, MA 02138
and Harvard University
freeman@nber.org

I. Introduction

One of the biggest economic problems facing Puerto Rico is the low employment rate of its adult population. In 2000, only 31 percent of the overall population was employed, giving the island the lowest employment to population ratio in the Americas and Caribbean, if not in the world. By way of comparison in 2000, 44% of the population in the Dominican Republic was employed, 40% of the Mexican population was employed, and 50% of the US population was employed. The low employment rate compromises the island's development by diverting resources that could go to investment to public assistance and services to the large non-working population.

Low participation of women in the work force contributes to the overall low employment rate, but it is the low employment rate for men that is "off the map" compared to other countries. Moreover, the male participation rate has been falling while the female participation has been increasing. Even in the late 1990s economic boom, when the Puerto Rican economy was growing and the rate of unemployment fell, the labor force participation of men dropped by 3 percentage points, while the labor participation rate of women increased.

The paper begins by laying out the dimensions of the male employment problem in Puerto Rico, using both the Census and labor force surveys, which give somewhat different figures on the participation rate of Puerto Ricans. Despite differences between the Census and labor force survey, however, both data sets show that the employment rate among men on the island is exceptionally low and declining. The remainder of the paper analyzes factors that could explain the low employment of Puerto Rican men, such as the rising divergence between the national product of the Island and the national income accruing to Puerto Ricans and the industrial distribution of output and employment, in social security disability insurance and related welfare

payments, migration to the US, opportunities for working in the informal economy, and relatively high wages in low skilled occupations. We organize our discussion around a new hypothesis, which we call the "rich uncle (Sam) hypothesis". A rich uncle is a wealthy relative who provides resources to poorer relatives for consumption while employing other resources for production. The rich uncle reduces incentives for relatives to supply labor and lowers the demand for their services as well. We argue that the connection of the relatively poor economy of Puerto Rico to the advanced and rich economy of the United States have created conditions that generate low employment.

In support of this hypothesis, we present data that shows: 1) an increasing divergence between GNP and GDP on the island, which has distorted the relationship between GDP and employment, due potentially to federal tax benefits to companies operating in Puerto Rico; 2) transfers accruing to Puerto Rican families funded mainly by the federal government, which account for about 22 percent of personal income; 3) open borders to the U.S. give unemployed individuals with high desire for work incentive to migrate readily to the US, and potentially creates a lower bound to wages on the island; (4) a wage structure in which low paid jobs have relatively higher earnings than in low income US states, possibly related to the federally imposed minimum wage, free mobility of labor between U.S. and Puerto Rico and to high reservation wages determined from the amount of transfers obtained in case of non-work; and (5) employment in the informal sector, which is unmeasured in official statistics. We argue that the "rich uncle" contributes to the sizeable informal sector because it allows workers who earn means-tested government transfers to supplement those earnings by generating "unreported" income; and by reducing labor supply pressures for lower wages in the formal sector.

From the vantage of the rich uncle hypothesis[1], Puerto Rico's seemingly unique experience is comparable to that of other economies connected to rich "uncles", such as East Germany after unification with West Germany, or of Southern Italy with Northern Italy. [2] These areas have also experienced high unemployment while attached to a much richer economy. The rich uncle analysis also links Puerto Rican economic problems to those faced by low income indigenous groups in wealthier societies, such as American Indians, Maori in New Zealand, aborigines in Australia. All of these groups also receive great social support from the wealthier society, live in particular geographic areas, and have employment problems. The details vary, but in all case attachment to the wealthier "uncle" produces economic problems ranging from low employment and high dependency on social benefits to migration from the poorer area to wealthier areas and potentially higher reservation wages than are consistent with full employment for the lower income group, that resemble the employment problems in Puerto Rico.

II. The male labor participation and employment problem

Figure 1 displays the labor participation rates of men and women of working age in Puerto Rico, the US, 19 Latin American or Caribbean countries, and 11 other countries from around the world. The horizontal axis gives male participation rates, while the vertical axis gives

---

[1] Our rich uncle analysis has links to Santiago's (1992) study of Puerto Rico employment. Spilimbergo (1999) has developed a general equilibrium model in which workers finance a transfer to the unemployed in the South to limit migration, but this does not fit the Puerto Rican case.

[2] German experience is particularly insightful for analyzing how linking a poorer economy to a wealthier economy can adversely affect employment in the former. This is because the timing of the "rich uncle" linkage can be dated fairly precisely. Prior to unification, East Germany had essentially full employment. Following monetary union with the West in June 1990 and adoption of West German wage levels and social benefits, the employment rate for east Germans aged 18-54 years old fell from 89% to 73% in six years, and unemployment rose to as high as 20% (Hunt, 2000). Firms made different capital investments in the East than had made been before unification. West German firms dominated the East's economy, with few locating headquarters in the East, so that profits were "repatriated" to

female rates. Each point represents a country. Puerto Rico is at the far left of the figure, with a male participation rate of 57.7 percent that is the lowest among the countries, and a female participation rate of 35.0 that is low but comparable to that in some other countries, such as Italy, Chile and Argentina.

Over time, moreover, the participation rate of men in Puerto Rico has fallen while female participation has increased. Even in the late 1990s economic boom, when the Puerto Rican economy was growing and the rate of unemployment fell, male labor force participation dropped by 3 percentage points. Figure 2 displays the labor force participation rates for men and women aged 16 and over in Puerto Rico from 1971 to 2003, using labor force household survey data. It also gives comparable rates for men and women in the US. Over this period, the male participation rate in Puerto Rico fell by 11.5 percentage points, from 70.8 to 59.3, with most of the decline occurring between 1971 and the early 1980s. Figure 2 also shows that the US male participation rate also fell, but by half as much as in Puerto Rico, by 5.7 percentage points, from 79.4 to 73.7. Over the same period, the labor participation rate of Puerto Rican women rose by 9 percentage points, while US females increased theirs by 13.4 percentage points. As a result, the US-Puerto Rico gap in labor force participation increased twice as much for men (67 percent) than for women (33 percent). These trends also meant that by 2003, the US female participation rate stood close to the Puerto Rican male participation rate.

Data on participation by age group given in appendix table A1 show that participation among Puerto Rican men fell more among older men than among younger men. Between 1970 and 1999, participation fell by 4.3 points for men aged 25-34, by 5.8 points among men aged 35-44, by 11.1 points among men aged 45-54 and by a huge 24.3 points among men aged 55-64. As

---

the West.

in Puerto Rico, the decline of male participation in the US was larger at older age groups, but the declines were considerably less for each group than the declines in Puerto Rico: a 2.4 point drop for men aged 25-34, a 3.6 point drop for men aged 35-44, a 5.2 point drop for men aged 45-54 and 14.6 point drop among men aged 55-64.

To see how male participation and employment varies by education in Puerto Rico, we examined data from the Census of Population of Puerto Rico. The Census shows a lower rate of male employment in 2000 than does the household survey for the same year, for reasons that statisticians have not resolved. The Census has the virtue of large sample sizes, which allows for analysis of the rates for detailed groups, and is the natural comparison for data from the US Census of Population. We use both the household survey and the Census data sets, to make sure that any conclusions we reach are not dependent on the particular source of data.

Table 1 records participation and employment rates by education for Puerto Rican men from the 2000 Puerto Rican Census, and for comparison, participation rates for US men from the 2000 US Census. At all education levels, the labor participation rate of men in Puerto Rico lies below that of men in the US. The magnitude of the Puerto-Rican US difference is lowest among men with a bachelor's degree or higher education (a 15 point difference) and is largest among those with a high school education but without a bachelor degree (20 points). The employment population ratio shows a similar but more pronounced set of differences due to the higher rate of unemployment in Puerto Rico than in the US. The Puerto Rico-US employment gap is highest among high school graduates and lowest among bachelor degree holders. Given the sizeable increase in educational attainment among Puerto Rican men since World War II, the pattern of rising participation and employment rise with education should have raised male labor force

activity. Instead, participation and employment fell. This shows the unreliability of using analyses based on cross-section patterns of labor participation to investigate patterns of change.

Another way of examining the low participation of Puerto Rican men in the work force is to follow the labor force behavior of a given cohort as it ages over time. Since we do not have longitudinal data that follows the same person over time, we use synthetic cohort data that compare the behavior of increasingly older age groups over time– i.e. we use the participation of persons aged 25-34 in 1970, aged 35-44 in 1980, 45-54 in 1990, and so on, to reflect the participation of the 25-34 year old 1970 cohort.

The top panel of Table 2 records the trajectory of labor force participation by Puerto Rican men in synthetic age cohorts that were 25-34 years old in 1970, 1980, and 1990 every ten years from 1970 to 2000. The bottom panel gives the trajectory of labor participation for Puerto Rican women. Column 1 records the participation of persons aged 25-34 in the appropriate year. Column 2 gives the participation of persons in the same cohort aged 35-44 ten years later. Column 3 gives the participation of persons in the same cohort aged 45-54 twenty years late. Column 4 gives the participation of the cohort aged 25-34 in 1970 when it reached 55-64 years old in 2000.

The labor force attachment of the male group aged 25-34 in 1970 fell by 12.9 percentage points as they aged twenty years from 1970 to 1990 and then fell another 30.7 points in the next decade. The 1980 cohort also shows a sharp drop in participation when it enters the 45-54 age group. By contrast, the data for women show modest drops in participation as a cohort ages, with no major decline in participation as the cohorts enter the 45-54 year old age bracket. Finally, comparing the participation of younger persons, the youngest female cohort shows a rise in

participation of 7 points between 1990 and 2000. This contrasts with a decline in participation of 3.6 points from men in the same cohort from 1990 to 2000.

We consider next the annual work activity of employed men and the past work activity of men out of the labor force. A low annual participation or employment rate could reflect low levels of weeks worked by most of the population or it could reflect a sharp division between persons who work full year and persons who work little if at all. The upper panel of Table 3 gives the weeks and hours worked of employed men in Puerto Rico and in the US in 1999, as reported in the 2000 Census of Population for the Island and for the US. The lower panel of the Table gives the proportion of non-working men who worked in the past five years. The weeks worked data show that relatively fewer men worked 50-52 weeks over the year in Puerto Rico than in the US, with the bulk of the difference occurring among those reporting 48-49 weeks a year. The difference is modest[3] and possibly spuriously due to differences in how some workers report weeks worked with vacations on the Island relative to the mainland. Additional tabulations of weeks worked in Puerto Rico for earlier Censuses shows little change over time. The hours data in the table also show only a modest difference between the proportion of Puerto Rican men working 35 hours or more per week and the proportion of US men working 35 hours or more per week.

The big difference in the table is in the proportion of non-working men who worked in the past 5 years. Whereas just 35 percent of Puerto Rican men out of the labor force report having worked in the past five years, 68 percent of men out of the labor force in the US reported having worked in the last 5 years. This is not the result of any huge difference in the age distribution of

Puerto Rican and American men, but rather reflects the relatively permanent detachment of a large number of Puerto Rican men from the work force – another measure of the employment problem for men on the island.

Figure 3 shows the principal activities of persons in Puerto Rico who are out of the labor force for men and women from the limited data on non-work activities in the Puerto Rican labor force household survey for 1970 through 2002. The two principal non work activities are working at home and reporting one self as disabled. A sizeable and rising proportion of men report themselves as out of the labor force and disabled. Between 1990 and 2000, the proportion of men reporting themselves as disabled jumped from 16.4% to 25.6%. By contrast, most women out of the labor force are engaged in household work; less than 3% report themselves as disabled.

In sum, diverse measures of labor force activity from the Census and household surveys show that Puerto Rican men had an exceptionally low involvement in the labor market at the turn of the 21st century – the result of a downward trend in participation in the 1970s that produced a permanent detachment of many men from the work force and a rising proportion who reported themselves disabled in the 1990s. This pattern motivates our paper: Why don't more Puerto Rican men work?

III. The distorted relationship between aggregate demand and employment

Since the implementation of the 936 code of the Federal Internal Revenue system in Puerto Rico in the late 1970s a divergence has grown between gross national production and gross domestic production. The ratio of GNP to GDP in Puerto Rico fell from 0.93 in 1970 to 0.74 in

---

[3] Since a 2 week difference in weeks worked over the year would be associated with almost a 4 percentage point difference in employment in a given period (= 2 weeks /52 weeks), the

1985 to 0.67 in 1997[4], which means that GDP grew much more rapidly than did GNP. By contrast, the ratio of GNP to GDP in the US and most other countries shows little or no trend over this period. The reasons are two-fold. First, GDP includes profits of foreign companies, particularly in the highly productive manufacturing sector, which then leave the island. The second reason is that Puerto Rico's favorable tax structure creates incentives for companies to shift profits to Puerto Rico, by under-reporting imported inputs such as R&D and thereby overstating value-added (Bosworth and Collins, 2005). As a consequence, Puerto Rico seems to have generated a type of growth based on production of highly productive manufacturing firms which does not translate into large enough gains in employment.

To the extent that GDP does not accurately measure production on the island, employment should be more closely related to the slower growing GNP than to the faster growing GDP. To assess this possibility, we regressed ln employment separately on ln real GNP and ln real GDP (allowing for first order serial correlation) and also regressed the first difference of ln employment on the first difference of the ln GNP and ln GDP. In addition, we also regressed the first difference in the absolute change in employment on the first difference in the absolute change in GDP. As our counterfactual or norm for assessing the coefficients, we estimated the same regressions for the US over the same period.

Table 4 summarizes the results of these regressions, for Puerto Rico and the US. Line 1 shows that ln GNP has a higher estimated impact on ln employment than does ln GDP for Puerto Rico in all specifications. By contrast, line 2 shows no such difference in regression coefficients of ln employment on ln GDP and ln GNP in the U.S. The ln forms show that the impact of GNP on employment is modestly larger for Puerto Rico than for U.S., which presumably reflects the

---

difference in weeks worked is associated with some of the difference in employment rates.

lower productivity on the island, though the absolute form shows a higher impact of changes in output on changes in employment for Puerto Rico in the GNP analysis but a lower impact in the GDP analysis.

These estimates and the slower growth of GNP per capita than GDP per capita indicate that aggregate economic growth in Puerto Rico was less favorable to employment than first appears to be the case because it took the form of GDP growth that is not part of GNP. The divergence between GNP and GDP is largely due to the 936 code companies operating in Puerto Rico. This tax benefit given by the federal government to Puerto Rico to attract foreign capital has produced a highly capital intensive and nominally highly productive manufacturing sector, in which the extra GDP has a smaller impact on employment than would be the case if manufacturing firms made a different set of investments, not distorted by the tax breaks.

Table 5 shows the extent to which the pattern of GDP and employment in Puerto Rico may have been distorted by the close relation to the US and the tax incentives given to investing in capital-intensive activities. In 2003, 42.1% of Puerto Rican GDP was in the manufacturing whereas just 11% of Puerto Rican employment was in manufacturing. The ratio of the share of output to the share of employment in manufacturing was nearly 4 to 1. This contrasts with a ratio of the share of output to the share of employment in manufacturing in the US of about 1.1 to 1.[5] Firms invest in capital-intensive manufacturing and declare large profits from those activities. Within manufacturing, one-quarter of Puerto Rican employment is in the highly capital-intensive chemicals sector, whereas just 5% of US manufacturing employment is in chemicals.

---

[4] Data downloaded from Penn World Tables, http://pwt.econ.upenn.edu/php_site/pwt_index.php

[5] US Council of Economic Advisors, Economic Report of the President, 2005 http://www.gpoaccess.gov/eop/download.html

IV. Transfer programs

Puerto Rico benefits from transfer programs from the US. In 2003, island residents received $14.3 billion in transfers, according to the Economic Report to the Governor of Puerto Rico, with most of these transfers coming from the federal government. By contrast, residents paid out $4.4 billion, largely as employee contribution to social security and contribution to Medicare.[6] The $9.9 billion net transfer was 22 percent of personal income and 26 percent of net income on the island. This has to be one of the greatest proportionate transfer payments from one economy to another, with potentially large impacts on labor supply.

Disability Insurance: The major federally funded transfer program in Puerto Rico is Old Age, Disability and Survivors Insurance (OASDI). A larger proportion of OASDI spending in Puerto Rico consists of disability payments than in the US. Administrative data from the Social Security Administration shows that 19% of Puerto Rican Social Security beneficiaries were on disability payments, in comparison to 12% of U.S. social security beneficiaries.[7]

Census data also provides information about disability. In 2000, 17% of the Puerto Rican male population aged 18-64 in Puerto Rico said that they had an *employment disability,* defined as a disability "that affects their ability to work at a job or business" compared to 13% in the US (Table 6).[8] The table shows that a much smaller proportion of persons who report a work disability are employed in Puerto Rico than are employed in the US. In 2000 38% of men with a work disability in Puerto Rico were working. By contrast, 63 percent of US men with some work

[6] These numbers are from the Economic Report of the Governor 2003. They differ from those reported by the US Social Security Administration as given in US Statistical Abstract, 2004. The Statistical Abstract reports 10.4 billion in transfers and residents paid out $2.9 billion, giving a $7.3 billion net transfer.

[7] On the mainland, West Virginia is the outlier with 17 percent

[8] Mississippi had the 2nd highest percentage with an employment disability in the US at 14.4%.

disability were working. The employment ratio in Puerto Rico relative to the employment ratio in the US among those with a work disability is 0.60 (38/63), which is slightly lower than the ratio of the overall male employment rate in Puerto to the male employment rate in the US of 0.62 (47/67). Among men without a high school diploma the differences between Puerto Rico and the US are even larger: only 26 percent of men in Puerto Rico with a work disability are employed, while 52 percent of those men in the U.S. are employed.

Using the Census data, we can infer whether or not men younger than 65 years of age receive social security disability insurance from whether or not they receive social security. Almost one in every ten adult men in Puerto Rico under the age of 65 receive social security income. The comparable figure for US is one in every twenty. Social security income is quite common among men 46 to 64, of which 22 percent receive this type of income. The Census data in Table 6 show that a much larger proportion of Puerto Rican men aged 18 to 64 are on social security disability insurance than are US men aged 18-64 – 9.8% vs 4.4%. The absolute difference in the rates reporting that they are on social security disability is larger for older than for younger workers and larger for the less educated workers, while the relative difference varies in a less clear pattern.

Across time, however, the Census data show a small decrease for the rate of recipiency in Puerto Rico and a small increase for the US. The implication is that while differences between Puerto Rico and the US in receipt of disability insurance contribute to differences in employment rates, they cannot account for trends or differences in trends between Puerto Rico and the US. On the other hand, the Puerto Rican labor force survey, which allows for a self-reported category of “disabled” in labor force status, shows a steady rise in the proportion of men reporting that they are disabled, reaching 25 percent in 2000.

Finally, administrative data also show that the ratio of disabled workers to the overall workforce is higher in Puerto Rico than in the U.S. In 2002, 131,340 persons claimed disability insurance in Puerto Rico according to administrative data, which compared to 1.157 million employees, giving a ratio of disabled workers to employees of 0.11 and ratio of disability insurance recipients to the population of working age of 0.06. By contrast, the comparable ratios for U.S. are .04 and .03, respectively.[9]

The potential for disability insurance to discourage work in Puerto Rico is enormous, considering the low earnings of Puerto Rican workers and the high levels of unemployment. In 2002 support for disabled workers in Puerto Rico was $713 per month – 80% of the $891 monthly support for disabled workers in the US. This compares to retirement benefits that are 66% those in the US and wages that are also about 2/3rds those in the US. Given monthly earnings of male workers in Puerto Rico of $1,032 as reported by the Department of Labor, the ratio of disability income to wages is 69 percent. By contrast, the ratio of disability income to wages is about 56 percent in the United States, where monthly earnings of workers are on the order of $1,600. Hence availability of disability income creates stronger incentives not to work in Puerto Rico than in the U.S. Given that studies of the effect of disability insurance for the US indicate that it affected male labor force behavior (Autor and Duggan, 2003), it is likely to have done the same in Puerto Rico.[10] High unemployment levels may also be pushing Puerto Rican men into claiming disability insurance, since studies have pointed that disability insurance participation responds to aggregate demand shocks (Autor and Duggan, 2003).

---

[9] The US had 5.4 million workers with disability insurance in a 137 million person work force.

[10] There remain debates over the magnitude of the effect and over how men who said they were disabled might have behaved absent disability insurance (Bound and Weidmann, 1992, Haveman, DeJong and Wolfe, 1991)

In sum, these figures suggest that social security disability insurance may be encouraging Puerto Rican men, particularly those with low levels of education, to drop from the labor force.

Nutritional Assistance Program: Another component of federal transfers to Puerto Rico is the Nutritional Assistance Program (NAP), which is the most widespread government assistance program on the Island. This program was initially created as a Food Stamp Program, but was cashed-out in 1985, so that benefits were given electronically, with 75 percent nominally allocated to food and 25 percent to cash. The Puerto Rican NAP benefits differ from the US Food Stamp Program. NAP has high implicit tax rates and covers a huge proportion of the work force, in contrast to the low implicit marginal tax rates on the US Food Stamp program and its limited coverage of the population. NAP, rather than Temporary Assistance for Needy Families, is the main government assistance program in Puerto Rico. The Department of the Family reports about half a million "units" on NAP. While NAP units are not exactly families as measured by the Census, the half a million compares to approximately 1 million families in the 2000 Census, which suggests that on the order of half of the families receive government assistance. A family of four with no income may receive about $300.00 monthly on NAP.

Although single mothers are the most likely demographic group to be on assistance because they are poorer, the NAP covers married couples as well. We have not estimated the effect of this program on the low labor participation rate of Puerto Rican men, but the sheer volume of participation in this program suggests that negative labor supply effects on men are present. Taken together, the social security disability program and the NAP program combined could have large effects on male employment. However, there are no data rich enough in Puerto Rico to sort out these effects. The only household data collected regularly are the labor force surveys which do not have questions on annual income and nor its sources. Decennial Census

data are also limited in the information they contain as to address these issues rigorously. Still, we can draw some inferences about the potential effect of non-work income on labor supply from data on the work patterns of married couples. If we assume that any couple in which neither the husband nor wife work must be earning income from some other source, of which transfer payments are a likely part, particularly from the NAP program, the proportion of families that are without work give some notion of the proportion of husbands for whom the non-work income reduces the pressure to obtain a job.

Work Patterns of Married Couples

To determine the work patterns of married couples, we matched wife and husband records for persons aged 18-64 from the 2000 Puerto Rican Census and tabulated the employment status of both spouses. Table 7 shows the proportion of couples that fall within four work arrangement: husband jobless; wife jobless; husband employed, wife jobless; husband jobless, wife employed; and both husband and wife employed. In 36 percent of the cases both the wife and husband were without work. This is the largest group in the table, giving Puerto Rico an extraordinarily high proportion of "jobless families" in an economy (Gregg and Wadsworth, 2001). In 31% of the cases, the husband works and the wife does not; in 8% of the cases the wife works and the husband does not work. In just 25% of the cases both spouses work.[11]

While it is not possible given the data at hand to estimate how many of the husbands in the "jobless families" are not working because their family can obtain income from transfers, the huge proportion of couples falling into that category suggest that effects of transfers on male employment could be quite large. The families with no earners are making money in some

[11] Analyzing the pattern in table 7 further, we estimated a logit model where the dependent variable took the value of 1 of the husband is employed and 0 otherwise, with the education and age of the husband, and whether or not the wife was employed as right hand side variable. The regression shows that husbands with a non-employed wife had a 63%

fashion. With about half the families obtaining NAP support and many men obtaining disability insurance, we would expect that many of the 40% of jobless families would be recipients of either or both of these forms of income, depressing their incentive to work, at least in the formal sector.

V. Migration: selectivity and wage

Puerto Ricans are US citizens with the right to a US passport and the freedom to travel and reside on the mainland at their discretion. For half a century, tens of thousands of Puerto Ricans have migrated to the US each year, and many return to the Island. The legal right to move back and forth between the US and Puerto Rico distinguishes Puerto Ricans from persons in other developing economies with close ties to the US, such as Mexico or the Dominican Republic. It leads to a potentially different pattern of migration with some workers going back and forth within relatively short time periods.[12] In 2000 37 percent of all persons aged 18 and over and born in Puerto Rico were living on the mainland (see column 1 of Table 7).

Migration can affect the employment-population and labor participation ratios on Puerto Rico in three ways. First, if unemployed persons leave the island to seek work in the US, it would reduce the number of unemployed persons and raise the employment rate by reducing the number of persons of working age. Thus, migration can serve as a way to export the unemployed. In fact, time series data shows a positive correlation between the rate of unemployment and net migration (Pol, 2004a). But when unemployed persons leave the island, their movement *lowers* the labor participation rate. This is because it reduces the number of persons in the labor force by

---

lower likelihood of employment than a husband with an employed wife.

[12] Godoy, et al (2001) report that 13.5% of persons in Puerto Rico in 1990 had lived on the mainland at various times in the preceding decade.

proportionately more than it reduces the population of working age.[13] Second, migration could reduce the labor participation rate through selective migration if persons with strong attachment to the labor market migrated to the US. The migration of those who want to work but do not have jobs would lower the labor force proportionately more than it would lower the population. Consistent with this, Enchautegui (2005a) found that the labor force participation rates of recent migrants and prior migrants to the US are higher than those of persons who remain on the island, even within the same age and educational groups. Third, migration could affect employment and participation indirectly by raising reservation wages of persons on the Island. Since migration gives Puerto Ricans access to higher wage US jobs, some persons might set their reservation wages on the basis of what they could get working in the US, producing a lower bound on wages that could be too high to accommodate excess labor. This could reduce the labor participation rate if persons with high reservation wages dropped out of the work force. For migration to help explain the low rate of employment, the second and third factors must dominate. But even if migration is only an outlet for the unemployed, it would contribute to the low participation rate.

We use Census data on the employment of Puerto Rican born men residing in Puerto Rico and residing as migrants to the US to assess the *maximum* contribution that selective migration could make to the low employment rate in Puerto Rico. We make the strong assumption that migrants to the US have higher rates of employment than comparable persons in Puerto Rico **solely** because the migrants have positively selected themselves according to their desire for or ability to get a job and that if migrants returned to Puerto Rico, they would obtain work at the same rate as in the US. By attributing all of the difference in employment rates to selective

[13] A numeric example demonstrates this. Assume 10 people of working age, 5 in the labor force, of whom 2 are unemployed. The migration of one unemployed worker reduces the working age population to 9 persons and the labor force to 4 persons. The labor participation rate falls from 5/10 to 4/9 while the employment rate rises from 3/10

migration, we obtain the **maximum** possible contribution that selective migration could make to the low level of employment on the island.

Table 8 shows the result of our calculation for men aged 16 and over. Line 1 gives the proportion of men aged 16 and above born in Puerto Rico who are living in the US, for all men and for men by education group. The proportion living in the US is much higher for persons with less education than it is for those with greater education – a pattern of migration that has long characterized the Island. Lines 2 and 3 record the employment rates for men living in Puerto Rico and for men who have migrated to the US, while line 4 records the difference in the two rates. For all men, 46% of those living in Puerto Rico were employed whereas 55% of those migrating to the US were employed – a 9 point differential. Within educational groups, the difference in employment rates is even greater. Line 5 gives our counterfactual estimate of what the male employment rate on the Island would be if all migrants returned to Puerto Rico and had the same employment rate in the US. If the 37% living in the US moved back to Puerto Rico and were employed at the 55% rate of employment in the US, the rate of employment would have risen to 49% – a three point increase over the 46% rate for Island residents. Within the four education groups, the increase in the rate of employment if immigrants returned to the Island but had the same employment rate as in the US ranges from 3 to 5 percentage points. This suggests that selective migration is a modest factor in the low employment rate on the Island. If migration is a major contributor to the low employment rate, it must also be operating by placing a lower bound on the structure of wages.

VI. The Structure of Wages

---

to 3/9.

From the perspective of labor demand analysis, low employment suggests an imbalance in the level and pattern of wages. Are wages too high relative to the level of economic development of Puerto Rico? Is the structure of wages by skill inconsistent with the supply of skills? If so, part of the Island's employment problem could be associated with wage levels and patterns inconsistent with the levels necessary to clear the labor market.

Table 9 compares earnings in Puerto Rico with earnings in the US and in the state with the lowest per capita income, Mississippi. The upper panel of the table records data on earnings in Puerto Rico from establishment surveys for 2003. It shows that in manufacturing the hourly pay or labor costs (which includes fringe benefits) for production workers is about 2/3rds of the hourly pay/labor costs in the US. Compared with Mississippi, Puerto Rican production workers in manufacturing earn 81%-85% of the hourly pay or labor costs of production workers in manufacturing. Since living expenses are comparable between the island and the mainland, these figures are indicative of differences in real earnings.[14]

The data for the hourly earnings of all workers show a bigger gap between Puerto Rico and the US and Mississippi. Puerto Ricans earn 59% of the earnings of workers on the mainland and 74% to 79% the earnings of workers in Mississippi, depending on whether earnings are given as medians or means. The larger gap in earnings among all workers than among manufacturing workers reflects that fact that the manufacturing sector in Puerto Rico diverges more from the rest of the economy than does the manufacturing sector in the US, consistent with the huge productivity difference on the Island between manufacturing and the rest of the economy shown in Table 5.

[14] Bosworth and Collins (2005) show that Puerto Rico cost of living is similar to that of the District of Columbia.

The lower panel of Table 9 gives annual earnings by gender and years of schooling for men and women separately from the 2000 Census of Population for the US and the 2000 Census of Population for Puerto Rico. They show that men's annual earnings in Puerto are 52% of male annual earnings in the US. This ratio is lower than in hourly pay because workers in Puerto Rico work fewer weeks and less hours than those on the mainland. Compared to men in Mississippi, those in Puerto Rico earn 65% as much. Women's annual earnings in Puerto Rico are closer to those of women in the US. For all women annual earnings in Puerto Rico are 64% those in the US and are 82% those in Mississippi. The data by education show that compared to the US relative earnings for both and women on the Island are highest among the most educated **and** among the least educated. Compared to earnings in Mississippi, the relative earnings of men in the Island are highest for the most educated. For women the relative earnings are highest for the least educated.

The normal pattern in earnings differences among countries with different levels of income is that earnings in a lower income economy are closer to earnings in a higher income economy among the most educated or skilled. The reason is that lower income economies have fewer highly skilled workers than advanced economies and thus pay relatively high wages in the top occupations (Freeman and Oostendorp, 2002). However, in three of the four comparisons in Table 9, the highest relative earnings are for less educated workers.

Relative Earnings by Occupation: To see whether the pattern of relatively high earnings among low paid workers holds across occupations, we compare next earnings by occupation in Puerto Rico and in Mississippi, our low income mainland comparison area, from

the Bureau of Labor Statistics' establishment-based Occupational Employment Survey (OES).[15] This survey obtains earnings and employment data at the three digit occupation level for detailed geographic areas of the US and outlying areas. Since the data come from establishment records, they offer a more accurate measure of rates of pay than self reported earnings in the decennial Census. The OES contains data on the relative earnings of persons in Puerto Rico in 538 detailed occupations from the May 2003 survey and in 643 detailed occupations from the comparison state, Mississippi. Do these data show high relative pay for Puerto Ricans with limited skills?[16]

Table 10 summarizes the OES data for a selection of high wage, middle wage, and low wage occupations. It shows that earnings in Puerto Rico are higher than in Mississippi in the selected occupations at the top of the earnings distribution; are markedly lower for the occupations in the middle of the distribution; but are relatively close for occupations with low earnings. The wages for maids and housekeeping cleaners are higher in Puerto Rico than in Mississippi, possibly reflecting the Island's comparative advantage in tourism and demand for these workers.

To see if the pattern of relatively high wages at both the top and bottom of the earnings distribution holds over the entire spectrum of occupations, we performed two additional calculations. First, we ranked earnings in all of the occupations reported for Puerto Rico and in all the occupations reported in Mississippi. We divided the distribution of earnings by decile and calculated the average earnings for occupations in each decile of the Puerto Rican distribution, and for occupations in each decile of the Mississippi distribution. For example, for occupations in

---

[15] The OES survey samples approximately 400,000 establishments each year and, over a 3-year period, contacts approximately 1.2 million establishments. It provides wage and employment estimates for detailed geographic areas, including Puerto Rico and its main metropolitan areas. See www.bls.gov/oes/current/oessrcst.htm

the lowest 10% of earnings in Puerto Rico, we averaged the earnings in that decile; while for occupations in the 2nd lowest decile, we averaged the earnings in that decile, and so forth. We made the same calculations for the occupations in Mississippi, ranked by the Mississippi distribution. This contrast uses the data on all occupations in both areas and places occupations in its area-specific distribution. Dividing the average earnings in each decile in Puerto Rico by the average earnings in each decile in Mississippi, we estimated the pattern of earnings differences from low wage to high wage occupations. The line labeled all occupations in figure 4 gives the results of these calculations. It shows that the ratio of wages among occupations by decile fits a U-shaped curve: the PR/Mississippi wage rate is high for low wage occupations, falls for middle wage occupations, and then rises for high wage occupations.

Second, we examined the distribution of earnings in the 513 occupations that were the same in both locations. This eliminates occupations found in one area but not in the other. The correlation coefficient between the wages by occupation in this case was 0.82, indicating some difference in the ranking of occupations by wages in Puerto Rico and Mississippi. We computed the mean wage of the occupations in each decile for Puerto Rico and Mississippi taken separately and took the ratio of those wages as our measure of the pattern of earnings differences from low wage to high wage occupations. The line labeled same occupations in figure 4 gives the results of these calculations. Again, we obtain a U-shaped curve that shows that the PR/Mississippi wage rate is high for low wage occupations, falls for middle wage occupations, and then rises for high wage occupations.

As a final check on this pattern, we categorized the 513 occupations for which we had earnings in both localities by the average of their ranking in the Puerto Rican and Mississippi

---

[16]http://www.ctdataengine.com/uswages/index0008.html

earnings distributions[17]; computed the decile in which each occupation fell by the average rank and regressed the ln of the ratio of earning in Puerto Rico to those in Mississippi on ten dummy variables for the decile in which the occupation fit. Table 11 gives our regression results. Again, we obtain the inverse-U relation. Puerto Rican wages were 0.15 ln points below wages in Mississippi for occupations in the lowest decile, fell to 0.31 ln points below wages in Mississippi in the fifth decile and then rose to 0.15 ln point below wages in Mississippi in the highest decile.

Given that Puerto Rico has relatively high wages at the bottom of the earnings distribution and high joblessness, the natural question to ask is why the high joblessness on Puerto Rico has not driven wages down at the bottom of the wage distribution to create more jobs. The rich uncle hypothesis directs attention at three possible answers.

On the demand side, it is possible that Puerto Rico's adoption of US level minimum wages limited downward wage adjustments (Castillo-Freeman and Freeman, 1992). Since 1977, employers in Puerto Rico covered by the Federal Fair Labor Standards Act (FLSA) are subject to the federal minimum while those not covered by the Act must pay at least 70 percent of the Federal minimum wage or the applicable mandatory decree rate set by the Department of Labor, whichever is higher. Since Puerto Rico has lower productivity and average wages than the US, this means that the minimum affects a larger proportion of the work force than in the US. However, Puerto Rican minimum wage law allows the Secretary of Labor and Human Resources to authorize a lower rate to any employer who can show that implementation of the 70 percent rate would substantially curtail employment in that business. Debate over the impact of the minimum wage law on the island on employment has focused on the period when the island

[17] That is if an occupation was ranked 6th in Puerto Rico and 14th in Mississippi, we gave it an average rank of 10.

adopted the federal minimum (Krueger, 1995). As the federal minimum rate was constant at $5.15 per hour from 1997 through 2004, it would bound annual earnings of full-time workers on the Island at about $10,700 per year. This level is below the earnings for low wage occupations shown in table 10 and indeed falls below the mean earnings in the lowest decile of the Puerto Rican earnings distribution: $13,399 for the sample of 538 occupations. The minimum wage may affect the lower part of the wage distribution but given this large gap we suspect that other factors are more important.

A second possible reason for the relatively high level of wages for low-paying occupations in Puerto Rico is that income transfers have created a reservation wage considerably above the minimum and above the full employment wage rates. Our survey of men in communities along El Caño Martín Peña in San Juan, to be described shortly, asked them for their reservation wage. The reservation wage of the non-employed men was 7 dollars per hour. Virtually no one said they would take a job for less than 7 dollars per hour. Seven dollars per hour would produce a lower bound on earnings for men around $14,500, consistent with earnings at the bottom of the occupational wage structure and considerably above the minimum wage.

The third possible reason for a high reservation wage on the Island is that potential migration to the US creates a floor for wages above the minimum. Given an annualized cost of mobility to the mainland of C and mainland earnings of W, annual earnings on the Island could be bounded by W-C, with workers migrating when unemployment develops at the wage. Arguably, if migrants returned to Puerto Rico, they would increase the labor supply and drive down the wage, which would raise employment. However, this would not necessarily raise the *rate of employment*, which would change depending on how much wages fell and the elasticity of demand to labor. The rich uncle impact of migration on the wage structure reverses the Harris-

Todaro migration mechanism in which people from rural areas migrate to urban areas with institutionally determined wages until urban unemployment equates the expected earnings in the two areas. In our model the potential of migration to the higher wage mainland sets a lower bound on wages in Puerto Rico, which depresses employment there. What makes the lower employment tolerable is the existence of diverse social benefits for persons on the island, paid by the mainland, the option to migrate to the US to earn higher wages, and the potential to make money outside of the formal sector.

VII. The role of the informal economy

There is a widespread belief that many jobless Puerto Rican men work in the informal sector, which standard labor force surveys fail to measure. Employment in the informal sector grew in many Latin American countries in the 1980s and 1990s – part and parcel of poor economic growth and the de-industrialization of Latin American economies, which has made informalization of work a major issue in understanding the economic circumstances of workers in those economies. In Puerto Rico, the informal labor market could provide job opportunities for men who cannot find work in the formal labor market while allowing them to receive government benefits like NAP, disability insurance, which are work- tested or means-tested, that they would lose if they took formal sector jobs. The low measured employment of Puerto Rican men would be a measurement problem due to the failure of official statistics to capture work in this sector.

For the informal sector to explain the low level of labor participation in Puerto Rico, it must be a large share of the economy. Some studies estimate that it accounts for upwards of 23 percent of the GDP of Puerto Rico (Pol, 2004b; Estudios Técnicos, 2004). For the informal sector

to explain the declining participation and employment population rate in Puerto Rico, however, it would have to have grown since the 1970s, or which the evidence is not as clear.

Standard labor force data provide indirect evidence on the possible size and development of informal sector work. One natural indicator of the informal sector is the proportion of workers who are self-employed. Since 1980 the proportion self-employed reported by the Department of Labor in Puerto Rico has fluctuated between 11 and 12 percent or about 5 points above the 6-7 percent self-employed in the US. Since the self-employed are counted as workers, these figures do not measure non-labor force participants who work in the informal sector. Still, if many workers worked in the informal sector, one would expect some to report that they are self-employed, so that a high level of self-employment is consistent with a large number working in the informal sector. The constancy of the self-employment rate in Puerto Rico suggests that the proportion of men in the informal economy has not grown in comparison to 20 years ago.

Another indicator of the potential level and growth of the informal sector is the proportion of men who are out of the labor force, not disabled, not going to school, and not doing housework. These men may be idle, but they could just as readily be informal sector workers since they have no other reported activity and have no reported physical or other impediments to work. Figure 5 shows that the proportion of men in this category declined from 1970 to 2000.

Based on self-employment rates and the proportion of non-working men who are idle, it does not seem that the informal sector has grown significantly in the last two decades, although it still may be a significant constant in the Puerto Rican labor market structure and a sector that needs close examination.

A pilot survey: Despite the appeal of the informal sector hypothesis as a contributor to the low participation rate of Puerto Rican men, there has been no direct study of workers involved in

the sector. To fill this gap, we undertook a pilot survey in summer 2004 to find out what men in communities with potentially low employment were doing. We randomly selected men in households from low-to-medium income communities along El Caño Martín Peña in the capital city of San Juan. The Department of Transportation and Public Works was undertaking a massive infrastructure project in the area related to the cleaning of the water route of el Caño and had commissioned a Census of the eight communities that composed the Caño. This Census provided us with a sampling frame to draw participants for the survey. We selected households in three communities: Marina, Bella Vista Hato Rey and Bella Vista Santurce, which were in the middle of income distribution for the eight communities. We drew samples from households containing men aged 18 to 64, not attending school. We interviewed 133 men. While our sample has some drawback for analyzing the informal sector,[18] it offers new insight into informal sector work on the Island and illuminates how informal sector workers report that work on the household survey.

The first question we asked on our survey was the question about employment that the Labor Department in Puerto Rico uses in its monthly survey: "Can you tell me what were you doing last week?"[19]. The possible answers are: (1) Working, (2) Looking for work; (3) With employment but not at work; (4) Domestic chores; (5) Going to school: (6) Disabled; (7) Retired; (8) Other. These responses are problematic for describing workers with contingent informal labor market arrangements. Men in sporadic or in contingent employment of short duration may not see themselves as working and not report that activity. To capture these types of work activities,

[18] One drawback is that employment opportunities in the metro area of San Juan tend to be better than elsewhere on the Island, which would lead to an underestimate of Island-wide informal work. Another drawback is that the area has a sizable number of foreign-born men, mainly Dominican, whose behavior may differ from that of the Puerto Rican born.

[19] The US Current Population Survey and Census ask the question "did this person do any work for pay last week". This question is more specific since any work no matter how small for which

we showed men a flash card that asked "Which of the following best describes your employment situation?" with answers such as: occasional or casual worker without a fixed job, occasional worker, contract worker, worker on call, worker on daily contract, worker through the duration of project, and handyman. These are the type of non-traditional employment situations associated with the informal labor market and likely to be missed in standard surveys. We classified men who answered yes to any of these employment situations as non-traditional workers.

Table 12 summarizes the results to the standard DOL question and to our question that probed about informal sector work in terms of the number of people whose responses put them into particular categories and the proportion of men with specified characteristics who fit into those groups. Lines 1 to 3 show the work activity on the basis of the household survey question: 94 men or 71% of the sample reported that they worked; 11 or 10.5% of those in the labor force reported that they were seeking work; while 105 or 79% of the sample reported being in the labor force. Lines 4-9 give the results from our non-traditional work question. Line 4 shows that the question identified 29 workers in non-traditional employment situations – 22% of the sample. Most of these men reported activities in construction, with the most common type of work being "chivero" (a person that get occasional jobs on construction or other related tasks, and works for the duration of the project).[20] Line 5 shows that the household survey question would have classified 15 of those workers (11% of the sample) as not working, which implies that the household survey would have missed the work activity of approximately half of those in informal sector work. Line 6 shows that 5 men who reported that they were doing non-traditional work had

---

pay was received is expected to be reported, though people may still interpret it to refer to formal jobs.

[20] The amount of work reported varied from 6 to 30 hours weekly. Men in these activities reported incomes of 550 dollars monthly.

responded that they were neither employed nor looking for work on the household survey question – 4% of the sample. . Counting the 15 men engaged in some kind of informal work but who said they were not employed on the household survey question from lin5 to the employed, we obtain an estimated employment in the sample of 109 or 82% (line 7). Adding those 15 men in informal work to the number counted in the labor force (lines 1 and 2) gives a total in the labor force, including nontraditional workers, of 110 – or 83% of the sample (line 8).

If these magnitudes are reasonably correct, how much of low male employment and participation might be due to informal sector work? Our survey has one problem in answering this question. The problem is that the employment level in the survey was higher than on the household survey and on the Census of Population, which makes it hard to generalize magnitudes. Still, the estimated proportion working in our sample increased from 71 percent under the traditional question to 82 percent under the wider definition of working – an 11 point or 15% increase (line 7).[21] If we assume that this 15% greater employment holds in comparisons with the lower reported rate of employment in the household and Census, our calculations suggest that a better counting of informal workers would increase the **employment rate** for men aged 18-64 not attending school on the household survey from 48% to55 %.

But this adjustment would not produce as large an effect on the **labor participation rate** found in both the Census and household survey. The reason is that most of the men in non-traditional employment situations reported themselves as looking for work on the household survey question. Line 8 shows that only 5 of the 29 men working in non-traditional employment in our survey said that they were neither working nor looking on the household survey question.

[21] The 71 percent rate of employment using the DOL-question exceeds the 55 percent labor participation rate for Puerto Rican in the household survey!

They are just 4% of the total sample and would raise the labor force participation rate to 83% or by 5%. If this increase is applied to the overall male population 18-64 years old not attending school, it would raise the male labor force rate from 58% in the household survey to 61%.

In sum, our pilot survey suggests that the official DOL question understates employment considerably but understates labor force participation only modestly. Since, as noted, our survey covered a group of men that had a relatively high rate of employment and participation even by the DOL question, it is possible that the understatement, particularly of labor participation, may be larger in a more representative sample. Taking our results as valid, informal sector work helps explain a significant part of the low employment rate of Puerto Rican men but can explain only 3 or so percentage points of their low participation rate.

VIII. Conclusion and implications

Our analysis shows that a variety of factors contributed to the low employment rate of Puerto Rican men: the pattern of economic growth, with GNP increasing much less rapidly than GDP, and GDP heavily weighted to capital intensive manufacturing; the emigration of men with potentially high attachment to the work force to the US; the attractiveness of disability insurance and NAP transfers funded in large part by the US; relatively high wages in low paid occupations; opportunity to work in the informal sector. The common thread behind all these separate factors which we have termed the "rich uncle" hypothesis: that the primary reason for the low employment is that Puerto Rico's unique relationship with the United States has produced an economic environment which discourages work on both the supply and demand sides of the market. The rich uncle hypothesis suggests that the close tie between the island and the mainland has been a double-edged relation, offering Puerto Ricans many of the benefits of living in a highly

advanced economy but also contributing to the employment problem. There are advantages to having a rich uncle but as anyone with rich relatives knows, it is a mixed blessing.

The analysis points to the difficulties facing Puerto Rico in solving the employment problem of its male population. Factors that affect employment such as the level of benefits of social security and eligibility into this program, the minimum wage, federal tax incentives, the amount of transfer to the poor, and border control are not controlled by Puerto Rico but by the federal government. Puerto Rico needs to work with the US government to redesign these programs, which help reduce poverty on the Island, to be more work-friendly. Government transfers to the poor need to reward work effort in various ways. The Nutritional Assistance Program could adopt work incentives and time limits similar to those mandated by the US 1996 welfare reform, the Personal Responsibility and Work Opportunity Reconciliation Act. Puerto Rico could seek ways to make support of low income persons more compatible with employment, for instance through Earned Income Tax Credit type arrangements or tax credits to firms on the basis of the number of jobs created. Although the 936 federal tax benefits program has ended, Puerto Rico should seek ways to encourage the high-technology industries that it engendered to expand employment in the future, and to shift some of their purchases of intermediate services and goods to the Island. For instance, pharmaceutical companies could set up distribution centers and costumer service centers in Puerto Rico and use Puerto Rican agencies for some of their marketing campaigns. Non-governmental organizations could try to combine their services to the low income population with employment. Work activities common to the informal labor market such as construction and reparation work could be organized through cooperatives of community workers or through community organizations, bringing these workers out of the shadows of informality. Since much of the low participation of men occurs among older men, perhaps a shift

in compensation toward deferred benefits such as pensions or health insurance could reduce the rate of withdrawal from the work force. The goal should be to link benefits to work rather than to non-work, to induce adult men from out of the work force or informal work into regular jobs, and raise Puerto Rico from its current position at the bottom of country or area tables of male employment and labor participation rates.

Bibliography

Autor, David H, and Mark G. Duggan. 2003. "The Rise in Disability Rolls and the Decline in Unemployment." *Quarterly Journal of Economics* 118: 155-205.

Bosworth, Barry, Susan Collins. 2005. Chapter 1 in *The Economy of Puerto Rico Restoring Growth*, edited by Barry Bosworth, Susan Collins, Miguel A. Soto-Class. Brookings Institution Press and the Center for the New Economy 2005.

Bound, John and Timothy Waidmann. 1992. "Disability Transfers, Self-reported Health and the Labor Force Attachment of Older Men. Evidence from the Historical Record." *Quarterly Journal of Economics* 107: 1393-1149.

Castillo-Freeman.Alida and Richard B. Freeman. 1992. "When the Minimum Wage Really Bites: The Effect of the US-Level Minimum on Puerto Rico." Chapter 6 in *Immigration and the Work Force.* Edited by George Borjas and Richard B.Freeman. Chicago: University of Chicago Press.

Enchautegui, María E. 2004. *Amarres de las Mujeres: Hogar y Empleo: Dos Investigaciones*., Gráfica 3. San Juan Puerto Rico: Estado Libre Asociado de Puerto Rico, Oficina de la Procuradora de las Mujeres.

Enchautegui, María E. 2005. "Educación y Salarios en Puerto Rico". Unpublished manuscript.

Enchautegui, María E. 2005. "Selectivity Patterns in Puerto Rican Migration." Paper presented at the Annual Meetings of the Population Association of America, March 31 to April 2, Philadelphia.

Estado Libre Asociado de Puerto Rico. 2003. *Informe Económico a la Gobernadora 2003*, Oficina de la Gobernadora, Junta de Planificación, San Juan Puerto Rico.

Estado Libre Asociado de Puerto Rico. 2002. *Serie Histórica de Empleo y Desempleo, Años Naturales, 1970-2001.* Departamento del Trabajo y Recursos Humanos, Negociado de Estadísticas, San Juan Puerto Rico.

Estudios Técnicos. 2004. *La Economía Informal en Puerto Rico.* Estudios Técnicos: San Juan Puerto Rico,

Freeman, Richard B. and Remco Oostendorp. 2002. "Wages Around the World: Pay Across Occupations and Countries," Chapter 1 in *Inequality Around the World,* Richard B. Freeman, editor. London, UK: Palgrave, in association with the IEA, Conf Vol #134.

Godoy, Ricardo, Ilana Redstone, Faisal Islam, Tanya Price, Amara Saeed, and Salamat Tabassum. 2001. "English proficiency and quality of life among Puerto Ricans: Does it matter? Brandeis, November. http://www.heller.brandeis.edu/sid/downloads/englishpro.pdf

Gregg, Paul and Jonathan Wadsworth, "Everything you ever wanted to know about measuring worklessness and polarization at the household level but were afraid to ask
Oxford Bulletin of Economics and Statistics, vol 63 issue S1, Sept 2001

Haveman Robert, Philip DeJong and Barbara Wolfe. 1991. Disability Transfers and the Work Decisions of Older Men. *Quarterly Journal of Economics* 106: 939-949.

Hunt, Jenny. 2004. "Convergence and Determinants of Non-Employment Durations in Eastern and Western Germany." *Journal of Population Economics* Volume 2.

Krueger, Alan. 1995. "The Effect of the Minimum Wage When It Really Bites: A Reexamination of the Evidence from Puerto Rico."in Solomon Polachek, editor. *Research in Labor Economics,* Vol. 14. Greenwich, CT: JAI Press.

Pol, Julio Cesar. 2004a. Determinantes Económicos de la Migración Entre Puerto Rico y Estados Unidos. Universidad de Puerto Rico, Unidad de Investigaciones Económicas, Ensayos y Monografías, Num 119.

Pol, Julio Cesar. 2004b. Estimaciones de la Economía Dubterránea: El caso de Puerto Rico. Universidad de Puerto Rico, Unidad de Investigaciones Económicas, Ensayos y Monografías Num 117.

Santiago, Carlos. Labor in the Puerto Rican Economy. Westport: Praeger, 1992.

Spilimbergo, Antonio. 1999. "Labor Market Integration, Unemployment, and Transfers" *Review of International Economics* 7(4) (November): 641-50.

United States Bureau of Labor Statistics: Customized Tables:
http://data.bls.gov/PDQ/outside.jsp?survey=ce, http://www.bls.gov/cps/cpsatabs.htm

United States Bureau of Labor Statistics. . 2003. *May 2003 State Occupational Employment and Wage Estimates.* http://www.bls.gov/oes/2003/may/oessrcst.htm

United States Bureau of Labor Statistics. 2003. *November 2003 State Occupational Employment and Wage Estimates.* www.bls.gov/oes/current/oessrcst.htm

United States Bureau of the Census. 2004. *United States Statistical Abstract 2004.*

United States Department of Commerce, Bureau of Economic Analysis, National Economic Accounts Tables:
http://www.bea.gov/bea/dn/nipaweb/TableView.asp?SelectedTable=44&FirstYear=2002&LastYear=2004&Freq=Qtr

Table 1: Labor force participation rates by education: US and Puerto Rico: Men ages 18 to 64, 2000.

	Labor force participation rates		
Education	Puerto Rico	US	Difference (US-PR)
Less than high school graduate	41	58	17
High school graduate	59	79	20
Some college	64	84	20
Bachelor's or more	76	91	15
ALL educational levels	59	81	22
	Employment rates		
Education			
Less than high school graduate	29	53	24
High school graduate	47	75	27
Some college	55	79	24
Bachelor's or more	72	89	3
All educational levels	46	76	30

Source: Calculated from US Census of Population and Census of Population of Puerto Rico, 2000.

Table 2. Labor force participation rates of synthetic cohorts at given age: 1970-2000

Year cohort was 25-34:	25-34 (1)	35-44 (2)	45-54 (3)	55-64 (4)	Change ((3)-(1)	Change (4)-(3)
	Males					
1970	91.7	85.2	78.8	48.1	-15.9	-30.7
1980	86.8	85.9	72.2		-14.6	
1990	86.8	83.2				
2000						
	Females					
1970	40.5	39.8	39.4	21.4	-1.1	-18
1980	45.5	48.0	41.8		-3.7	
1990	47.4	54.4				
2000						

Source: Serie Histórica de Empleo y Desempleo, Años Naturales, 1970-2001,
Negociado de Estadísticas, Departamento del Trabajo y Recursos Humanos,
Estado Libre Asociado de Puerto Rico.

Table 3. Percentage of men with different work status in Puerto Rico and the US, 2000.

	Puerto Rico	United States
1. Percentage of employed, by weeks worked ovr the year		
50-52	60.9%	70.3%
48-49	11.3	4.8
27-47	12.5	12.6
<27	15.3	12.3
2. Percentage of Employed by hours usually worked per week		
35 or more hours	82.6%	86%
15-34	12.2	11
1-14	5.2	3
3. Percentage of those out of the work force, by year last worked		
Worked in past 5 years	35%	68%
Did not work past 5 years	65	32

Source: Tabulated from US and Puerto Rican Census of Population 2000.

Table 4. Effects of Output on Employment: US and Puerto Rico: 1970-2003

	Functional form of regression equation		
	Ln form	Change in Ln	Change in level
1. Puerto Rico			
Coefficient and SE on GNP	0.72	0.78	0.14
	(0.09)	(.21)	(.043)
Coefficient and SE on GDP	0.49	0.67	0.045
	(.05)	(.16)	.(025)
2. United States			
Coefficient and SE on GNP	0.54	0.53	0.008
	(.03)	(.07)	.(001)
Coefficient and SE on GDP	.54	0.54	0.008
	(.03)	(.07)	(.001)

Source: Data for GNP, GDP and employment for Puerto Rico are from *Informe Económico al Gobernador*, Junta de Planificación, San Juan Puerto Rico, (various years)
Data from U.S. were downloaded electrinically from Department of Commerce Bureau of EconomicAnalysis, National Economic Accounts
http://www.bea.gov/bea/dn/nipaweb/SelectTable.asp?Popular=Y

Note: All equations are corrected for serial correlation. Ln form is regression of ln employment on ln output. Change in Ln is a regression of change in ln employment on change in ln output. Change level form is regression of change in employment on change in output, measured on thousands and in constant dollars.

Table 5. Percentage Distribution of GDP and Employment in Puerto Rico, by Industry 2003

	GDP	Employment
Manufacturing	42.1	11
Finance, insurance and real estate	17.1	4
Trade	11.6	21
Services	9.9	28
Government	9.6	21
Transportation and other public utilities	6.9	5
Construction and mining	2.4	7
Agriculture	.3	2

Source: http://welcome.topuertorico.org/economy.shtml

Table 6: Percentage of Men, aged 18-64, by Work Disability and Recipiency of Social Security Income, PR and US

	Puerto Rico	US	PR / US Ratio
Percentage with a work disability, 2000	17	13	1.3
Percent of those with work disability, who are employed			
Total employed	38	63	0.63
With education <12 yrs	26	52	0.50
With education 12> yrs	47	68	0.69
Percentage on Social Security Disability Insurance, 1999	9.8	4.4	2.2
Age 18-30	2.1	1.1	1.9
Age 31-45	5.7	2.1	2.7
Age 46-64	21.7	9.8	2.2
Without a high school diploma	15.3	7.4	2.1
With at least a high school diploma	6.6	3.7	1.8
Percentage on Social Security, 1979	9.2	4.9	1.9

Source: Tabulations by the author based on *2000 PUMS of the Census of Population of United States and Puerto Rico*. The 1979 data are from *1980 Census of Population of US and Puerto Rico*

Table 7: Percentage of Couples by Work Status of Spouses: Puerto Rico, 2000
Spouses ages 18- to 64

% with husband not employed, wife not employed	36.1
% with husband employed, wife not employed	30.8
% with husband not employed, wife employed	7.9
% with husband employed, wife employed	25.2
Total	100.0

Source: Tabulations by the author based on 2000 PUMS of the Census of Population of United States and Puerto Rico

Table 8. Emigration and Employment Rates of Puerto Rican Men in Puerto Rico and in the U.S. by Education: Men, Ages 18-64 Years Old or More (Percentages)

	Educ 0-11	Educ 12	Educ 13-15	Educ 16+	All
Emigration Rate %	45	37	26	27	37
% Employed in PR	32	48	54	72	46
% Employed in US – Puerto Ricans	43	61	70	84	55
% Employed if:					
All migrants go back to PR and have the same probability of Employment as in US	37	53	58	75	49
Difference					
PR in PR; PR in US	11	13	16	12	9
PR in PR: Simulation	6	8	12	9	6

Source: Based on tabulations by the authors of the Public Use Micro Samples of the 2000 Census

Table 9. Wages and Labor Costs in Puerto Rico, US and Mississippi, 2000-2003

	PR	US	Mississippi	Ratios of Wages or Labor Costs In PR to:	
	In $	In $	In $	US	Mississippi
1. Establishment Data, Hourly Earnings and Labor Costs					
Production workers in manufacturing					
Hourly Earnings	9.87	15.18	12.12	.65	.81
Hourly labor costs	13.91	20.93	16.45	.66	.85
All Workers					
Mean hourly, May 2003	10.41	17.56	13.13	.59	.79
Median hourly, May 2003	7.92	13.65	10.73	.59	.74
2. Household Data, Census of Population, by Gender and Years of Schooling					
Annual Earnings, Male					
All	20,200	39.142	31,199	.52	.65
College, 4 or more years	37,151	66,842	54,304	.56	.68
College, 1-3 years	19,127	35,612	30,142	.54	.63
Schooling, 12 years	15,888	30,316	27,821	.52	.57
Schooling, <12 years	12,639	19,415	19,825	.65	.54
Annual Earnings, Female					
All	15,499	24,074	18,966	.64	.82
College, 4 or more years	22,231	37,902	30,161	.59	.74
College, 1-3 years	12,994	22,278	18,174	.55	.71
Schooling, 12 years	10,922	19,013	16,102	.57	.66
Schooling, <12 years	9,580	12,513	12,278	.77	.78

Source: lines 1-2 Commonwealth of Puerto Rico, http://www.pridco.com/english/operational_advantages/4.2opr_adv_wages_salary.html lines 3-4, BLS, http://www.bls.gov/oes/2003/may/oessrcst.htm; Household data, calculated from US Census of Population and Puerto Rican Census of Population 2000

Table 10 – Yearly Earnings in Puerto Rico and Mississippi,
Selected Group of Detailed Occupations, by Wage Level

	Puerto Rico	Mississippi	Ratio: PR/Miss
All Workers	21650	27310	0.79
Higher Wage Occupations			
Chief Executives	113500	101540	1.12
Marketing Managers	68860	63570	1.08
Optometrists	53580	95970	0.59
Lawyers	53850	73310	0.73
Mechanical Engineers	50450	55800	0.9
Middle Wage Occupations			
Loan Officers	34250	42070	0.81
Accountants and Auditors	30700	43190	0.71
Firefighters	17630	27350	0.64
Child, Family and School Social Workers	22690	29090	0.78
Registered Nurses	22300	43990	0.51
Low Wage Occupations			
Maids and housekeeping cleaners	14420	14280	1.04
Security guards	13520	16910	0.8
Laborers	16300	18730	0.87
Cooks, fast food	12630	13390	0.94
Bus drivers, school	13360	15910	0.84

Source: Tabulated from BLS, May 2003 Occupational Employment Survey,http://www.bls.gov/oes/oes_dl.htm#2003_m

Table 11: Coefficients and Standards Errors for the Regression of the Ln of Earnings in PR Relative to Ln Earnings in Mississippi by Decile

	Coefficient (standard error)
Lowest Decile	-.15 (.03)
Decile 2	-.26 (.03)
Decile 3	-.29 (.03)
Decile 4	-.26 (.03)
Decile 5	-.30 (.03)
Decile 6	-.31 (.03)
Decile 7	-.22 (.03)
Decile 8	-.21 (.03)
Decile 9	-.17 (.03)
Decile 10	-.15 (.03)
R^2 = 0.55	

Source: Tabulated from Bureau of Labor Statistics, Occupational Employment Survey
Notes: The following regressions summarize the data for the 513 occupations which overlap.
Ln PR/Miss = ln of the ratio of the earnings in Puerto Rico to the earnings in the US
Decile (N) = decile in which the occupation fit on the basis of its average rank

Table 12. Labor force activity of men in Pilot Survey according to household survey question and modified question

	Numbers	Percent of Total Sample
Number of men on pilot survey	133	100.0%
I. Activity according to household survey (DOL) question		
1. Working, traditional work	94	71.0%
2. Not working, but looking for work (unemployed)	11	8.0%
3. Working or unemployed (labor force)	105	79.0%
II. Activity according to alternative question reporting non-traditional work		
4. Reporting non-traditional employment	29	22.0%
5. Reporting non-traditional work who said they were not working on household survey question	15	11.0%
6. Reporting non-traditional work who said they were not working or looking for work, on household survey question	5	4.0%
7. All: Working including the 15 non-traditional workers who reported they were not working on household survey	109	82.0%
8. Reporting participating in the labor force: including non-traditional employed	110	83.0%

Source: Encuesta de Empleo y Uso del Tiempo-El Caño

Figure 1. Male and Female Labor Force Participation: The Americas and other Selected Countries, 2000-2003

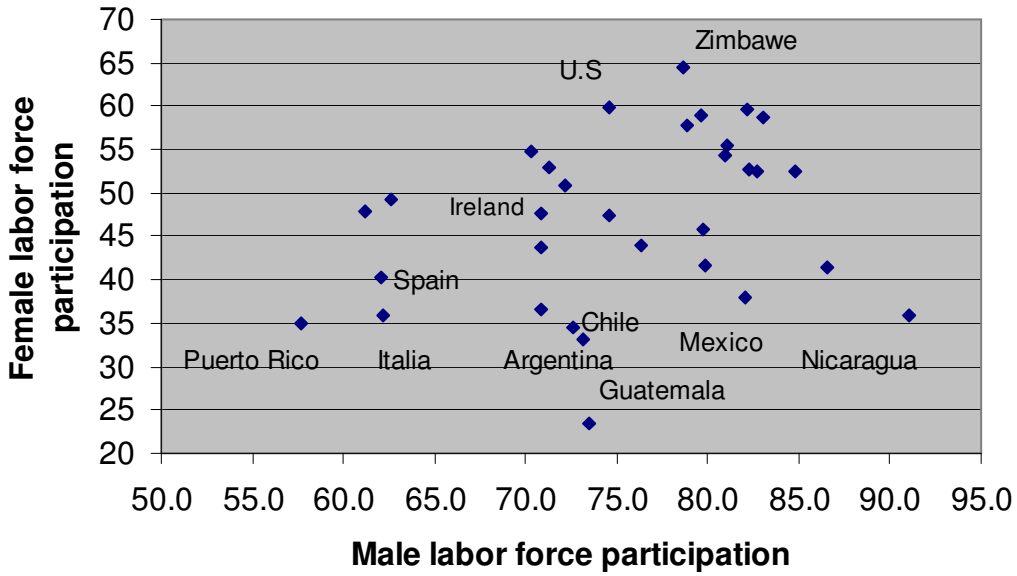
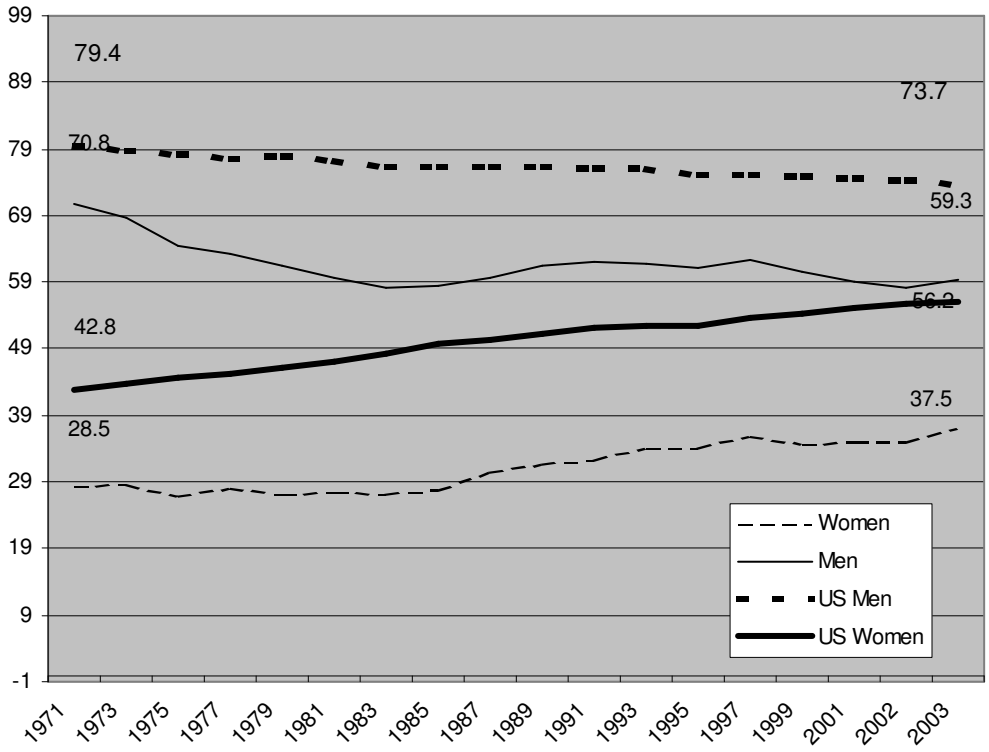
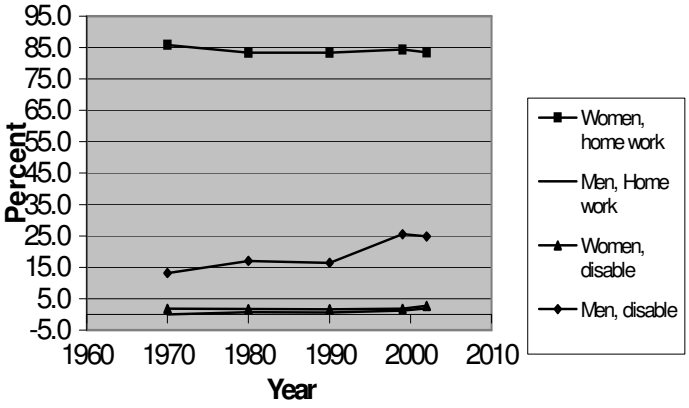


Figure 2. Labor Force Participation Rate: Puerto Rican Men and Women, and U.S. Men: 1971-2003.



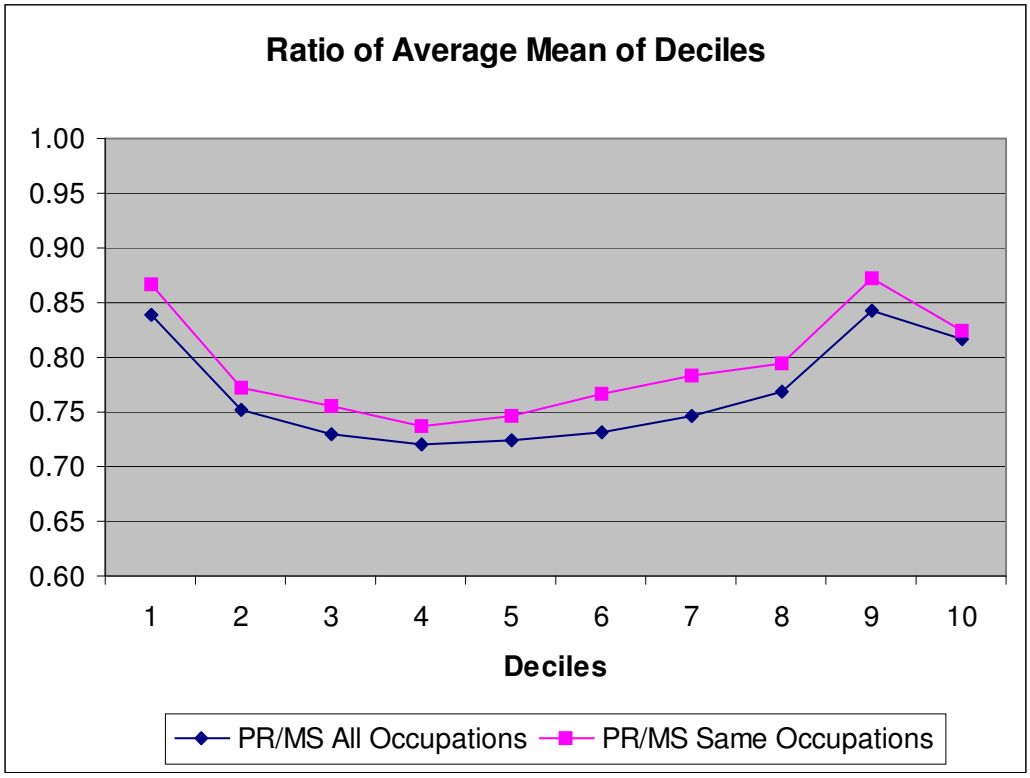
Source: Serie Histórica de Empleo y Desempleo, Años Naturales, 1970-2001, Negociado de Estadísticas, Departamento del Trabajo y Recursos Humanos, Estado Libre Asociado de Puerto Rico. Data for US are from the online data services of the US Bureau of Labor Statistics, http://data.bls.gov/PDQ/outside.jsp?survey=ce.

Figure 3: Principal Activity for those Out of the Labor Force, by Gender: 1970-2002



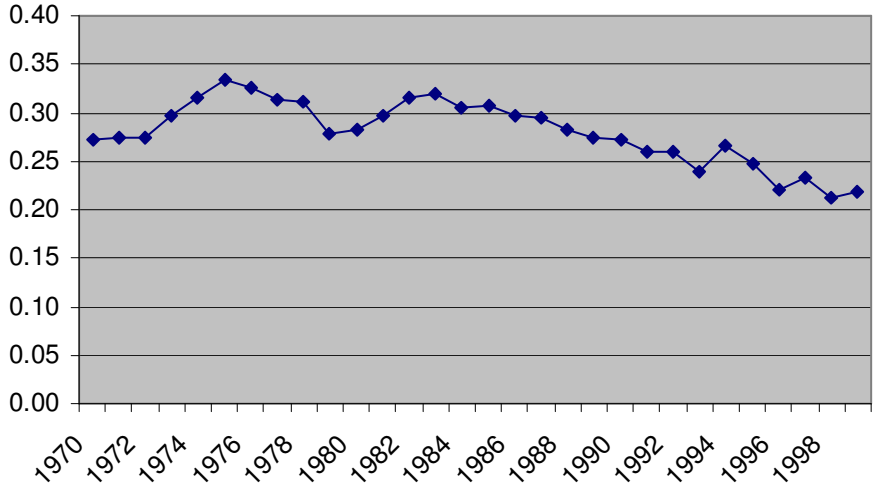
Source:Serie Histórica de Empleo y Desempleo, Años Naturales, (varios años) Departamento del Trabajo y Recursos Humanos, Negociado de Estadísticas, Estado Libre Asociado de Puerto

Figure 4: The Ratio of Earnings in Puerto Rico to Earnings in Mississippi, by Decile for Occupations, May 2003



Source: Tabulated from Bureau of Labor Statistics, Occupational Employment Survey

Figure 5. Percent of men out of the labor force, in no productive activity: 1970 to 2000



Source: These figures were calculated from information on labor force status from Series Histórica de Empleo y Desempleo, Años Naturales, 1970-2001, Negociado de Estadísticas, Departamento del Trabajo y Recrusos Humanos, Estado Libre Asociado de Puerto Rico

Appendix: Male Labor Force Participation by Age Group: 1970-2003, Puerto Rico and United States

	PUERTO RICO					UNITED STATES				
	≥16	25-34	35-44	45-54	55-64	≥16	25-34	35-44	45-54	55-64
1970	70.8	91.7	90.3	85.7	73.8	79.4	95.7	96.4	94.2	82.5
1975	64.6	88.7	86.2	79.6	61.0	78.2	95.2	95.6	92.1	75.7
1980	60.7	86.8	85.2	75.8	50.6	77.7	95.1	95.2	91.3	72.4
1985	58.4	85.9	84.5	77.5	50.5	76.5	94.7	95.1	91.0	68.1
1990	61.6	86.8	85.9	78.8	52.7	76.6	94.1	94.4	90.6	67.3
1995	61.2	86.6	85.2	76.1	53.8	75.3	93.2	92.4	89.0	65.6
1999	60.5	87.4	84.5	74.6	49.5	74.9	93.3	92.8	89.0	67.9
2000	59.2	N/A	N/A	N/A	N/A	75.0	93.7	92.6	88.7	67.1
2003	59.3	N/A	N/A	N/A	N/A	73.7	92.0	91.9	87.9	68.5
Change										
1999-1971	-10.3	-4.3	-5.8	-11.1	-24.3	-4.5	-2.4	-3.6	-5.2	-14.6

Source: Serie Histórica de Empleo y Desempleo, Años Naturales, 1970-2001, Negociado de Estadísticas, Departamento del Trabajo y Recursos Humanos, Estado Libre Asociado de Puerto Rico, Data for US are from the online data services of the US Bureau of Labor Statistics, http://data.bls.gov/PDQ/outside.jsp?survey=ce.