

Current Issues

IN ECONOMICS AND FINANCE

SECOND DISTRICT HIGHLIGHTS



Trends and Developments in the Economy of Puerto Rico *Jason Bram, Francisco E. Martínez, and Charles Steindel*

A two-year-long economic downturn and a persistent income gap with the U.S. mainland contribute to an uncertain outlook for Puerto Rico. Still, the commonwealth possesses a skilled and educated workforce, a favorable business climate, and the benefits of U.S. legal and financial structures—advantages that could encourage the development of new industries and create the potential for sustained growth.

Readers of this publication who are accustomed to thinking of the Federal Reserve System's Second District as New York State and nearby counties in New Jersey and Connecticut may be surprised to learn that the District includes the Commonwealth of Puerto Rico.¹ In this issue of *Second District Highlights*, we present an overview of Puerto Rico's economy, examining its basic characteristics, long-term industry and labor trends, and prospects for growth.

In our analysis, we apply many of the tools used to examine the economy of a U.S. state. After all, Puerto Rico's population of nearly 3.9 million exceeds that of twenty-four states, and its area of about 3,500 square miles, while small, roughly matches that of Connecticut. However, our analysis also recognizes that Puerto Rico possesses unique institutional and structural features—its location, status as a commonwealth, and large public sector—that set it apart from the fifty states. Its economy is unusual too in having

been directly influenced by federal legislation—most notably, section 936 of the Internal Revenue Code, which until its recent repeal provided incentives for the capital-intensive production of chemicals and pharmaceuticals.

Our look at the economy of Puerto Rico highlights some dramatic changes over the last half century: a shift away from agriculture, a large out-migration of people to the mainland United States, and the growth of certain sophisticated manufacturing industries. Despite economic advances, however, Puerto Rico remains considerably less affluent than any U.S. state. Indeed, while the United States as a whole and other parts of the Second District continued to grow through 2007, recent economic data suggest that the commonwealth's economy has contracted over the last two years.

Puerto Rico and Its Economy: Some Background

Commonwealth Status and Location

The institutional framework in which the Puerto Rican economy operates bears significant similarities to that of a state, but it also has some unique characteristics. Like a state, Puerto Rico is part of the U.S. banking and financial system and adheres to all U.S. international trade

¹ This assignment may seem more understandable if we consider that San Juan, the capital of Puerto Rico, lies nearly equidistant from the three Reserve Bank cities of Atlanta, Philadelphia, and New York, and is only modestly closer to a fourth, Richmond. The Second District also includes the U.S. Virgin Islands.

regulations and tariffs; labor and capital move freely between the island and the mainland, just as they do across state borders. Puerto Rico differs from the states, however, in that federal taxes are generally not levied on personal and corporate income earned on the island.

A key characteristic of Puerto Rico is its relative isolation from the U.S. mainland. San Juan is approximately 1,000 miles from Miami, the closest major U.S. city. The remoteness of Puerto Rico from the mainland has likely lessened its attractiveness as a location for firms siting operations to serve the broad U.S. market. Still, the bulk of Puerto Rico's trade is with the United States: for instance, more than 80 percent of the commonwealth's exports are to the states. Moreover, it is interesting to note that Puerto Rico is less isolated than either Hawaii or Alaska: Honolulu is about 2,500 miles from Los Angeles, and Anchorage, the center of Alaska's population, is roughly 1,400 miles from Seattle.

Migration and Current Human Resources

Midway through the twentieth century, Puerto Rico underwent a major transition from an agricultural to an industrial economy. This turnover in the economy prompted much of the island's population to migrate to the mainland United States, and especially to New York City. The heaviest out-migration occurred between 1950 and 1975, and the 1980s witnessed some return migration (Martínez, Máttar, and Rivera 2005). Nevertheless, on net, about one million people (equal to 45 percent of the island's 1950 population) moved from Puerto Rico to the mainland between 1950 and 2000. The effects of this large population outflow are widely debated in Puerto Rico. Some conventional wisdom holds that the island has suffered a "brain drain"—a loss of skilled workers—to the mainland. The economic literature on the topic, however, generally does not support this conclusion. In fact, studies suggest that in the 1950-70 period, those who left Puerto Rico for the mainland were largely rural residents, unable to find work in the industrial sector.

Other evidence that undercuts the notion of a brain drain is the steady growth in college-educated residents after 1970—a development seen as placing "substantial downward pressure on the relative wages of college-educated workers" (Ladd and Rivera-Batiz 2006). If the out-migration had drawn away a significant share of Puerto Rico's highly skilled workers, the relative wages of the more educated workers who remained on the island would have been under upward, not downward, pressure. Still, it is conceivable that emigration may have deprived Puerto Rico of people with skills that could have contributed to the island's development.

Fortunately, the displacement of the agricultural population did not result in a surge in the urban population, as it did in other developing regions, where the influx of rural residents put a severe strain on city infrastructure. The

Table 1
Educational Attainment, 2005

	Percentage of Population Aged 25 to 44	
	United States	Puerto Rico
Less than high school degree	13.2	17.9
High school degree	27.7	25.5
Some college	20.9	16.4
Associate's or bachelor's degree or higher	38.3	40.1

Source: U.S. Census Bureau, 2005 American Community Survey.

population of the San Juan metropolitan area grew 18 percent from 1950 to 2000²—a much more modest expansion than the 87 percent increase observed in the United States population as a whole. Moreover, the migration of the population has had some favorable consequences for the island economy: Puerto Ricans continue to receive remittances from relatives residing elsewhere in the United States, though as a share of personal income these payments have dropped from about 3½ percent in the 1950s and 1960s to a little more than 1 percent in 2006 (Puerto Rico Planning Board 2006). In addition, the large population on the mainland with close ties to Puerto Rico has likely helped create markets for goods and services produced on the island—for example, one major bank in Puerto Rico has an extensive mainland branch network.³

As for the current state of the workforce, we have already noted the increase in college-educated workers. The younger portion of the working-age population of Puerto Rico now has, on average, a level of educational attainment close to that of mainland residents (Table 1). While it is hard to generalize from such statistics, these characteristics suggest that the workforce may be comparable to that of much of the developed world.

Industry Profile

Agriculture now plays a small role in the commonwealth's economy. Employment data indicate that goods-producing industries such as construction and manufacturing are significant relative to U.S. norms (Table 2). Government also figures importantly: many utilities, educational services and, to a lesser extent, health services are supplied by government entities. In fact, the public sector's share of total employment is so large that it reduces industries like construction or manufacturing to a share of total employment that is little more

² See the U.S. Census of Population and Housing for 1950 and 2000.

³ Banco Popular maintains 144 branches in six states, including New York and New Jersey. Other Puerto Rican banks also have networks (although less extensive) in the United States and the U.S. Virgin Islands. Goya Foods, the principal producer of Hispanic food products in the United States, has a large processing plant in Puerto Rico, geared to the local and U.S. markets.

Table 2

Private Sector Employment, by Industry

Percentage of Total

	United States	Puerto Rico
Agriculture, forestry, fishing, and hunting	1.0	1.5
Mining	0.5	0.2
Construction	6.8	8.3
Manufacturing	12.5	14.9
Pharmaceutical manufacturing	0.3	3.7
Wholesale trade	5.2	4.4
Retail trade	13.7	18.4
Transportation and warehousing	3.7	2.3
Utilities	0.5	0.0
Information	2.7	3.1
Finance, insurance, and real estate	7.3	6.7
Professional and technical services	6.6	4.0
Management of companies and enterprises	1.6	1.5
Administrative and waste services	7.4	9.0
Educational services	2.0	3.3
Health care and social assistance	13.1	9.9
Arts, entertainment, and recreation	1.7	0.5
Accommodation and food services	9.9	9.4
Other private services	3.9	2.5

Source: U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

Notes: Industries in boldface type account for an above-average share of private sector employment in Puerto Rico. Data are as of May 2006.

than the U.S. average, even though these industries claim a notably high share of private employment. Within manufacturing, employment in pharmaceutical production is unusually high: nearly 4 percent of all private sector workers on the island are employed in this industry—more than ten times the mainland average. Educational services account for a substantial share of private sector jobs on the island. By contrast, employment in professional and technical service industries is relatively low, and even financial services' share is somewhat below average.

The high concentration of pharmaceutical employment appears to reflect incentives created by section 936 of the Internal Revenue Code, in force from 1976 to 2006. This rule exempted corporations from paying U.S. corporate income taxes on profits earned from sales of items produced in Puerto Rico.⁴ In practice, the provision appeared to encourage the siting in Puerto Rico of plants producing high-profit,

⁴ With the repeal of the section 936 provision, U.S. corporations operating in Puerto Rico have tended to alter their charters to take advantage of the provisions of section 901. Under this rule, U.S. corporate taxes on profits earned in Puerto Rico are deferred until the income is repatriated to the mainland parent.

easily transportable items such as pharmaceuticals and electronic components. To get the maximum benefit from section 936, manufacturing facilities in Puerto Rico tended to have relatively small and lower-wage workforces; other, higher-value-added components of the enterprises (such as management or research and development) generally remained elsewhere.

The share of employment in tourism-related industries—accommodation and food services, the arts, entertainment, and recreation—is below the mainland average, even though Puerto Rico can be viewed as an important tourist destination. Certainly, the deep connections between Puerto Rico and the mainland United States create considerable potential for travel and tourism to become a leading growth sector.

Economic Development and Income Profile

The current level of development in Puerto Rico is high by the standards of much of the world, but not relative to the United States as a whole. In 2005, median wage and salary income for full-time workers was barely one-third of the U.S. average and a bit less than two-thirds of the figure for Mississippi, the state with the lowest median income. By a different economic metric, output (or GDP), Puerto Rico appears somewhat more prosperous, with a per capita figure just short of half that for the United States as a whole. Output has performed better than labor income primarily because of the robust production of the capital-intensive “section 936 plants.” However, while the profits and other capital income earned by these establishments may be taxed by the commonwealth—and thus can contribute indirectly to the well-being of Puerto Rico—the income itself for the most part accrues to mainland U.S. owners. Thus, the wage and salary numbers, reflecting income directly earned by Puerto Ricans, likely give a better sense of the island's economic performance.⁵ Still, while wages are relatively low, home ownership rates are quite high: as of 2006, three-fourths of Puerto Rican households owned their homes, compared with two-thirds of households on the mainland. Moreover, an exceptionally large share of these homes—more than 60 percent, almost double the share on the mainland—had no mortgage debt.⁶

⁵ The FIRE (finance, insurance, and real estate) sector offers an especially pronounced contrast between employment and output, accounting for only 4 percent of employment in Puerto Rico but 17 percent of GDP (Puerto Rico Planning Board 2006); however, the output of this sector includes the imputed services supplied by owner-occupied housing.

⁶ See U.S. Census Bureau, 2006 American Community Survey, available at <http://factfinder.census.gov/servlet/ADPTable?_bm=y&-geo_id=04000US72&-qr_name=ACS_2006_EST_G00_DP4&-ds_name=ACS_2006_EST_G00_-&-_lang=en&-redoLog=false&-sse=on>.

Over the last thirty years, average weekly earnings of Puerto Rico's private sector workers have grown less rapidly than the earnings of their mainland counterparts, slipping from 63 percent of the U.S. average in 1977 to 55 percent in 2003 (Burtless and Sotomayor 2006). Thus, while the island has become substantially more prosperous, there has been no reduction of the large income gap with the United States. With the expiration of section 936 and the income inducements this provision created for corporations to locate in Puerto Rico, the persistence of the income gap has led to some rethinking of growth prospects for Puerto Rico.

On the institutional side, the prominence of government activity also has implications for the island's growth. Government or government enterprises account for nearly 30 percent of employment in Puerto Rico, nearly twice the mainland average of 16 percent. The large role of government in part reflects efforts to relieve poverty and to provide services such as medical care and utilities at a lower cost to groups unable to afford them otherwise.⁷ However, it also leaves Puerto Rico with a relatively high tax burden, despite the general exemption from federal income taxes.⁸ Indeed, even with this exemption, Puerto Rico collects about one-quarter of its gross product in taxes, a share that slightly exceeds the U.S. norm. Thus, a major issue for the commonwealth is balancing the burden that these high taxes may place on development against the benefits that government interventions provide to distressed groups.

Business Climate

Despite the tax burden, Puerto Rico's general business climate appears to be relatively favorable. In the World Bank's most recent poll of the "ease of doing business" in countries worldwide, Puerto Rico (considered separately from the United States) ranked nineteenth, higher than any Caribbean or Central American nation (World Bank 2006).⁹ The commonwealth scored particularly high on "starting a business," "protecting investors," and "paying taxes." It received relatively low marks, however, on "dealing with licenses" and "enforcing contracts."

On balance, Puerto Rico has a well-educated labor force and, despite the relatively large size of the government, a

more favorable climate for business than its Caribbean neighbors. Before discussing the potential growth sectors for Puerto Rico, we consider some current trends.

Recent Developments

Puerto Rico's business cycles have generally tracked those of the nation as a whole—a correspondence that may well reflect the close trade linkages between the island and the mainland. Private sector employment growth on the island fell sharply in each of the last three U.S. recessions, and bottomed out at roughly the end of the downturn on the mainland (Chart 1).

Given the close cultural and family links between Puerto Rico and New York City, one might also expect to find some parallels in the employment patterns of the island and the city. However, monthly employment numbers indicate that private sector job growth in Puerto Rico is somewhat more volatile than in the United States or New York City.¹⁰ And if we look beyond the monthly swings to the broad movements shown in Chart 1, we see that business cycle fluctuations in Puerto Rico tend to resemble those of the nation more than they do those of New York City.¹¹ For example, the 1982 recession was deep and prolonged in Puerto Rico and in the United States—but not in New York City. In addition, the 1990-91 recession was relatively deep in New York City but mild in Puerto Rico and the nation as a whole. The 2001 recession was also somewhat less severe in Puerto Rico than in New York City but more severe than in the nation. The ensuing recovery in Puerto Rico came sooner and was stronger than the U.S. recovery and markedly stronger than the city's recovery. Puerto Rico's substantial concentration in manufacturing, as well as its relatively light concentration in the financial sector so important to New York City, could help to explain why its cycle may have been more like the nation's than the city's over much of the past twenty-five years.¹²

Beginning in 2006 and continuing through the end of 2007, however, Puerto Rico's employment growth patterns diverged markedly from those of both New York City and the nation, showing considerably more weakness (Chart 1). As of January 2008, private sector employment on the island was down 1.1 percent from a year earlier and down 3.5 percent

⁷ Over the last decade, Puerto Rico has completely restructured its health care system. Primary patient care is now administered through publicly funded plans managed by private insurers, while tertiary and catastrophic health care continues to be provided through the public health service.

⁸ See Alm (2006) for a discussion of Puerto Rican fiscal issues.

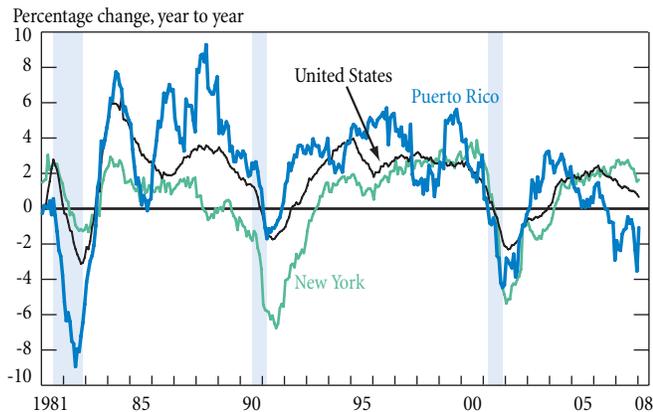
⁹ The United States ranks third in the poll. The World Bank samples data from the largest city of each nation. Thus, the U.S. data are taken from New York City and the Puerto Rican data from San Juan. It is certainly conceivable that the business climate is more favorable in Puerto Rico than in some other parts of the United States.

¹⁰ In the 1981-2007 period, the standard deviation of twelve-month growth is 3.3 percentage points for Puerto Rico, compared with 1.8 percentage points for the nation and 2.2 percentage points for New York City.

¹¹ The correlation between growth in Puerto Rico and the United States is 0.75 in the 1981-2007 period, compared with just 0.35 between Puerto Rico and New York City.

¹² These similarities and differences merit further investigation; to date, however, there seems to have been little systematic study of the business cycle in Puerto Rico and its relationship to the U.S. cycle and the commonwealth's own industry structure.

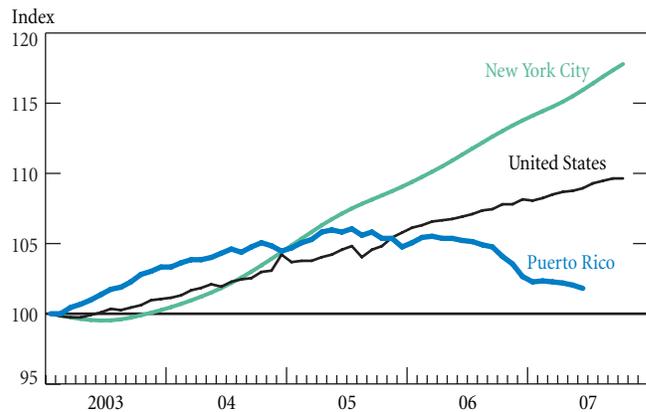
Chart 1
Private Sector Employment Growth



Source: U.S. Department of Labor, Bureau of Labor Statistics.

Note: Shaded areas indicate periods designated national recessions by the National Bureau of Economic Research.

Chart 2
Coincident Economic Indexes



Sources: Office of the Governor of Puerto Rico; Conference Board; Federal Reserve Bank of New York.

from its end-year 2005 cyclical peak. This observation is supported by a standard measure of high-frequency activity on the island, the coincident economic index (CEI). Like similar indexes used to gauge the performance of the U.S. and state economies, Puerto Rico's index combines the employment numbers with other series.¹³ As Chart 2 shows, Puerto Rico's CEI has been substantially weaker than the roughly comparable U.S. index compiled by the Conference Board and the index for New York City computed by the Federal Reserve Bank of New York. Commentators have suggested that Puerto Rico entered a recession near the beginning of 2006;¹⁴ by contrast, in the nation as a whole, payroll employment and overall output continued to grow throughout 2007, albeit more slowly than earlier in the expansion.

The decline in Puerto Rico's CEI has been driven primarily by the drop in reported private employment. Moreover, jobs lost in the private sector have compounded earlier job losses stemming from a public sector downsizing that reduced government employment by more than 5 percent between mid-2004 and mid-2006.¹⁵ Recent job numbers for Puerto Rico should be viewed with some caution, however:

payroll employment data tend to be revised substantially (see box). For example, the 2005 decline in employment emerged in the reported statistics only after the employment growth numbers for that year were revised downward a full 7 percentage points. Thus, given the uncertainty surrounding the data, a pattern of continuing job loss cannot be definitively established at this time. In fact, some contrary evidence comes from household survey data, which indicate that the unemployment rate remained steady at a little more than 11 percent through the end of 2007—up from earlier in the year but still low when compared with readings prior to 2000 (Chart 3). Still, the numbers as they stand point to deterioration in the Puerto Rican economy's recent performance, both in absolute terms and relative to the United States, and there is some contention that the island's business cycle has become disengaged from that of the mainland (Alameda 2007).

Moreover, other developments appear consistent with an economic downturn in Puerto Rico: as of second-quarter 2007 (the latest numbers available), growth in total wage and salary earnings was sluggish, up by just 3.0 percent from a year earlier, or well below the inflation rate. Housing markets have weakened noticeably; housing permits hit a seven-year low in 2006. Reports indicate that office vacancy rates have also risen.¹⁶

¹³ A full discussion of Puerto Rico's coincident index and its methodology can be found at <<http://www.jp.gobierno.pr/>>. Explanations of the methodology underlying the U.S. index and the New York City index can be found at <http://www.conference-board.org/pdf_free/economics/bci/BCI-Handbook.pdf> and <http://www.ny.frb.org/research/regional_economy/coincident_summary.html>, respectively.

¹⁴ See, for example, "Puerto Rico's Economic Slump Weighs Hard on Consumers—Cost of Living Surges As Inflation Helps Tip Island into Recession," *Wall Street Journal*, August 14, 2007.

¹⁵ Puerto Rico Department of Labor and Human Resources, Establishment Survey.

¹⁶ See <<http://www.puertoricowow.com/html/Archives/ArcDetail2.php?archID=22114>>.

Data on the Puerto Rican Economy

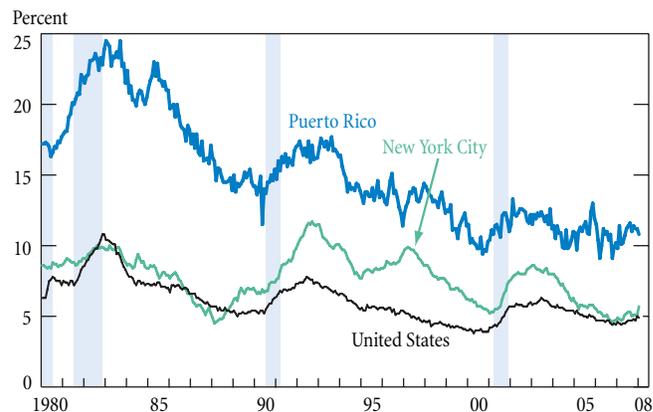
The economic statistics for Puerto Rico combine the qualities of state and national data. Fairly comprehensive data on Puerto Rico's household employment, payroll employment, and building permits correspond closely to the data gathered for the states. In addition, the commonwealth compiles numbers on inflation, manufacturing production, and gross product that are similar to those compiled for countries. (The gross product figures for Puerto Rico are, however, based on expenditure data, while the U.S. gross state product numbers are derived from income data.) Puerto Rico also produces figures on foreign trade, which—intriguingly—treat the United States as a foreign nation.

Although the dual nature of the Puerto Rican data might lead us to expect a richer set of information than that available for a state, the data pose some problems. Certain numbers are released with a considerable lag, are subject to substantial revision, or may be questioned on other grounds. For instance, the exact amount of exports from Puerto Rico to the United States—as well as the computation of the island's gross product and income—is dependent on the valuation of products and services imported for use as inputs in section 936 facilities. During the time this rule was in force, incentives existed to undervalue these imports so as to boost the product and aggregate income numbers. Price data are also subject to question: according to official estimates, consumer prices in Puerto Rico have risen at a double-digit rate since 2004, a dramatically faster pace than in the nation as a whole. One reason to view this assessment of price trends as inaccurate is that, until recently, Puerto Rican consumer prices were computed using a “basket” of goods and services surveyed in 1977. The use of this old basket would, according to the usual arguments on the construction of price indexes, lead to an upward bias in the estimate of price growth. Given the concerns about the quality of some numbers and the lags in reporting much of the data,^a analysts have tended to focus on the coincident economic index to track ongoing developments.

^aAnother problem is that the gross product figures are only computed on an annual basis.

What accounts for the apparent contraction of Puerto Rico's economy? Spillovers from the slowdown in sectors of the mainland U.S. economy such as manufacturing and homebuilding may have played a role, but factors specific to Puerto Rico have likely contributed as well:

Chart 3
Unemployment Rate



Source: U.S. Department of Labor, Bureau of Labor Statistics.

Note: Shaded areas indicate periods designated national recessions by the National Bureau of Economic Research.

- The repeal of the section 936 tax provision may be prompting some relocation of manufacturing from Puerto Rico. A portion of the drop-off in economic activity could thus reflect this one-time adjustment rather than a true cyclical decline or more fundamental long-term weakness.
- The shrinkage in the government sector could also be having some near-term negative effect on aggregate activity. As noted earlier, government employment was cut by more than 5 percent over 2004-06, a consolidation of the sector designed to ease the commonwealth's fiscal problems. Although some might argue that a smaller government would ultimately facilitate higher trend growth in the private sector, the job cuts in the short term could adversely affect growth by contributing to a reduction in government spending on goods and services.¹⁷

Growth Prospects for Puerto Rico

The longer term outlook for Puerto Rico is uncertain. Given the commonwealth's link to the United States, output in Puerto Rico is likely to grow at least in tandem with output on the mainland. However, the more substantive issue is whether, after the disappointing performance of the last generation, the income gap with the United States will narrow.

¹⁷Constant dollar spending on goods and services by the commonwealth government fell nearly 2 percent in 2006 (Puerto Rico Planning Board 2006). Since such spending in current dollars represents about 15 percent of Puerto Rico's GDP, the 2 percent decline lowered the island's real growth about 0.3 percentage point in 2007, from 1 percent to 0.7 percent.

In the near term, Puerto Rico seems to be experiencing a recession, and the repeal of section 936 of the Internal Revenue Code could be putting some further drag on the island's economy. The hope that Puerto Rico could overcome such problems and become the next Ireland—an island nation that, though long impoverished, has emerged as one of Europe's wealthiest countries—may not be realistic.¹⁸ One reason for skepticism is that in seeking a position in the Americas comparable to Ireland's in Europe, Puerto Rico could face strong competition from its Caribbean neighbors in the coming decades.¹⁹

A number of factors could, however, contribute to a more favorable outlook for Puerto Rico. The concentration of manufacturing in pharmaceuticals and electronics—a legacy of section 936—could be an impetus for further growth in these sectors since industry clusters are thought to increase productivity through the sharing of product and market information. Growth could also be achieved through the emergence of new industries. Indeed, some commentators have speculated that Puerto Rico, by virtue of its location, size, and association with the United States, may have significant comparative advantages as a premier tourist destination, regional center for financial and business services, and shipping and distribution

¹⁸ Puerto Rico is comparable in size and population to Ireland and shares with Ireland a history of out-migration and long-standing linkages to a much larger and wealthier entity (Bosworth and Collins 2006). Ireland's success has been attributed in part to low business taxes (OECD 2007). Interestingly, the structure of Puerto Rico's taxes is currently under review. In 2006, Puerto Rico replaced its excise tax on products made on or imported to the island with a sales tax; more recently, the governor proposed returning to a commonwealth-wide excise tax while retaining the municipal portion of the sales tax.

¹⁹ Haiti and the Dominican Republic are potential rivals, although at present they are substantially less developed than Puerto Rico. Jamaica may be a bit more comparable to Puerto Rico. And Cuba—were it to undergo a major shift in policy or regime—could become a significant competitor, with its well-educated population, appreciable resources, and familial connections with the United States.

²⁰ However, by some accounts, Puerto Rico's development as a shipping center will be hindered by the 1920 Jones Act, which requires that goods transported between U.S. ports—including shipments between Puerto Rico and the mainland—be carried in U.S. flag vessels. Nonetheless, a deep-water port facility now under construction in Ponce will be capable of handling very large “post-Panamax” ships.

center for the Caribbean and Latin America.²⁰ Finally, the island possesses certain fundamental advantages that create the potential for sustained growth: an increasingly skilled and educated workforce, a favorable business climate, deep familial connections to the mainland United States, and the benefits of U.S. legal, contractual, and financial structures. The challenge for Puerto Rico going forward will be to devise an appropriate set of policies and incentives to build on its many strengths.

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