Estudios Técnicos Inc.
Investigación | Estrategias | Soluciones

The Economy of Puerto Rico and Air Freight Trends

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Executive Summary

The challenges facing the Island's economy are serious and require a profound rethinking of its traditional economic model in line with global trends, the new constraints created by the Tax Cuts and Jobs Act and Puerto Rico's competitive capabilities. This will require moving away from the traditional dependence on tax incentives and manufacturing to an economy more oriented towards advanced services and intangibles.

There is the interest of projecting Puerto Rico's economy to the region and the global economy in general through an increased emphasis on exports and on Puerto Rico being a transportationhub for the region. The competition already exist. The three regional contries that compete with Puero Rico are Panama, Dominican Republic and Colombia. Their three main airports are already transfer hubs at different levels.

In the last two decades, the economy of Puerto Rico has suffered a deep and prolonged economic contraction, a steady decrease in the quality of life, outmigration of a significant proportion of its population, and of course the impact of Hurricane Maria. These factors make it imperative that an additional instrument of growth be developed. Real GNP growth for fiscal years 2018 thru 2022 is expected to be positive, albeit with significant downside risks.

Fiscal years 2019 and 2020 look poised to exhibit strong economic growth but it will be mainy as a result of the expected significant influx of federal funding for reconstruction after the hurricane. The question to ponder then is what will happen next.

The following trends have characterized Puerto Rico's air freight and passenger movements:

- Both, inbound and outbound freight from the LMM International Airport decreased in the period 1991-1999 (Fiscal years) at a CAGR of -1.7% and -1.0% respectively. The trend is reversed afterwards, when the movement of both increased at an average CAGR of 7.7%.
- The share of LMM International Airport (San Juan) in the total air freight volume of Puerto Rico has declined over time, while that of Borinquen Airport (BQN) has increased. The volume of freight handled by the other two local airports is nill.
- Consistent with the high degree of concentration of the pharmaceutical industry in the island's GDP and in the trade of merchandise, the great majority of the inbound and outbound air freight from LMM airport consist of pharmaceutical products.
- Although much of Puerto Rico's air freight trade is with the mainland, the foreign component is important, as indeed it would for the proposal under consideration.
- Most of the commercial airlines are from the U.S., but there are several foreign carriers. They provide regular service to and from several cities, mostly from Florida, New York/NewJersey, Texas, Atlanta, Chicago, Cincinnati, and Cleveland, the

Dominican Republic, Panama, and several Caribbean islands, plus Madrid and Frankfurt airports.

- Since fiscal year 2000, the volume of total passengers handled by Puerto Rico has trended downward. From a peak in fiscal year 2006 of 5.6 million outbound and 5.6 million inbound passengers, the volume decreased to 4.9 million outbound and 4.1 million inbound in fiscal 2017.
- Load factors at both airports – LMM increased over time, from 76.12 in 2005 to 86.42 in 2018 (LMM); in the case of Borinquen Airport it fell but slightly, from 87.35 to 86.42. Both factors are above the average for the U.S. and worldwide.
- After declining by fiscal year 2012, the number of tourist visitors rebounded, rising to 3.8 million in fiscal 2017.
- The great majority of the visitors to the island come from the Mainland (90.7%), with the states of New York and Florida occupying the top positions, followed by New Jersey. Visitors from foreign countries represent a small proportion of the total, 9.3% in 2017, with the Dominican Republic and Canada the two top countries of origin.
- Cruise passengers are one segment which have become an importat component of tourist visitors. Between 2000 and 2012 the total number of cruise passengers decreased, from 1.3 million to 1.0 million. Aftwerwards, there was an upward trend as the number of those in transit, that is, those that fly to SJ to take the cruise, has been increasing. As a matter of fact, their share in the total number of cruise passengers increased from 44.4% in 2000, to 73.% in 2018, while that of local residents declined.

According to data from the U.S. Department of Homeland Security, the number of persons entering Puerto Rico under the Visa Waiver Program, as tourist and business travelers, rose from 57,642 in 2012 to 61,852 in 2017.

There has been a significant shift in the industrial composition of Puerto Rico's economy. Although manufacturing still account for almost half of the island's production, the share of services has increased. The world's economy is currently undergoing a series of transformations, in which the rise of the tech sector is playing a leading role, with technological innovations substituting manual labor. At the same time, these transformations in employment provide the basis for, or reflect already-developing business opportunities.

The efforts related to amending federal legislation to exempt Puerto Rico from air cabotage restrictions is a key part of this effort. The purpose of this report is to provide the economic basis and sectoral background to support that goal.

Key Conclusion

The 2009 and 2015 reports reviewed and undertaken by InterVistas-EU presents evidence on the positive impact of liberalization of international air markets. Thus, the potential economic benefits for Puerto Rico do exist.

1 Introduction

The challenges facing the Island's economy are serious and require a profound rethinking of its traditional economic model in line with global trends, the new constraints created by the Tax Cuts and Jobs Act and Puerto Rico's competitive capabilities. This will require moving away from the traditional dependence on tax incentives and manufacturing to an economy more oriented towards advanced services and intangibles. One area in which Puerto Rico has important advantages is logistics, in particular related to air transportation, due to location and the availability of two extraordinary airport facilities, one in the Northwest of the Island and the other in the East. In addition, Puerto Rico provides a risk free environment compared to other countries in the region.

This brief document provides information on the Island's economic condition and on air freight. The data reflects the urgent need for rethinking Puerto RBico's economic development strategy. The present Adminsitration has focused on developing new approaches to the economy that emphasize technology based initiatives and, in general, advanced services. It has also focused on projecting Puerto Rico's economy to the region and the global economy in general through an increased emphasis on exports and on Puerto Rico being a hub for the region.

The competition already exist. The three regional contries that compete with Puero Rico are Panama, Dominican Republic and Colombia. Their three main airports are already transfer hubs at different levels, and have devised expansion plans according to the expected growth in worldwide and regional commercial and freight traffic, which is expected to double in the next 20 years.

Panama, for instance, is expanding its Tocumen Airport with new terminals and a new free trade zone next to the airport, and expanding the airport. Colombia's El Dorado, which is private, expanded and now they are developing a new one known as "El Dorado II. The airprt already is the first in Latin America in terms of the freight it handles. In the case of the Dominican Republic, it has two international airports: its main one, Las Américas, and in Punta Cana on the East coast, also a tourist center. The Las Américas airport is already a freight hub between Latin America, the U.S. and Europe, mostly "Belly cargo" of passenger aircrafts. In Punta Cana, a new "Cargo City" is being built next to the airport. Thre is an official Executive Decree (D 262-15), that establish the legal framework for the logistical centers.

The efforts related to amending federal legislation to exempt Puerto Rico from air cabotage restrictions is a key part of this effort.

2 Puerto Rico's Economic Performance Since the 1990's

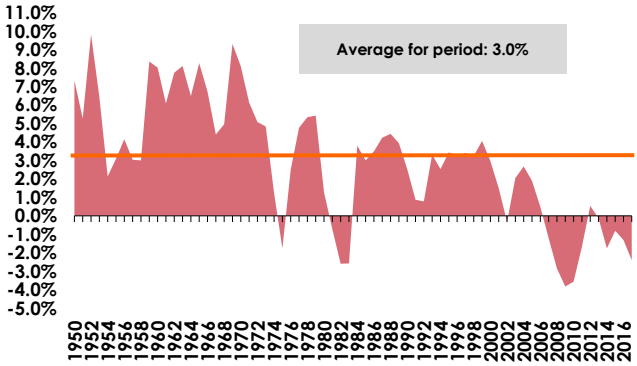
In the last two decades, the economy of Puerto Rico has suffered a deep and prolonged economic contraction, a steady decrease in the quality of life, outmigration of a significant proportion of its population, and of course the impact of Hurricane Maria. A Federal Fiscal Oversight Board was created by the PROMESA legislaiton with the purpose of dealing with the Island's Government debt of some $72 billion and monitoring fiscal policies conducive to balanced budgets.

2.1 Real growth – Economic stagnation

Real GNP growth in Puerto Rico has underperformed since the mid seventies, with the average annual growth in real GNP per decade since 1950 becoming progressively smaller for almost the entirety of the 1970-2017 period. Between the onset of the actual contraction in 2007 and 2017, the economy has contracted by 19.1%. In fiscal year 2017, real GNP contracted by 2.4%, and in fiscal 2018 growth was estimated to be near "0".

FIGURE 1

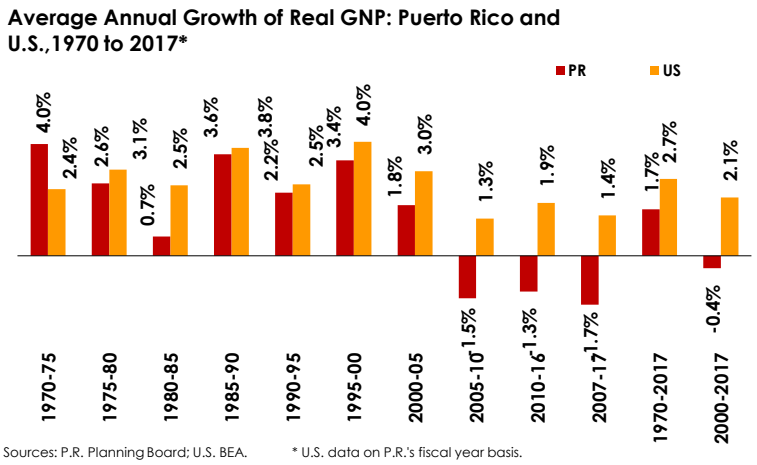
Real GNP Growth: 1950-2017 (Fiscal Years)



Sources:: P.R. Planning Board, *Statistical Appendix*. Table 1. Various years.

The growth gap between the local economy and that of the mainland has widened considerably since 2000. The performance of the U.S. economy does have an impact on our economy, but the impact has weakened (See Figure 2). During the second half of the 80s, P.R.'s real GNP growth averaged 3.6%, while in the case of the US it was 3.8%. Since 2000 until fiscal 2017, it declined at an average of 0.4%, while the US economy expanded at an average annual rate of 2.1%.

FIGURE 2



Sources: P.R. Planning Board; U.S. BEA. * U.S. data on P.R.'s fiscal year basis.

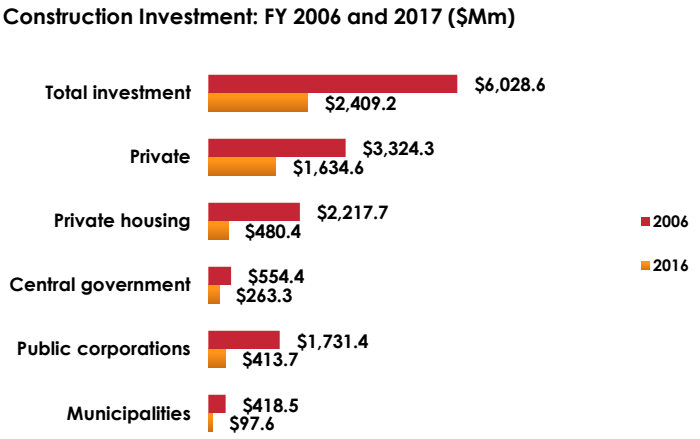
2.2 Investment in construction and housing activity

The one area in which the impact of the economic contraction has been felt most strongly is in fixed investment, in particular in construction. Between fiscal year 2006, the year before the start of the contraction, and 2017, total investment in construction decreased, from $6.0 billion to $2.4 billion, a reduction of $3.6 billion, representing 60.0% of the investment in 2006.

The biggest decline has been in public investment, which fell by $1,930 million as a result of the reduction of $1,317 million in investment by public corporations.

Private investment declined by $1,690 million, as investment in private housing fell by $1,737 million. In fiscal 2006, it accounted for 67.0% of the total private investment in construction; by fiscal 2017 the share fell to 29.4%.

FIGURE 3



Source: Puerto Rico Planing Board. *Statistics on Construction Investment*, Fiscal Years 2016 and 2017.

TABLE 1

GNP and its Components Growth
Fiscal Years 1990-2017

	GNP	Consumption	Government	Domestic Investment	Exports	Imports
1990	2.5%	2.0%	3.2%	1.4%	9.4%	6.4%
1991	0.9%	-1.2%	-0.5%	-7.7%	3.6%	-0.2%
1992	0.8%	3.7%	0.1%	6.9%	-3.3%	0.7%
1993	3.3%	5.0%	1.1%	8.6%	-4.2%	0.0%
1994	2.5%	5.0%	0.3%	5.4%	2.7%	4.5%
1995	3.4%	5.1%	7.0%	10.5%	3.6%	6.4%
1996	3.3%	6.2%	5.0%	3.0%	-5.4%	0.6%
1997	3.4%	5.8%	5.2%	13.8%	-2.5%	3.9%
1998	3.2%	4.4%	1.9%	-2.3%	11.7%	7.3%
1999	4.1%	5.4%	4.4%	33.1%	2.4%	8.8%
2000	3.0%	3.0%	-5.6%	-0.5%	6.9%	2.9%
2001	5.9%	1.0%	3.9%	1.2%	17.7%	10.0%
2002	-0.3%	2.6%	5.5%	-7.0%	-2.5%	0.1%
2003	2.1%	8.0%	2.5%	0.0%	5.8%	5.5%
2004	2.7%	4.2%	0.6%	7.7%	2.6%	4.2%
2005	1.9%	2.7%	4.1%	-3.9%	2.8%	2.4%
2006	0.5%	1.0%	-0.4%	-0.4%	6.2%	3.7%
2007	-1.2%	1.3%	-0.8%	-4.0%	-7.9%	-3.5%
2008	-2.9%	-1.2%	-4.7%	-7.9%	-1.3%	-1.7%
2009	-3.8%	-2.9%	2.5%	-12.5%	-3.6%	-3.2%
2010	-3.6%	1.4%	-3.4%	-7.8%	-3.9%	-0.5%
2011	-1.7%	1.5%	-2.2%	8.1%	-0.9%	2.1%
2012	0.5%	2.4%	1.3%	5.8%	-6.6%	-0.9%
2013	-0.1%	1.7%	-2.1%	-8.9%	-2.0%	-0.9%
2014	-1.8%	-3.1%	7.4%	-6.0%	-2.1%	-2.2%
2015	-0.8%	-2.6%	-10.5%	0.4%	3.8%	-1.4%
2016	-1.3%	-2.2%	-3.5%	-9.7%	2.0%	-1.6%
2017	-2.4%	-2.5%	3.3%	-4.4%	-0.2%	-0.8%

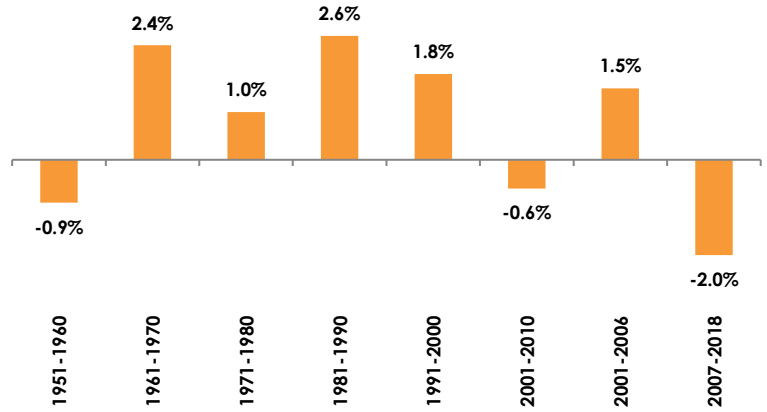
Source: Puerto Rico Planning Board (2019). *Statistical Appendix (various years).*

2.3 Employment and unemployment: the labor market

Growth in total employment (Household survey) since the 1980's first slowed down, from 2.6% in 1981-1990, to 1.5% during 2001-2006, to decrease then by an average of 2.0% during 2007-2018.

FIGURE 4

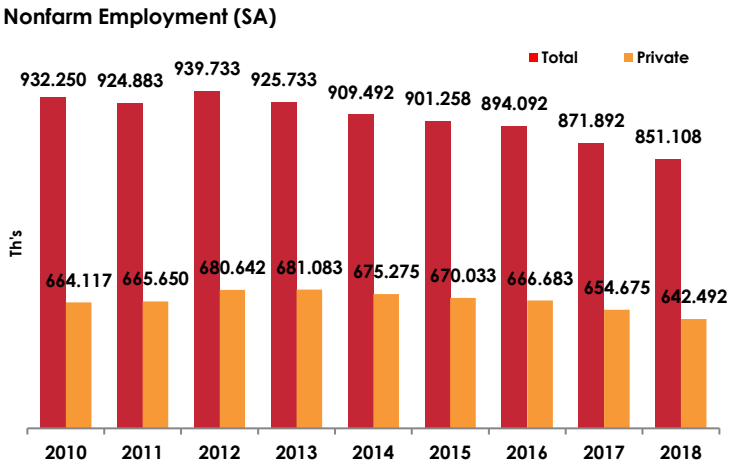
Average Growth of Total Employment per Period, 1951-2018



Source: Department of Labor and Human Resources, Employment and Unemployment, Household Survey. NSA = Not easonnally adjusted.

Between 1990 and 2005, total nonfarm employment increased, from 846,900 to 1.052 million in 2005, led by a steady increase in private employment. Afterwards, it decreased as both, private and public employment fell, from a high of 939,733 in 2012 to 851,108 in 2018. Today, total employment is almost back to its 1990 level.

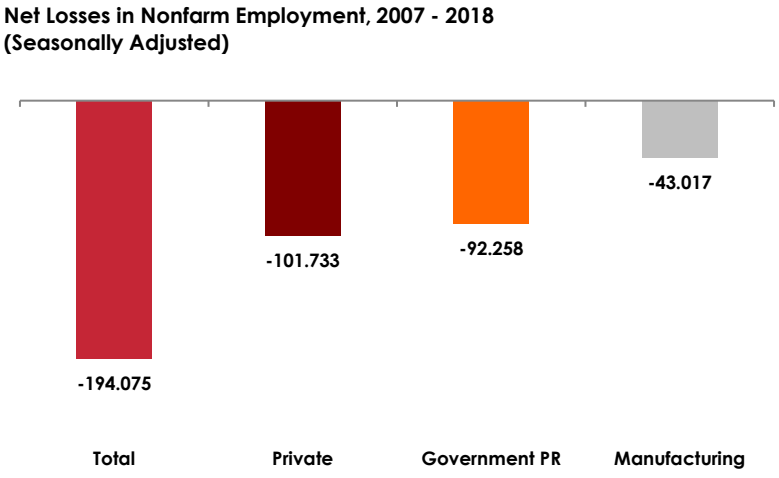
FIGURE 5



Source: P.R. Department of Labor, Establishment Survey.

As a result of the contraction (Plus the after-effects of Hurricane María), since 2007 there has been an accumulated net loss of 194,075 jobs (Nonfarm salaried), of which 52% were in the private sector, with 48.0% coming from the government sector (Central Government public corporations and municipalities). Manufacturing employment accounted for 42.3% of the job losses in the private sector.

FIGURE 6



Source: U.S. BLS (2019). Establishment Survey.

Notwithstanding the recent improvements, the trend for the greater part of the period after 1990 was one in which the situation in the labor market deteriorated rapidly after

2006, with a steep decline in the employment rate, a higher unemployment rate compared to the previous period, a rapidly deteriorating labor force participation rate, from an already very low level, and a decreasing employment rate. Let's examine the employment rate, an excellent indicator of employment in an economy since, for one, it does not ignore the labor force dropouts (See Table 2).

TABLE 2

Unemployment, Employment and Labor Force Participation Rates: Averages for the Periods

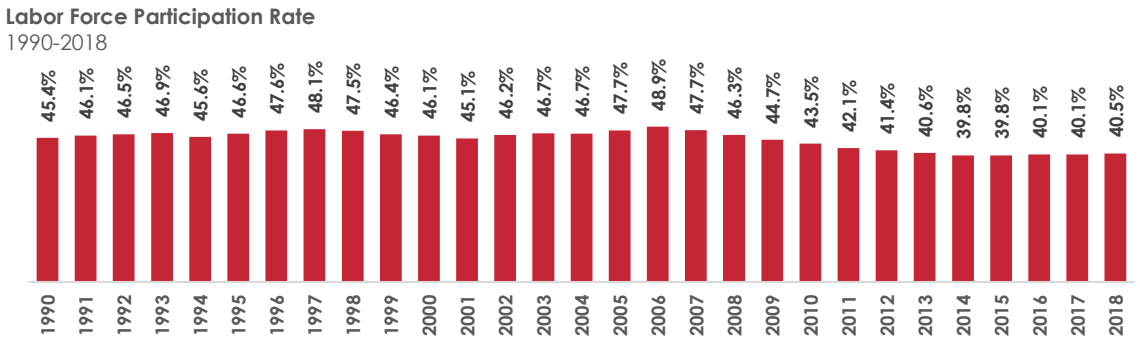
	Unemployment Rate	Labor Force Participation Rate	Employment Rate*
1990-99	14.4%	46.7%	39.9%
2000-05	11.3%	46.4%	41.2%
2006-18	12.9%	42.7%	37.2%

Source: P.R. Department of Labor and Human Resources. Household Survey.

* Proportion of those in the 16-64 age groups employed.

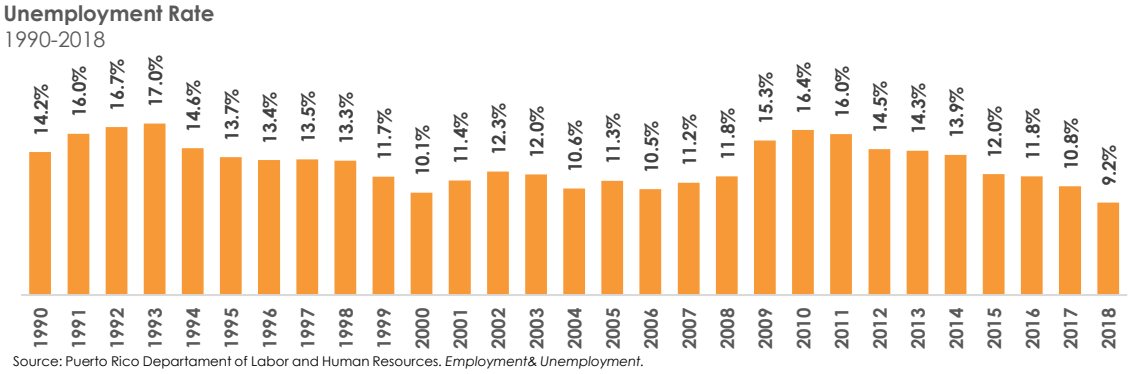
The unemployment rate decreased between 2000 and 2005 Between 1990 and 2005, to move up later, on average. Between 2006 and 2018 the employment-to-population ratio (ER) decreased, from an average of 41.2% during the period 2000-2005 to 37.2% in 2006-2018. In other words, the proportion of the working-age population (16-64) with a job declined. The total population decreased over time, which would favor a higher employment rate. That did not happen, suggesting that employment was even more sensitive to the economic contraction, but also other factors such as increased use of technology had an impact.

FIGURE 7



Source: Puerto Rico Departament of Labor and Human Resources. *Employment& Unemployment.*

FIGURE 8



Source: Puerto Rico Departament of Labor and Human Resources. *Employment& Unemployment.*

The decline in the general labor force participation rate brings out another issue, namely, what is happening to those not in the labor force. The data available from the Household Survey (NSA) provides a breakdown, by employment category, of the civilian non-institutional population of those out of the labor force. In Figure 10 we present a comparison between calendar 2007 and March 2017.[1]

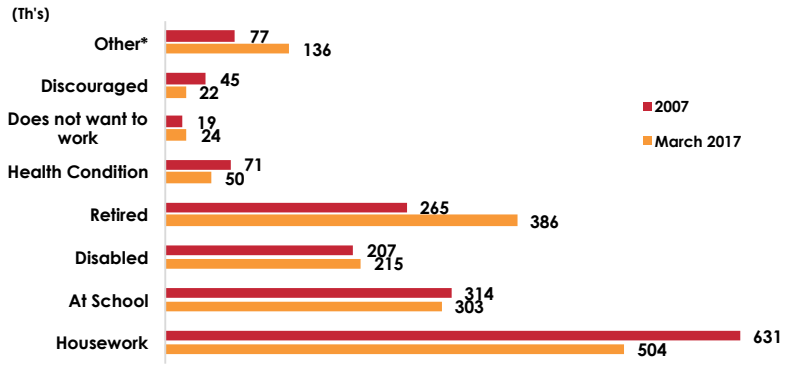
The first thing that strikes one is the significant increase in the share of those retired, from 16.3% in 2006to 24.0% in 2017, followed by a slight increase of those classified as disabled. Both categories represented 37.0% of the total out of the labor force in 2017, from 29.0% in 2007. On the other hand, the proportion of those leaving the labor market, the marginally attached, - a term describing those who want a job, are available to work, have looked for work in the previous year, but recently stopped looking - declined.[2] The number of discouraged workers decreased, from 45,000 in 2007 to 22,000 in March 2017, and so did its proportion in the total of those out of the labor force, from 2.8% in 2007 to 1.4% in March 2017. The number of those who did not want to work rose by 5,000. The share of the categories of nonparticipants that absorbed a large proportion of those leaving the labor force, housework or at school, and could enter or reenter the labor market and push up the unemployment rate again declined, from 58.0% in 2007 to 49.5%.

[1] We use the year 2007 since in May of 2006 there was the partial shutdown of the central government, so estimates for that year are affected by that development.

[2] The employment data published by the Department of Labor of those that have looked for work in the previous year but stopped looking is included in the category of Other. As this category increased in 2017, it is possible that their number also increased, which would be a further sign of a weak labor market.

FIGURE 9

Population Out of the Labor Force, by Detailed Status



Source: PR Department of Labor and Human Resources (2008). *Empleo y Desempleo en Puerto Rico 2007 and March 2017.* * New status categories were added after 2007.

That increase in the number of retired in all likelihood represents to a great extent the rise in retired government employees following the contraction in public employment, and was a contributing factor in the decline of the general LFPR. Thus, the decline in the labor force, from 1.4 million in 2007 to 1.1 in March 2017, reflects not only the impact of emigration but also, and it seems in a greater proportion, the increase in the number of those classified as retired, which was 121,000 persons.

2.4 Income and poverty – The rise of income inequality

The issue of income inequality has acquired great prominence in the past several years, becoming today one of the most widely and controversial issues. It has assumed increased presence in social and economic issues due to the social and economic impacts of the recent recession, and the comparative study by Thomas Piketty (2014) on the subject.[3] Inequality is very important since it depresses demand due to the fact that those at the lower end of the income scale have higher propensity to consume, than the top earners.

Income inequality, or the distribution of wealth, broadly speaking, can take various forms. For instance, inequality in lifetime spending power could be more important than inequality in current incomes and wealth, which are the usual measures, since they change over the course of a life. That might be, but as Auerbach et.al. (2016) suggest, measures of inequality based on current incomes and wealth are misleading, not giving a true picture of the problem.

There are more traditional measures of income inequality that provide a picture at the society level, for instance, the well-known Gini coefficient.[4] The Gini coefficient is a very

[3] Thomas Piketty (2014). **Capital in the Twenty-First Century**. Cambridge, MA., The Belknap Press of Harvard University Press.

[4] The Gini index is a measurement of the income distribution of a country's residents. This number ranges between 0 and 1, with 0 representing perfect equality and 100 representing perfect inequality. It is typically expressed as a percentage. The Gini coefficient measures relative, not absolute, wealth. The index provides a convenient summary measure of the degree of inequality. It should be said that the index is affected by taxes and benefits. The index usually used is that before taxes, but a more adequate measure would be that after taxes and including social benefits, progressive taxes.

useful indicator for the analysis of income distribution within a country or region. It should not be mistaken for a measurement of the distribution of wealth.

TABLE 3

GINI Coefficient for Puerto Rico and Selected Jurisdictions, 1999 - 2015

	1999	2009	2010	2011	2012	2013	2014	2015
PR	**0.574**	0.532	0.537	0.531	**0.533**	**0.547**	0.547	0.559
U.S.	0.476	0.469	0.469	0.475	0.476	0.481	0.480	0.482
Alabama		0.471						0.481
Florida		0.469						0.487
Hawaii		0.425						0.435
Luisiana		0.473						0.491
New York		0.502						0.514
Tennessee		0.467						0.479
West Virginia		0.463						0.458
Argentina		0.453					0.427	
Brazil		0.539					0.515	
Costa Rica		0.510					0.485	
Canada*		0.337					NA	
Chile**		0.520					0.505	
Ireland***		0.328					0.325	
Israel*		0.428					NA	
México****		0.482					0.482	
Dominican Republic**		0.489					0.473	

* 2009 corresponds to 2010. ** 2014 corresponds to 2013. *** 2014 corresponds to 2012. NA = Not available.

**** 2009 corresponds to 2007.

Sources: U.S. Bureau of the Census, American Community Survey Briefs, various years; Puerto Rico Community Surveys; Jorge M. Mattar and Pedro J. Rivera, cords. (2005), *Globalización y desarrollo: desafíos de Puerto Rico frente al siglo XXI*, CEPAL, Santiago de Chile, ch. IV, section C, p. 222; World Bank (2017), DataBank World Development Indicators, GINI Index WB Estimate (Extracted May 23, 2017).

Among U.S. jurisdictions inequality in Puerto Rico is the highest.[5] In 2006, it ranked second in the top 10 jurisdictions with the highest Gini coefficient; by 2015 it is the U.S. jurisdiction with the highest Gini.[6] With respect to other economies in the region, Puerto Rico is among those with more inequality, surpassing those in table 3.[7] There has been an improvement in the index but marginal, from 0.574 in 1999, to 0.559 in 2015.

Not only is the Gini coefficient high, but the percentage of the population below the poverty line has also increased. In 2005, 44.9% of the population reported being below the poverty level, increasing to 45.2% by 2012, decreasing slightly to 44.9% in 2017. Nevertheless, poverty remains high. (See Figure 11).

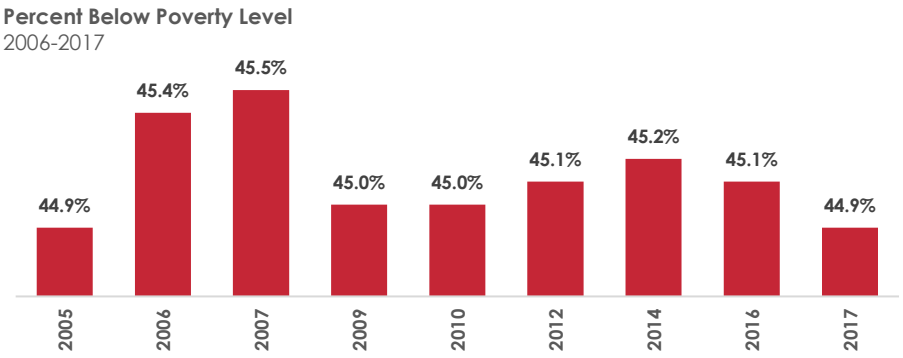
The study cited of Auerbach et.al. (2016), for instance, find less inequality than the standard measures show in the U.S. In accounting for this difference: progressive taxes and benefits play a big role. In this regard, the CEPAL (ECLAC) study cited finds that Federal transfers to individuals are a mitigating factor in Puerto Rico's poverty and inequality. See also see chapter 3, *Labor supply and public transfers*, by Gary Burtless and Orlando Sotomayor, in Susan M. Collins, Barry Bosworth and Miguel A. Soto-Class (Eds.) (2006), **The Economy of Puerto Rico – Restoring Growth**, CNE/Brookings, Washington, DC.

[5] For an overview on the subject of inequality and poverty in Puerto Rico, see Jorge M. Mattar and Pedro J. Rivera, cords. (2005), **Globalización y desarrollo: desafíos de Puerto Rico frente al siglo XXI**, CEPAL, Santiago de Chile, ch. IV, section C, at http://www.cepal.org/es/publicaciones/37894-globalizacion-desarrollo-desafios-puerto-rico-frente-al-siglo-xxi Harold Toro, "Inequality in Puerto Rico – Facing the Challenges," *ReVista – Harvard Review of Latin America* (Spring 2008), at https://revista.drclas.harvard.edu/book/inequality-puerto-rico; Eileen V. Segarra Alméstica (2012), *What happened to the distribution of income in Puerto Rico during the last three decades of the XX Century*, Departamento de Economia UPR, Series de Ensayos, at https://www.google.com.pr/search?q=Gini+coefficient+Puerto+Rico+2000&ie=utf-8&oe=utf-8&gws_rd=cr&ei=xFskWY-jKoHimAG6pajgBw.

[6] Kirby G. Posey (2016). *Household Income: 2015*. American Community Survey Briefs, U.S. Bureau of the Census ACSBR/15-02 (September 2016), table 1. At: https://www.census.gov/content/dam/Census/library/publications/2016/demo/acsbr15-02.pdf

[7] A situation that has not changed by much since at least the late 1990's. See CEPAL (2005), p. 222.

FIGURE 10



Source: U.S. Census Bureau (2019). *American Community Survey* [Table s1701].

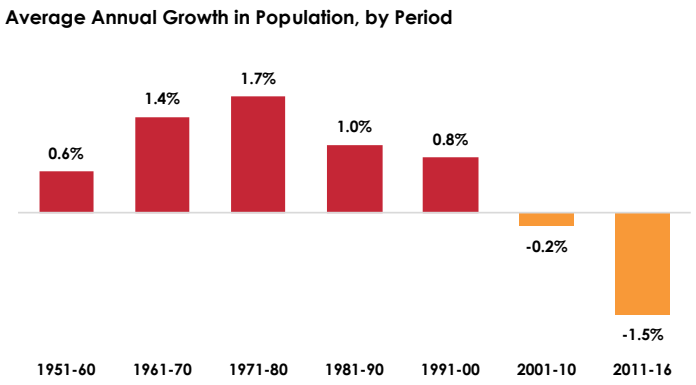
2.5 Population and demographics

There are two key demographic trends characterizing Puerto Rico since the early 2000's: a major reduction in the population - mostly due to emigration, as well as a very low birth rate - and a resulting acceleration in aging.

2.5.1 Demographic downsizing

Long-term population has been consistent with GNP growth during the first three post WW II decades, with high population growth during the expansionary phase of the economy, and declines as economic conditions weakened.

FIGURE 11



Sources: U.S Census Bureau (2016). *Decennial Census (Various Years); ACS Annual estimates.*

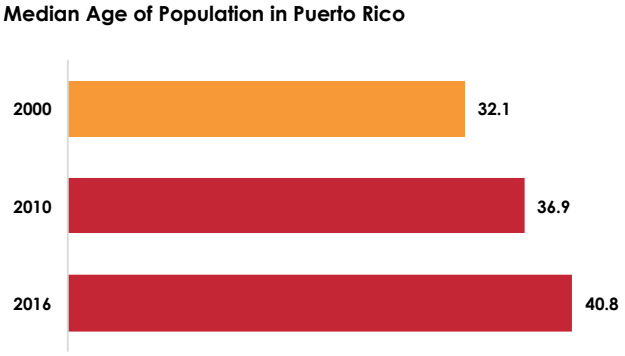
Average population increases began to slow from 1981 onwards, coinciding with the structural reduction in average GNP growth for the same period.

2.5.2 Accelerated aging of the population

Until 2000 the population in Puerto Rico had remained relatively young, with a high percentage in the 25 to 34-age cohort, and a noticeable decline in older cohorts. By 2010, the population showed signs of a profound and accelerated aging process; the population younger than 34 years old had declined by approximately 243,000 individuals, while the population 45 years and over increased by almost the same amount (233,000

individuals). Between 2000 and 2016, the median age of the population increased to 40.8 from 32.1 in 2000.

FIGURE 12

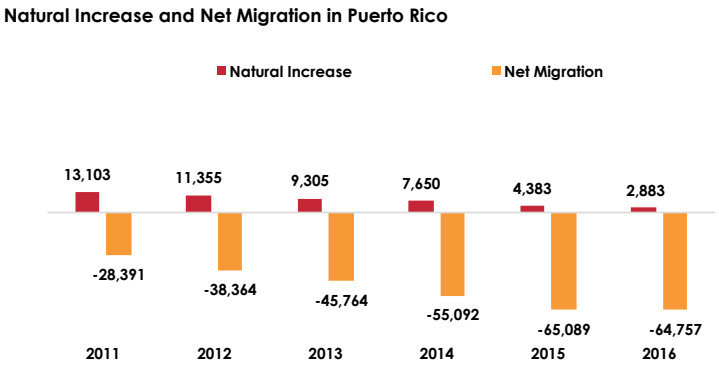


Source: U.S. Census Bureau (2017). *2000 & 2010 Census (Table P13), American Community Survey 5-year Estimates (Table B01002).*

2.6 Emigration

The issue of increasing emigration and its socio-economic implications is well known. Net out migration has been increasing since at least 2010. In 2007. the number of emigrants to the U.S. was 47,070 in 2007 but by 2016 that number increase to over 93,000.[8]

FIGURE 13



Source: US Census Bureau (2016). *Annual Estimates of the Components of Resident Population Change (Various years).*

Between 2011 and 2015 there was an accumulated net migration of 232,700, with an additional 65,000 in 2016. The high emigration also catalyzed the aging trends in the island. According to the *Puerto Rico Migrant Profile 2015*, 51.8% of the emigrant population belonged to the 18-44 years or older age cohort.

2.7 Government finances

At least since fiscal 2000, public finances including both expenditures and debt, have reached critical levels, with the resulting imposition last year of the Fiscal Oversight and Management Board (FOMB). Between fiscal year 2000 and 2017, while net revenues to the

[8] U.S. Census Bureau, ACS 1-Year Estimates, various years.

General Fund increased at a CAGR of 1.8%, the debt of the central government (not including public corporations) rose at an annual rate of 7.9%, and nominal GNP grew at 3.2%. This explains why the ratio of total public debt to GNP increased from 58.4% in fiscal 2000 to 97.5% in 2017.[9] Expenditures and debt increased at a much faster pace than revenues.

The end-result has been a government seeking "bankruptcy protection" through Title III of PROMESA. It has been required to incorporate stringent fiscal adjustment measures to its 2018 Budget, and to restructure its debt, including that of several of its public corporations, with a time-line for adjustments and economic recovery extending through fiscal 2026 at the very least.[10]

TABLE 4

Total Public Debt in Circulation of Puerto Rico ($Mm)

FY	GO's	Public Corporations	Municipal	Extra Constitutional	SUT (COFINA)	Total Central Government*	Gross Public Debt**	Other Debt***	Total	Annual Growth	Total/GNP	GPD/GNP
2000	$5,348.9	$13,431.6	$1,464.4	$3,576.8		$8,925.7	$23,821.7	$367.1	$24,188.8		58.4%	57.5%
2001	$5,573.4	$13,699.1	$1,632.2	$4,310.1		$9,883.5	$25,214.8	$1,944.8	$27,159.6	12.3%	60.2%	55.9%
2002	$5,853.8	$15,124.1	$1,795.8	$5,192.7		$11,046.5	$27,966.4	$2,046.2	$30,012.6	10.5%	65.2%	60.8%
2003	$6,222.1	$15,889.8	$1,955.1	$5,640.0		$11,862.1	$29,707.0	$2,817.5	$32,524.5	8.4%	67.1%	61.3%
2004	$6,878.7	$18,040.6	$2,046.0	$6,977.3		$13,856.0	$33,942.6	$3,491.0	$37,433.6	15.1%	72.2%	65.5%
2005	$7,307.1	$19,234.1	$2,181.3	$7,980.5		$15,287.6	$36,703.0	$3,565.3	$40,268.3	7.6%	73.4%	66.9%
2006	$7,276.3	$20,449.5	$2,330.3	$9,557.5		$16,833.8	$39,613.6	$3,522.7	$43,136.3	7.1%	74.6%	68.5%
2007	$8,167.2	$24,159.4	$2,463.0	$5,203.5	$2,825.2	$16,195.9	$42,818.3	$3,365.0	$46,183.3	7.1%	76.2%	70.6%
2008	$8,758.7	$26,342.4	$2,819.4	$2,683.1	$6,328.6	$17,770.4	$46,932.2	$6,460.7	$53,392.9	15.6%	85.2%	74.8%
2009	$9,006.4	$26,640.8	$2,997.3	$2,759.6	$11,575.9	$23,341.9	$52,980.0	$5,434.9	$58,414.9	9.4%	91.8%	83.3%
2010	$9,511.2	$27,287.9	$3,231.4	$2,574.9	$14,217.6	$26,303.7	$56,823.0	$5,383.2	$62,206.2	6.5%	96.8%	88.4%
2011	$9,681.6	$28,118.1	$3,537.0	$3,070.0	$14,535.4	$27,287.0	$58,942.1	$5,337.1	$64,279.2	3.3%	97.8%	89.7%
2012	$10,945.0	$30,801.0	$3,872.0	$3,160.0	$15,982.0	$30,087.0	$64,760.0	5,188.00	$69,948.0	8.8%	102.7%	95.1%
2013	$10,599.0	$31,208.8	$3,882.0	$4,043.5	$15,223.8	$29,866.3	$64,957.0	5,086.01	$70,043.0	0.1%	101.6%	94.2%
2014	$13,400.7	$30,311.8	$4,193.0	$3,943.7	$15,224.0	$32,568.4	$67,073.2	$4,993.8	$72,267.0	3.2%	105.0%	97.5%
2015	$13,060.8	$29,424.2	$4,126.1	$4,047.5	$15,223.8	$32,332.1	$65,882.4	$4,934.6	$71,217.0	-1.5%	102.3%	94.7%
2016	$12,663.6	$27,641.2	$3,732.7	$4,609.7	$15,174.2	$32,447.5	$63,821.4	$4,684.6	$68,906.0	-3.2%	98.1%	90.9%
2017	$12,664.0	$27,591.1	$3,724.0	$4,665.0	$15,174.0	$32,503.4	$63,818.5	$4,665.0	$68,835.0	-0.1%	97.5%	90.4%
CAGR	5.2%	4.3%	5.6%	1.6%	18.3%	7.9%	6.0%	16.1%	6.3%			

Sources: Government Development Bank; OMB, Budget Requests, various years.

* Consist of the GO's, SUT, and the Extra Constitutional. ** Total central government plus municipal.

*** Debt paid with federal funds from the Housing and Urban Development Department, and the funds received through the federal agreement with the tobacco companies.

2.8 Federal funds

Federal policies have a direct impact on P.R.'s economy mostly through expenditure decisions, but also through fiscal policy decisions. Changes that are enacted can impact the local economy through spending levels, as the flow of federal funds has acquired a dramatic dimension. For instance, they represent 23.0% of the consolidated budget, and 17.0% of disposable personal income. Overall, they represent about 27.3% of the Island's GNP. Moreover, Changes in or enactment of new fiscal policies can have significant impacts on the flows of federal spending, and investment, for instance, through government spending.[11]

[9] It is worth noting, though, that these figures do not take into account P.R.'s unfunded pension liabilities, which by 2016 it is estimated amounted to $42.0 billion, and also do not include interest.

[10] In essence, the process from a budget deficit to a sustained period of balanced budget is a fiscal adjustment. It is a reduction in the government primary budget deficit (Based on recurrent expenditures and recurrent revenues). It can be achieved through a reduction in government expenditures, an increase in tax revenues, or both simultaneously.

[11] Government spending consists of consumption expenditures (goods and services), transfer payments (social security, unemployment insurance, veteran's benefits, and other transfer payments), and gross fixed investment.

During the period between fiscal years 2009 and 2016, the economy of Puerto Rico had an inflow of federal funds, and from other sources, of about $147.0 billion (See Table 5). These inflows (Receipts) in all likelihood exceeded that of external direct (Non-financial) investment to the Island. The total represented 27.3% of the GNP (Gross National Product) for that period.

TABLE 5

Inflows of Funds Received by the Economy of Puerto Rico During 2009 - 2016

Funds	Amount ($Mm)	Dist. %	As a % of GNP During Period
ARRA Funds - Total	$7,156.8	4.9%	1.3%
Received by ELA and Municipalities	$4,160.1	2.8%	0.8%
Destined to Individuals	$1,430.0	1.0%	0.3%
Channelled through Federal Agencies	$1,405.8	1.0%	0.3%
Private Organizations and Non-Profit Institutions	$160.9	0.1%	0.0%
Local Stimulus Fund (2009 - 2010)	$500.0	0.3%	0.1%
Reduction of individual and corporate taxes (Tax Reform 2011)	$706.0	0.5%	0.1%
Subtotal	**$8,362.8**	5.7%	1.6%
Federals Funds (Receipts)*	**$138,720.2**	94.3%	25.7%
Individuals*	$114,883.2	78.1%	21.3%
Central government, agencies, public corporations and municipalities**	$19,346.6	13.2%	3.6%
For infrastructure (PREPA and PRASA)	$1,760.5	1.2%	0.3%
Municipalities (Communal Development)	$909.5	0.6%	0.2%
Subsidies to industries (Public corporations) and WIA	$1,820.4	1.2%	0.3%
Total	**$147,083.0**	**100.0%**	**27.3%**

Sources: P.R. Planning Board (2017), *Statistical Apendix 2016*, tables 21 - 22; Working Group for the Fiscal and Economic Recovery of Puerto Rico, Puerto Rico's Fiscal and Economic Crisis (Marzo 1, 2016), p. 2.

* Does not include receipts from ARRA, which are included above. and from state governments, and civil service pensions.

** Includes U.P.R.

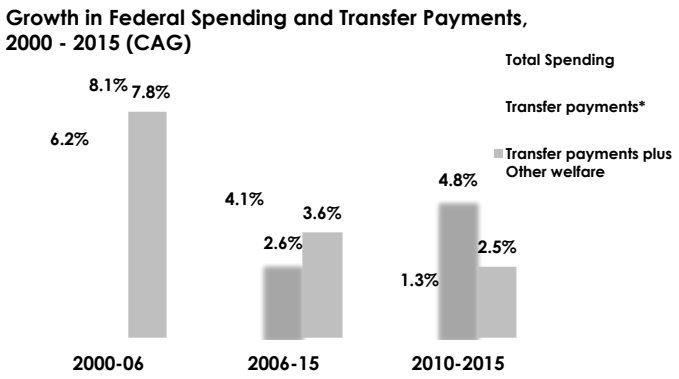
As can be seen in the table, the sources were various but can be grouped into several categories: those that came through the American Reconstruction and Recovery Act (ARRA), the local Stimulus Fund, using bond proceeds from the Puerto Rico Sales Tax Financing Corporation (COFINA), from the reduction in tax rates for individuals and corporations through the Tax reform of 2011, and from Federal funds to individuals, the Commonwealth, and municipalities.

The majority, as reflected in the above table, (92.3%) were Federal funds, amounting to $138.7 billion, of which 78.0% were received by individuals (Mostly corresponding to Social Security and Medicare payments, for which individuals paid while working, followed by food stamps, and scholarships). Given the high propensity to consume in Puerto Rico, it is safe to assume that most of that money went to personal consumption, representing on average 88.0% of the Island's GNP. This huge amount of funds has sustained domestic consumption even in the midst of the prolonged contraction in the economy.

With respect to federal expenditures, the pace of growth of spending by the Federal government in transfer payments has declined.[12] During the period 2000-2006, total federal spending increased at a compound annual rate of growth of 6.2%, while transfers' payments increased at a higher rate (See Figure 14). In the following period (2006-2015), which includes the Great Recession (2007-2009), growth of expenditures slowed to 4.1%, with that of transfer payments below the growth of total spending.

[12] Estudios Técnicos (2016), p. 72.

FIGURE 14



Source: www.usgovernmentspending.com. * Social Security, Medicare and Medicaid.

2.9 Damages from Hurricane Maria

Estimates from Estudios Técnicos, Inc. (2018) of the total economic impact of were from $53.8 billion to $67.6 billion. Losses of throughput (business activity) alone amount in excess of $15 billion, with infrastructure damages totaling $19.6 billion.

TABLE 6

Concept	Impact Maria (Lower Bound)	Impact Maria (Upper Bound)
Infrastructure Damage	$15,506	$19,553
Electric	$1,450	$1,800
Water	$60	$75
Transportation	$100	$120
Housing & Other Structures	$13,496	$16,991
Communications	$400	$567
Economic Damages	$15,303	$19,169
Agricultural Output	$116	$145
Government	$1,487	$1,858
Lost Business Activity	$13,700	$17,166
Cost of Reconstruction	$23,025	$28,850
Total	**$53,834**	**$67,572**

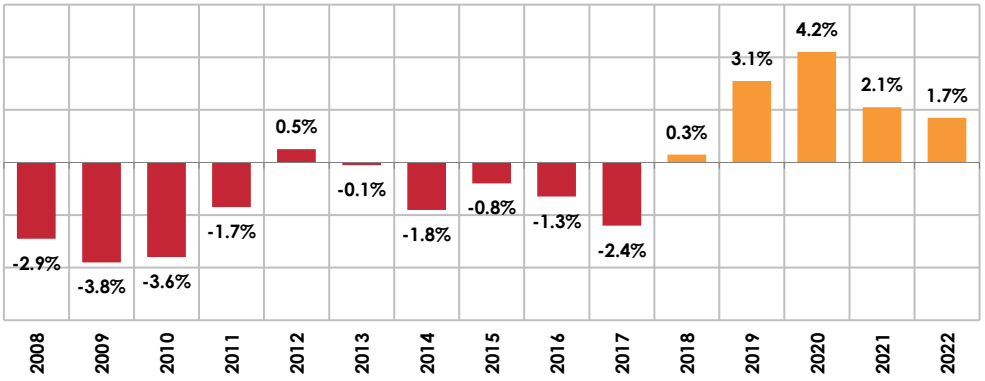
Sources: US Federal Emergency Management Agency (1999). *Plan de Acción Presidencial Para la Recuperación a Largo Plazo de Puerto Rico.* PR Planning Board (2001). *Impacto Económico del Huracán Georges 1999 .* Acevedo, S. (2016). *Gone With the Wind: Estimating Hurricane Climate Change Costs in the Caribbean* [Working Paper]. Retrieved from the International Monetary Fund Database. [1]Represents lost revenue from stoppages in service, estimated by multiplying a $30 monthly average telephone bill by 2 months, and multiplying said subtotal by the affected consumers. [2]According to the PR Planning Board, room-nights lost by tourism cancellations were offset by increased room nights from additional assistance personnel. [3]Estimated by assuming partial damages worth 10% of the median household value, and a

2.10 Outlook for real GNP growth

Real GNP growth for fiscal years 2018 thru 2022 is expected to be positive, albeit with significant downside risks. Fiscal years 2019 and 2020 look poised to exhibit strong growths from the significant influx of federal funding; however, this growth is likely to be affected by administrative delays in funds disbursements. As of January 2019, the forecasts assume a 20% delay in federal funding for fiscal 2019, which is spread out to fiscals 2020-2022.

FIGURE 15

Actual & Forecasted Growth in Real GNP of Puerto Rico
Fiscal Years -- 2008 - 2022



Sources: PR Planning Board (2018). *Statistical Appendix*. Estimates by Estudios Técnicos, Inc. (January 16, 2019).

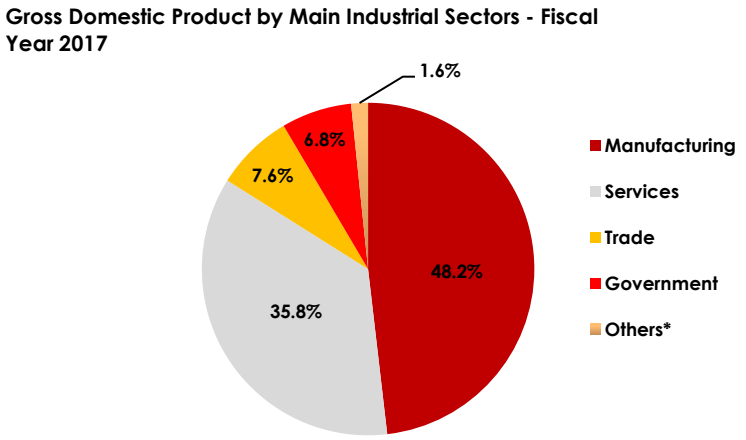
3 Shift to Services – Changes in the Economic Structure

There has been a significant shift in the industrial composition of Puerto Rico's economy. Although manufacturing still account for almost half of the island's production, the share of services has increased. The world's economy is currently undergoing a series of transformations, in which the rise of the tech sector is playing a leading role, with technological innovations substituting manual labor. At the same time, these transformations in employment provide the basis for, or reflect already-developing business opportunities.

3.1 Production

Measured by its GDP (Gross Domestic Product), the main sector is still manufacturing, which accounted for 48.2% of the island's GDP in fiscal 2017, from 44.1% in 1990. The share of services has also increased, from 31.0% in 1990 to 36.0% in 2017.

FIGURE 16



Soure: P.R. Planning Board (2018). Statistical Apendix 2017. Table 9. * Agriculture, mining, construction and other sectors, plus the statistical discrepancy.

3.1.1 Capital – vs. labor-intensive industries

One key development in manufacturing production, when compared to the period prior to 1970, is the increasing trend toward capital-intensive vs. labor-intensive investment and production. The competition, on the one hand, from labor-intensive competitors with low wages in the U.S. market, plus the tax incentives enacted, and trends in worldwide investment and production contributed to this development over time. By the early1980's, manufacturing production was already centered on capital or technology-intensive industries, such as electronics and pharmaceuticals.

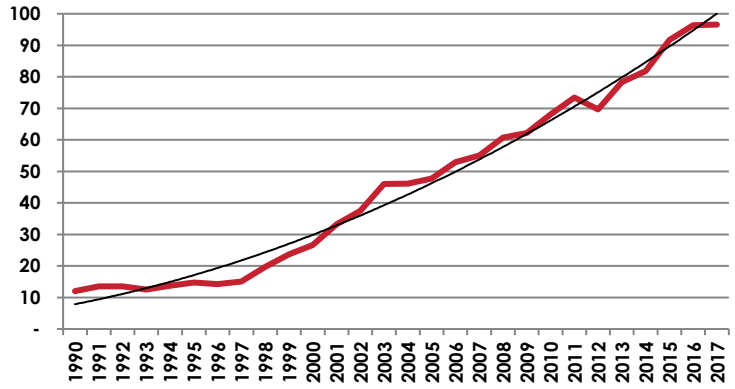
Between 1997 and 2002, investment in plant and equipment increased significantly, after falling between 1992 and 1997. It is precisely after 1997 when the ratio of exports to

employment in manufacturing trends up consistently, with the exception of fiscal year 2012 (See Figure 18).

While manufacturing employment declined by 46.0% between 1996 and fiscal 2017, exports of manufactured products rose significantly, by 312.% (At nominal prices). The manufacturing exports-to-employment ratio rose way up after 1997, indicating that productivity in the manufacturing sector, mostly composed of the pharmaceutical industry, surged, reflecting an intensive process of substituting capital for labor in manufacturing. This would suggest that there are other factors contributing to the use of more capital-intensive technology than incentives, related to labor costs but also changes in industry production functions worldwide.

FIGURE 17

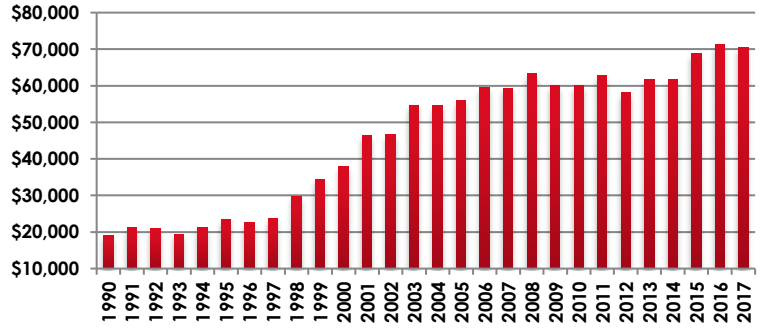
Manufacturing Exports-to-Employment Ratio



Sources: U.S. BLS (2019). Nonfarm Employment (NSA); P.R. Planning Board, *Statistical Appendix*, Exports of merchandise, various years.

FIGURE 18

Exports of Manufactured Products (Fiscal Years - $Mm)

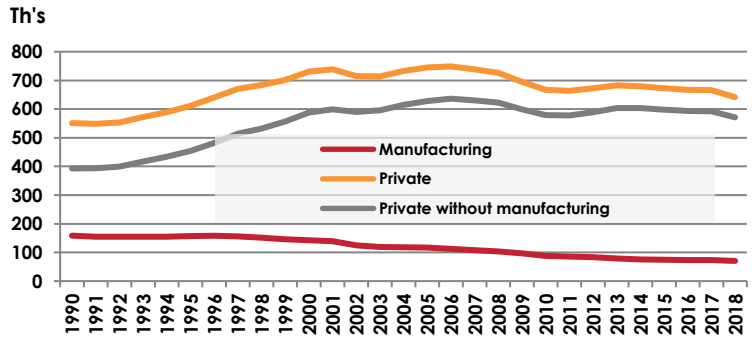


Source: P.R. Planning Board, *Statistical Appendix*, Exports of merchandise. Table 23, various years.

It is clear from Figure 19 that manufacturing employment started to decline prior to NAFTA's enactment and the elimination of Section 936 in 1996.[13] In fact, the last benefits from section 936 ended in 2005, by which time exports of manufactured products, for instance, increased over those in 1994.[14] On the other hand, private employment (without manufacturing) continued increasing until the contraction of 2002, with a slight recovery afterwards, and then the onset of the current contraction in fiscal 2007, even when manufacturing jobs were disappearing. In 1990, manufacturing employment accounted for 29.0% of private nonfarm employment; by 1994 that share fell to 26.3%, falling more to 11.0% in fiscal 2018, by which time 88,210 jobs were lost from 1990, while private employment without manufacturing actually increased by 178,270 jobs.

FIGURE 19

Private and Manufacturing Nonfarm Employment: 1990 - 2018 (Fiscal years)



Source: U.S. BLS (2017). Nonfarm Employment (NSA).

Between 2001 and 2016, hourly compensation costs (HCC) in manufacturing in Puerto Rico increased at a CAGR of 3.0% in nominal terms, and 0.9% adjusted by inflation, while in the U.S. they increased by 2.4% in nominal terms and 0.4% in real terms.[15] That slower growth in the mainland is a reflection of the trend that has taken place since the end of the Great Recession in 2009, with salaries rising very slowly. Some economists in the U.S. have worried that many of the jobs being added are low-wage, low-skill positions. The ratio of P.R.'s HCC to that in the mainland increased, from 65.0% in 2001 to 70.3% in 2008, with the first increase in the federal minimum wage, declining afterwards to an average of 68.0% until 2015 when it again increased to 70.1%.[16]

[13] It was eliminated retroactively to Dec. 31, 1995, for any business not already claiming it. For all other companies, the bill continued a phase-out process begun in 1993, provided a new cap on the credit beginning in 2002, and abolished it altogether by January 1st, 2006. In addition to section 936, the Puerto Rican corporate tax code gave significant incentives to U.S. corporations to locate subsidiaries on the island. Puerto Rican tax law allowed a subsidiary with more the 80% owned by a foreign entity to deduct 100% of the dividends paid to its parent. As such, subsidiaries in Puerto Rico had no corporate income tax liability as long as their profits were distributed as dividends. Since 1948, with the enactment of the Industrial Incentives Act of 1948, most U.S. subsidiaries on the island have been completely or partially exempted from Puerto Rican taxes as well as from U.S. income tax, a situation that changed in 1996, and with the implementation of the excise tax on the sales of these subsidiaries through Law 154 in 2010, and in 2017 with the enactment of the federal TCJA.

[14] In fiscal 1994 exports of manufactured products amounted to $21,756.8 million, and in fiscal 2006 increased to $59,542.1 million.

[15] In order to make it comparable, we adjusted for the differences in the base years of both CPIs by normalizing them to 2001 = 100 based on their annual changes in the period.

[16] On July 24, 2008, the Federal minimum wage increased to $6.55 per hour from $5.85 per hour, and to $7.25 in July of 2009.

In comparative terms, Puerto Rico does not have a compensation cost advantage with respect to emerging economies (See Table 7).[17] But that "wage advantage" of some competing economies may reflect lower productivity levels in these economies, compared to Puerto Rico, where manufacturing is of a high value added, capital-intensive nature, where compensation costs, although important, are not critical.[18] On the other hand, Ireland, with a corporate income tax on foreign corporations similar to Puerto Rico's, a high proportion of capital-intensive exports, significant foreign investment, mostly by U.S. corporations, has a HCC higher than in Puerto Rico.[19] This would mean that labor costs by themselves, are not a determining factor in defining competitiveness for the high value added manufacturing sector.

TABLE 7

Hourly Compensation Costs
2000-2016 (1)

	Average Hourly Earnings of Production and Nonsupervisory Workers (2)											
	Puerto Rico*	United States***	Puerto Rico	U.S.	Mexico	Brazil	Ireland	South Korea	Taiwan	Singapore	India	China
2000	NA	$24.95	NA	$14.32	$4.70	$4.34	$16.40	$9.62	$7.31	$11.72	$0.70	NA
2001	$16.92	$26.21	$9.85	$14.76	$5.41	$3.63	$17.73	$9.00	$7.16	$12.21	$0.71	NA
2002	$17.96	$27.35	$10.30	$15.29	$5.59	$3.08	$19.60	$10.24	$6.83	$12.14	$0.73	$0.60
2003	$18.90	$28.56	$10.46	$15.74	$5.31	$3.22	$24.57	$11.33	$6.96	$12.75	$0.81	$0.68
2004	$19.45	$29.30	$10.84	$16.14	$5.26	$3.82	$28.28	$12.63	$7.27	$13.20	$0.85	$0.74
2005	$20.29	$30.13	$11.10	$16.56	$5.61	$5.01	$29.79	$14.83	$7.92	$13.24	$0.91	$0.83
2006	$21.23	$30.47	$11.48	$16.81	$5.88	$5.99	$31.58	$17.36	$8.05	$13.76	$0.95	$0.95
2007	$22.41	$32.07	$11.94	$17.26	$6.17	$7.10	$36.70	$19.43	$8.18	$15.70	$1.17	$1.21
2008	$23.03	$32.78	$12.09	$17.75	$6.48	$8.44	$41.82	$16.80	$8.69	$18.86	$1.26	$1.59
2009	$23.48	$34.19	$12.28	$18.24	$5.69	$8.12	$41.94	$15.03	$7.77	$17.54	$1.23	$1.74
2010	$23.38	$34.75	$12.29	$18.61	$6.13	$10.00	$40.66	$17.88	$8.31	$19.29	$1.46	$1.98
2011	$23.55	$35.51	$12.73	$18.93	$6.49	$11.61	$42.73	$19.19	$9.28	$23.07	$1.59	$2.62
2012	$23.90	$35.70	$12.65	$19.08	$6.35	$10.80	$40.72	$20.44	$9.40	$24.42	$1.59	$3.07
2013	$25.19	$36.49	$13.03	$19.29	$6.80	$10.59	$41.98	$22.09	$9.41	$25.78	NA	$4.12
2014	$25.78	$37.04	$13.78	$19.56	$6.76	$10.54	$43.38	$23.77	$9.49	$26.82	NA	NA
2015	$26.44	$37.71	$13.03	$19.90	$5.90	$7.97	$36.02	$22.68	$9.51	$25.41	NA	NA
2016**	$26.37	$37.64	$12.42	$20.21	NA	NA	NA	NA	NA	NA	NA	NA

(1) Compensation costs include direct pay, social insurance expenditures, and labor-related taxes. (2) Not including compensation costs.

*Includes all employees of the manufacturing industry. Estimated on the basis of the hourly wage for all employees, based on the average hourly number of hours for manufacturing, and applying the same ratio of compensation to salary of the U.S. workers. **Jan-Sept. ***Average weekly hours of all employees.

Sources: U.S.BLS (2013). *International Labor Comparisons;* U.S.BLS (May 2017). *Quarterly Census of Employment and Wages for Puerto Rico;* The Conference Board (2016). *International Labor Comparisons;* U.S. BLS, Employment, Hours and Earnings - National (May 2017). NA means data not available.

Notes: Earnings statistics are typically obtained from establishment surveys or from administrative data sources. Average earnings are generally adjusted to total compensation using data from periodic labor cost surveys. Other sources include censuses of manufacturers, tabulations of employer social security contribution rates provided by the International Social Security Association, information on contractual and legislated changes in social insurance benefits, and statistical series on indirect labor costs from employer confederations. Total compensation for each country is calculated by adjusting earnings series for items of direct pay, social insurance, and labor-related taxes and subsidies not included in earnings. Hourly compensation costs are converted to U.S. dollars using the average exchange rate for the reference year. The exchange rates used are prevailing commercial market exchange rates as published by the International Monetary Fund.

[17] Another important aspect is that of productivity, which is not considered here, although, as mentioned, the manufacturing exports-to-employment in manufacturing ratio gives an idea of how it increased (with the caveat that export data reflects transfer pricing, distorting the analysis). For an analysis of this issue see chapter 2, *Economic Growth*, by Barry Bosworth and Susan M. Collins, in Susan M. Collins, Barry Bosworth and Miguel A. Soto-Class (2006), **The Economy of Puerto Rico – Restoring Growth**, CNE/Brookings, Washington, DC.

That upward trend in that ratio as a reflection of increasing productivity is also suspect for another reason. In the U.S. labor productivity growth has declined to 0.6% since 2011, from an average increase of 2.1% during 1987-2004. See McKinsey Global Institute (2017), *The Productivity Puzzle: A Closer Look at the United States* (March). Discussion Paper. At: http://www.mckinsey.com/~/media/mckinsey/global%20themes/employment%20and%20growth/new%20insights%20into%20the%20slowdown%20in%20us%20productivity%20growth/mgi-the-productivity-puzzle-discussion-paper.ashx

[18] Already labor costs in China are rising, translating into higher costs for companies with assembly lines in China. Some companies are now taking their business elsewhere, which also means China could start losing jobs to other developing countries like Sri Lanka, where hourly factory wages are $0.50. http://www.cnbc.com/2017/02/27/chinese-wages-rise-made-in-china-isnt-so-cheap-anymore.html

[19] In 2016, Ireland exports of goods amounted to $128.1 billion, of which 25.0% were pharmaceuticals. World's Top Exports (2017), http://www.worldstopexports.com/irelands-top-10-exports/

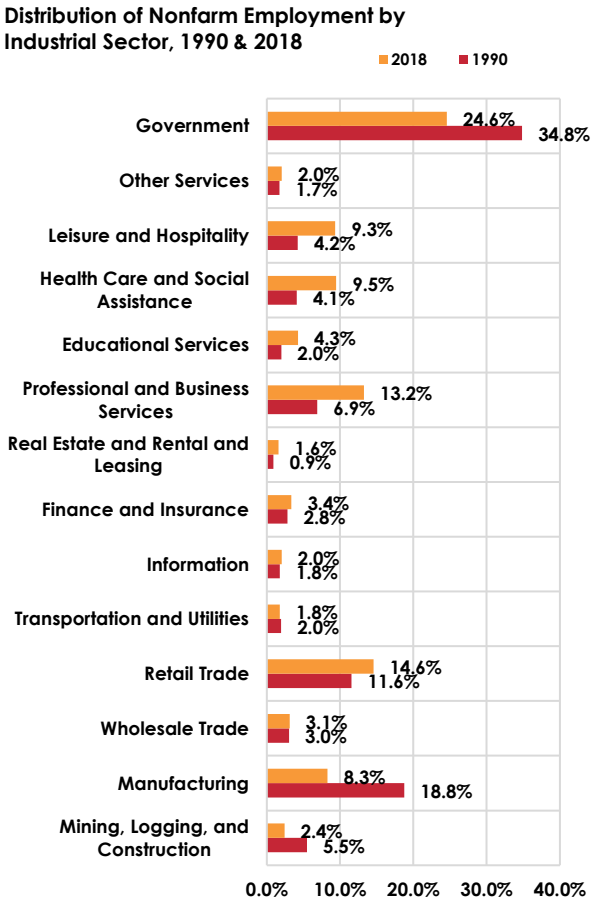
In general, then, the shrinking of the gap in manufacturing compensation costs in Puerto Rico with those in the U.S. has narrowed, and, partly as a result, manufacturing has become much more capital intensive than before.

3.2 Employment by industrial sector and occupations

Since 1990, the distribution of nonfarm employment by industrial sectors has been characterized by three developments: a reduction in the share of employment in manufacturing, a reduction in the share of public employment, and an increase in that in services (See Figure 20).

The share of employment in manufacturing fell from 18.8% in 1990 to 8.3% in 2018, and that in government from 34.8% to 24.6%, while employment in services increased from 24.6% to 45.0%. The sectors in services that saw increases were Information, Finance and Insurance, Real Estate, Professional and Business Services, Health Care, and Leisure and Hospitality. The share of Trade also increased, from 14.6% to 18.0%.

FIGURE 20



Source: US Bureau of Labor Statistics (2019). *Current Employment Statistics --*

The composition of employment by occupation is also important, as it will reflect qualitative changes in terms of higher skills and higher wages. That information is presented in Table 8 for the period 1999 to 2017. Reflecting the reduction in the share of manufacturing in employment, that of production occupations fell from 11.3% in 1999 to 6.2% in 2017, while employment in technical occupations (Computer and Mathematical Occupations) increased from 0.6% to 1.2%. The overall occupational composition of employment has become more service-oriented throughout time.

TABLE 8

Distribution of Employment By Occupation

1999, 2007 & 2017

Occupation Title	1999	2007	2017
Office and Administrative Support Occupations	18.2%	19.1%	18.5%
Sales and Related Occupations	9.9%	10.9%	12.3%
Food Preparation and Serving Related Occupations	6.3%	6.7%	8.1%
Education, Training, and Library Occupations	6.4%	6.9%	7.5%
Production Occupations	11.3%	8.3%	6.5%
Protective Service Occupations	6.5%	6.5%	6.2%
Healthcare Practitioners and Technical Occupations	3.6%	4.4%	6.0%
Transportation and Material Moving Occupations	8.2%	6.3%	4.9%
Business and Financial Operations Occupations	3.2%	3.8%	4.8%
Building and Grounds Cleaning and Maintenance Occupations	4.3%	4.3%	4.6%
Management Occupations	3.8%	3.6%	4.4%
Installation, Maintenance, and Repair Occupations	3.8%	3.7%	3.3%
Construction and Extraction Occupations	7.2%	6.4%	3.1%
Personal Care and Service Occupations	1.3%	1.6%	1.9%
Community and Social Services Occupations	1.3%	1.8%	1.8%
Architecture and Engineering Occupations	1.2%	1.4%	1.6%
Computer and Mathematical Occupations	0.6%	0.9%	1.2%
Healthcare Support Occupations	0.9%	1.1%	1.1%
Arts, Design, Entertainment, Sports, and Media Occupations	0.6%	0.7%	0.8%
Life, Physical, and Social Science Occupations	0.7%	1.0%	0.6%
Legal Occupations	0.4%	0.5%	0.5%
Farming, Fishing, and Forestry Occupations	0.2%	0.2%	0.2%

Source: Bureau of Labor Statistics (2019). *Occupational Employment Statistics.*

TABLE 9

Mean Hourly Wage By Occupation

1999, 2007 & 2017

Occupation Title	1999	2007	2017
Management occupations	$24.33	$31.16	$35.62
Business and financial operations occupations	$13.25	$16.73	$18.52
Computer and mathematical occupations	$15.89	$20.44	$21.06
Architecture and engineering occupations	$16.42	$22.56	$26.70
Life, physical, and social science occupations	$14.68	$19.24	$22.83
Community and social services occupations	$9.14	$12.28	$14.07
Legal occupations	$20.92	$26.93	$30.54
Education, training, and library occupations	$11.07	$14.86	$17.05
Arts, design, entertainment, sports, and media occupations	$13.00	$14.18	$15.43
Healthcare practitioners and technical occupations	$10.49	$14.16	$17.67
Healthcare support occupations	$6.92	$7.96	$9.99
Protective service occupations	$7.59	$10.38	$12.23
Food preparation and serving related occupations	$6.12	$7.11	$9.02
Building and grounds cleaning and maintenance occupations	$6.36	$7.57	$9.75
Personal care and service occupations	$7.11	$7.74	$9.46
Sales and related occupations	$8.58	$9.41	$10.67
Office and administrative support occupations	$8.23	$10.09	$11.82
Farming, fishing, and forestry occupations	$6.94	$8.87	$10.38
Construction and extraction occupations	$7.29	$8.75	$10.34
Installation, maintenance, and repair occupations	$9.88	$11.99	$12.97
Production occupations	$7.65	$9.60	$11.55
Transportation and material moving occupations	$7.35	$8.33	$10.54
Total		$11.50	$13.91

Source: Bureau of Labor Statistics (2019). *Occupational Employment Statistics.*

The mean hourly wage of all occupations increased, in some cases as a result of raises in the Federal minimum wage after 2007 (See Table 9). Management occupations have the highest mean hourly wage, followed by architecture and engineering occupations and life, physical and social occupations, were those in medicine are included. About 16.0% of the employment in 2017 were in occupations paying close to the Federal minimum wage, and 8.3% with mean hourly wages of $21.00+.

3.2.1 Employment in the tech sectors – Manufacturing vs. services

As examined before, through the period 2001 – 2018 employment (Nonfarm salaried) has declined overall. Some sectors have seen growth, like education and health services, and accommodation and food services. Others, like manufacturing continued to shed jobs. But what about tech employment?

Even when overall, private employment has decreased since the onset of the economic contraction in 2007, as described before, some sectors (in services) have seen an upward trend, in particular that in sector 541611 (Administrative Management and General management Consulting Services).

The tech sector is typically defined, and is composed of a series of industries in manufacturing and services, aimed at advancing technological innovations that are used in other sectors of the economy, or exported.

NAICS Tech Sectors*

333: Machinery Manufacturing

334: Computer and Electronic Products Manufacturing

335: Electrical Equipment and Appliance Manufacturing

5182: Data Processing, Hosting and Related Services

5191: Other Information Services

541330: Engineering Services

5415: Computer Systems Design and Related Services

5416: Management and technical – Private

541611: Administrative Management and General management Consulting Services

5417: Scientific Research and Development Services

*** Sectors for which there is information available for Puerto Rico.**

A recent analysis by Estudios Técnicos, Inc. (2017) shows that while total private non-agriculture has been declining, from an annual increase of 0.5% in 2001-2006, to a decrease of -0.5% during the period 2007-2016 (See Table 10), total tech employment also followed a similar pattern, from an annual increase of 0.4% to a decrease of -0.4% afterwards. Yet, even though total tech employment has been decreasing, the same isn't true for tech services employment, which increased at a compound annual growth rate (CAGR) of 4.2% through 2001-2016.

The cause of the fall of overall tech employment resides in the tech manufacturing sector, whose employment decreased at a compound annual growth rate of -4.4%. As a result,

the composition of the tech sector has greatly changed, and tech manufacturing as a percentage of total tech employment has decreased from 70.0% in 2001 to 38.6% in 2016.

Employment in manufacturing's tech sectors as a share of total private salaried employment has declined, but that in tech services increased. Manufacturing is losing, while tech employment in services is rising, albeit at a slower pace in the latter years, with employment in Computer Systems Design and Related Services (NAICS 5415) increasing at a CAGR of 7.2%, and that in Management and Technical (NAICS 5416) by 9.6% during 2001-2016.

TABLE 10

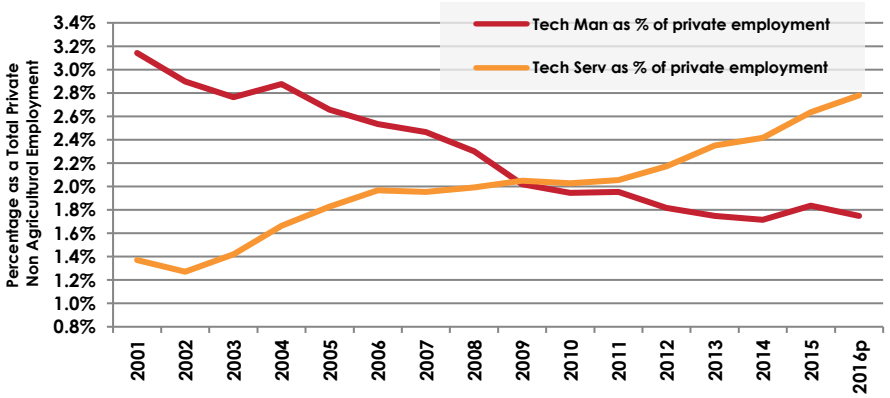
Tech Employment and Share in Private Employment, 2001 - 2016 (Calendar years)

Year	Tech Manufacturing	Tech Services	Total Tech	Non Agricultural Private	Tech Man as % of Tech emp	Tech Man as % of private employment	Tech Serv as % of private employment	Tech as a % of private employment
2001	22,820	9,949	30,849	726,192	69.6%	3.1%	1.4%	4.5%
2002	20,562	9,016	27,833	709,317	69.5%	2.9%	1.3%	4.2%
2003	19,987	10,280	27,966	723,567	66.0%	2.8%	1.4%	4.2%
2004	21,339	12,339	30,537	741,958	63.4%	2.9%	1.7%	4.5%
2005	19,842	13,644	29,607	746,775	59.3%	2.7%	1.8%	4.5%
2006	18,861	14,639	28,827	744,225	56.3%	2.5%	2.0%	4.5%
2007	18,107	14,345	28,040	734,125	55.8%	2.5%	2.0%	4.4%
2008	16,434	14,227	25,913	714,550	53.6%	2.3%	2.0%	4.3%
2009	13,645	13,848	22,381	676,158	49.6%	2.0%	2.0%	4.1%
2010	12,922	13,470	21,308	664,117	49.0%	1.9%	2.0%	4.0%
2011	12,997	13,670	21,353	665,642	48.7%	2.0%	2.1%	4.0%
2012	12,365	14,793	21,260	680,633	45.5%	1.8%	2.2%	4.0%
2013	11,907	16,014	21,616	680,992	42.6%	1.7%	2.4%	4.1%
2014	11,577	16,307	21,627	675,333	41.5%	1.7%	2.4%	4.1%
2015	12,295	17,656	22,904	670,142	41.1%	1.8%	2.6%	4.5%
2016p	11,586	18,463	22,407	666,167	38.6%	1.7%	2.8%	4.5%
			COMPOUND ANNUAL GROWTH RATE					
2001-2016	-4.4%	4.2%	-0.6%	-0.6%				
2001-2006	-3.7%	8.0%	0.4%	0.5%				
2007-2016	-2.3%	1.3%	-0.4%	-0.5%				

Sources: US Bureau of Labor Statistics (BLS); Department of Labor and Human Resources.

FIGURE 21

Shares of the Two Main Groups of Tech Employment in Total Private Salaried Employment



Sources: US Bureau of Labor Statistics (BLS); Puerto Rico Department of Labor and Human Resources.

That increase in employment in tech services, which by itself is a significant development, taking into consideration the overall downward trend in total private employment, is reflected in the occupations related to the sectors.

As seen in Table 11, according to the annual Occupational Employment Survey of the US Bureau of Labor Statistics for Puerto Rico, at least between 2012 and 2016 employment in tech occupations increased from 20,870 to 23,430. The increase in the number of aerospace engineers is particularly significant.

TABLE 11

Tech Occupations Employment and Annual Median Wage
2011-2016

OCC CODE	OCC TITLE	2012		2013		2014		2015		2016	
		Employment	Annual Median Wage	Employment	Annual Median Wage	Employment	Annual Median Wage	Employment	Annual Median Wage	Employment	Annual Median Wage
	Total	**20,870**	**---**	**19,850**	**---**	**20,040**	**---**	**21,220**	**---**	**23,430**	**---**
17-2011	**Aerospace Engineers**	80	51,690	**	54,700	**	**	490	56,700	540	59,960
11-3021	Computer and Information Systems Managers	1,000	69,210	1,030	69,000	980	68,880	1,120	67,920	1,260	66,150
15-0000	Computer and Mathematical Occupations	9,560	37,290	9,310	38,030	9,170	37,820	9,430	38,070	10,390	39,240
17-2061	Computer Hardware Engineers	170	76,680	280	72,820	450	64,610	440	65,330	290	63,950
15-1143	Computer Network Architects	390	44,780	390	44,990	390	48,610	510	38,090	580	39,660
15-1152	Computer Network Support Specialists	530	33,030	540	36,060	590	35,480	500	37,230	620	37,850
15-1199	Computer Occupations, All Other	570	51,940	570	51,500	410	62,540	400	67,240	360	66,170
43-9011	Computer Operators	860	21,870	780	22,340	700	21,380	730	20,360	910	19,000
15-1131	Computer Programmers	1,290	43,300	1,340	44,650	1,260	42,890	1,260	41,180	1,420	42,820
15-1121	Computer Systems Analysts	1,030	46,090	1,010	46,840	1,070	45,040	990	43,730	1,150	43,760
15-1151	Computer User Support Specialists	2,920	25,160	2,850	26,960	2,900	27,840	3,000	28,380	3,070	28,440
15-1141	Database Administrators	350	44,230	**	**	450	43,420	460	49,500	480	49,590
15-1122	Information Security Analysts	160	43,560	190	43,820	230	43,840	260	40,780	320	43,200
15-1142	Network and Computer Systems Administrators	910	43,190	680	43,590	650	44,080	670	42,290	820	45,470
15-1132	Software Developers, Applications	390	44,310	320	46,130	470	50,410	560	52,820	470	53,750
15-1133	Software Developers, Systems Software	550	66,110	470	64,310	210	57,090	240	65,000	570	64,030
15-1134	Web Developers	110	38,180	90	40,150	110	35,050	160	36,250	180	36,850

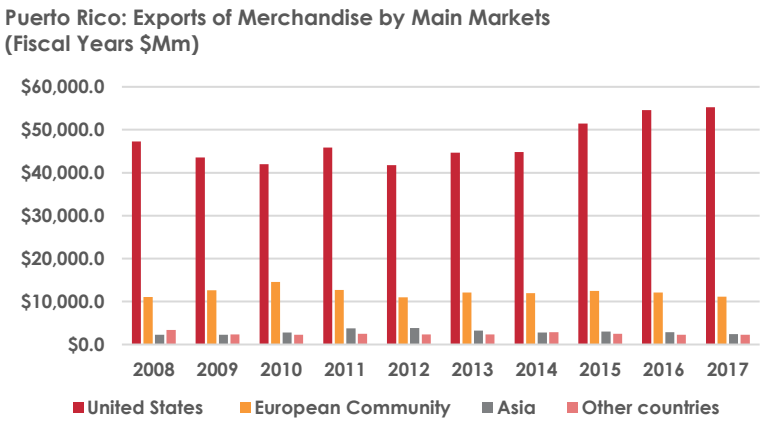
Source:U.S. Bureau of Labor Statistics (2017). *Occupational Employment Statistics* (various years). ** Indicates that an employment estimate is not available.

4 Freight and Passenger Movement and Air Connectivity[20]

4.1 Merchandise trade – composition and main markets

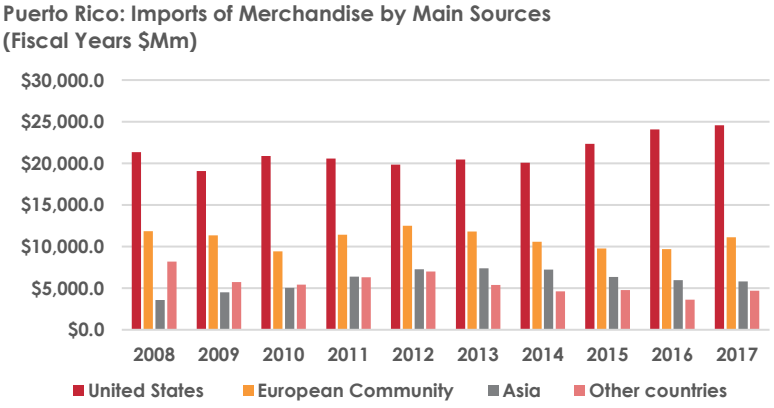
Most of Puerto Rico's trade of merchandise is with the Mainland, with 78.0% of exports destined to, and 53.2% of imports coming from the Mainland (See Figures 22 and 23). The lower share in the case of imports reflects the higher participation of countries in the European Union (24.0%) as a result of imports from the pharmaceutical industry coming these countries (See Appendix A).

FIGURE 22



Source: Puerto Rico Planning Board (2018). Selected Statistics on Puerto Rico's External Trade.

FIGURE 23



Source: Puerto Rico Planning Board (2018). Selected Statistics on Puerto Rico's External Trade.

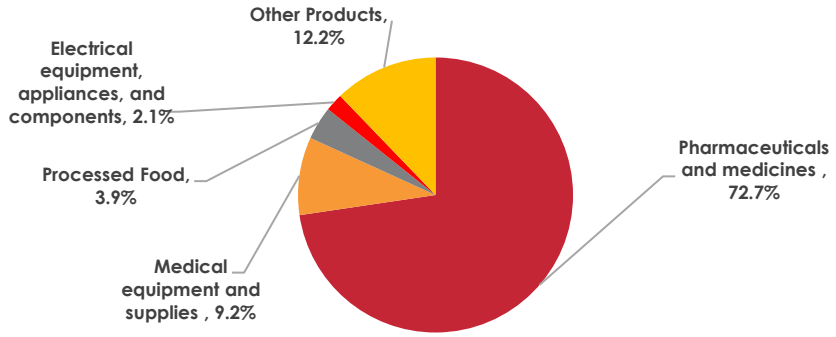
There is also a high degree of concentration in the case of the industry composition of exports and imports of merchandise, which is reflected in the product composition of air freight as well (See Figures 24 and 25). Pharmaceuticals and medicine products represent 73.0% of total exports, most of them destined to the Mainland. In the case of imports, they

[20] The fiscal year 2018 has not been included in order to avoid the distortions created by Hurricane Maria that year.

are less concentrated on pharmaceuticals and medicines (39.0%), followed by basic chemicals (12.0%), followed by transportation equipment (8.0%) and food (7.0%).

FIGURE 24

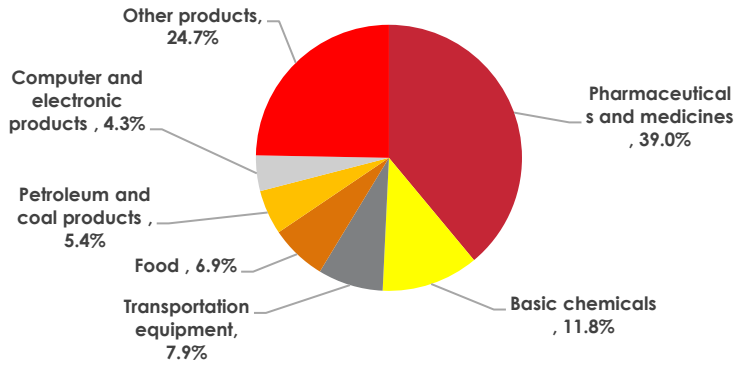
Industry Composition of Puerto Rico's Exports of Merchandise, Fiscal Year 2017



Source: Puerto Rico Planning Board (2018). Selected Statistics on Puerto Rico's External Trade.

FIGURE 25

Industry Composition of Puerto Rico's Imports of Merchandise, Fiscal Year 2017

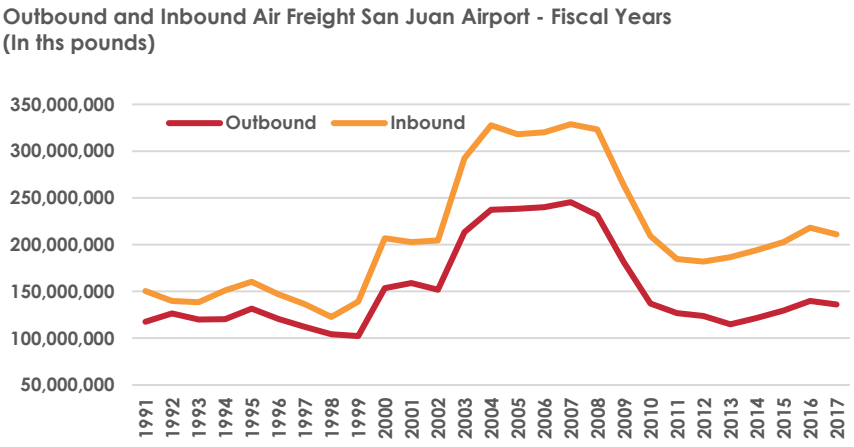


Source: Puerto Rico Planning Board (2018). Selected Statistics on Puerto Rico's External Trade.

4.2 Air freight – Movement and volume

Both, inbound and outbound freight from the LMM International Airport decreased in the period 1991-1999 (Fiscal years) at a CAGR of -1.7% and -1.0% respectively. The trend is reversed afterwards, when the movement of both increased at an average CAGR of 7.7%. After fiscal 2007, and reflecting the contraction in economic activity since, the movement of freight from the airport moved into negative territory again, at an average CAGR of -5.0% (See Appendix A for details).

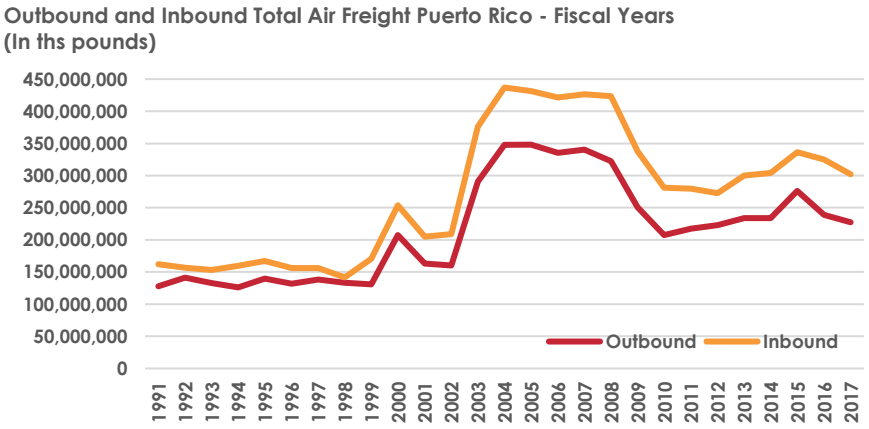
FIGURE 26



Source: Bureau of Transportation Statistics (2019). Air Carrier Statistics, Form 41 Traffic, T-100 Segment, All Carriers.

A similar downward trend is observed at the aggregate level for all of Puerto Rico (Mostly including Borinquen Airfield in Aguadilla) (See Figure 28).

FIGURE 27

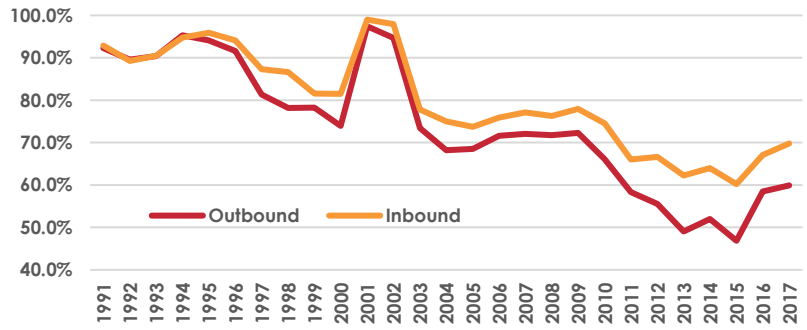


Source: Bureau of Transportation Statistics (2019). Air Carrier Statistics, Form 41 Traffic, T-100 Segment, All Carriers.

An interesting and very important development for the purpose of the proposal, is that the share of LMM International Airport (San Juan) in the total air freight volume of Puerto Rico has declined over time (See Figure 29). Between fiscal year 1991 and 2001, its share in outbound freight increased from 92.3% to 97.4%, and in inbound freight from 93.0% to 99.0%. Afterwards, it fell considerably to 60.0% in fiscal 2017 in the case of outbound trade and to 70.0% in the case of inbound trade. Although there was an improvement from fiscal 2013, the shares were still quite below the historic levels.

FIGURE 28

Share of San Juan Airport in Total Air Freigh, Fiscal Years (In ths pounds)



Source: Bureau of Transportation Statistics (2019). Air Carrier Statistics, Form 41 Traffic, T-100 Segment, All Carriers.

Tables 12 and 13 present the outbound and inbound freight volume for the LMM and Borinquen Field airports (BQN) since fiscal year 1991, and for the other two local airports.

Between 1991 and 2005, the total volume of freight handled by LMM and Borinquen Field airports (BQN) increased; afterwards, with the exception of 2015 in the case of Borinquen Field airport, the volume fell compared to 2005.

In the case of the other two local airports (Ponce and Mayaguez), the volume of freight they handle is quite small (See Table 13).

TABLE 12

Air Freight Volume Handled by LMM International and Borinquen Field Airports (Fiscal years - Ths pounds)

Fiscal Year	Outbound LMM	Inbound LMM	Outbound BQN	Inbound BQN
1991	117,773,507	150,627,609	9,848,154	11,545,403
2000	153,372,441	206,781,154	53,782,797	46,251,857
2005	238,501,341	318,009,081	109,314,233	113,245,644
2010	137,130,698	209,430,755	69,166,250	70,872,900
2015	129,423,043	202,671,738	139,615,642	132,532,998
2017	136,185,166	210,854,308	91,061,041	90,755,557
2018	170,942,288	301,509,695	58,289,483	69,350,382

Source: Bureau of Transportation Statistics (2019). *Air Carrier Statistics, Form 41 Traffic, T-100 Segment, All Carriers.*

TABLE 13

Air Freight Volume Handled by the Other Two Local Airports (Fiscal years - Ths pounds)

Fiscal Year	Outbound Ponce (PSE)	Inbound PSE	Outbound Mayaguez (MAZ)	Inbound MAZ
1991	22,847	46,050	-	50
2000	306,022	444,941	-	-
2005	-	-	-	-
2010	448,406	28,049	-	-
2015	-	39,959	-	-
2017	-	-	-	-
2018	2,720	342,713	-	-

Source: Bureau of Transportation Statistics (2019). *Air Carrier Statistics, Form 41 Traffic, T-100 Segment, All Carriers.*

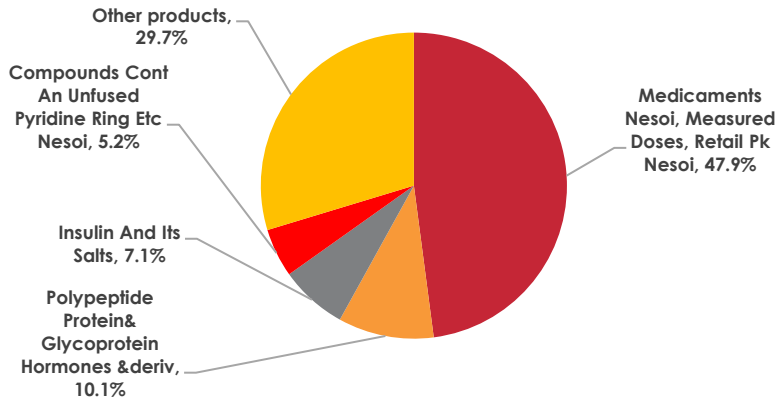
4.3 Composition by products

Consistent with the high degree of concentration of the pharmaceutical industry in the island's GDP and trade of merchandise, the great majority of the inbound and outbound air freight from LMM airport consist of pharmaceutical products.

There is no data for the distribution by commodities (HTS) of air shipments to and from the Mainland, but in the case of trade with foreign countries. In the case of the outbound air freight from LMM Airport, the great majority (at least 70.3%) consist of pharmaceutical and medicinal products (See Figure 29). For incoming or inbound trade to LMM Airport, the concentration on pharmaceutical and medicinal products is much higher, at least 85.0% (See Figure 30).

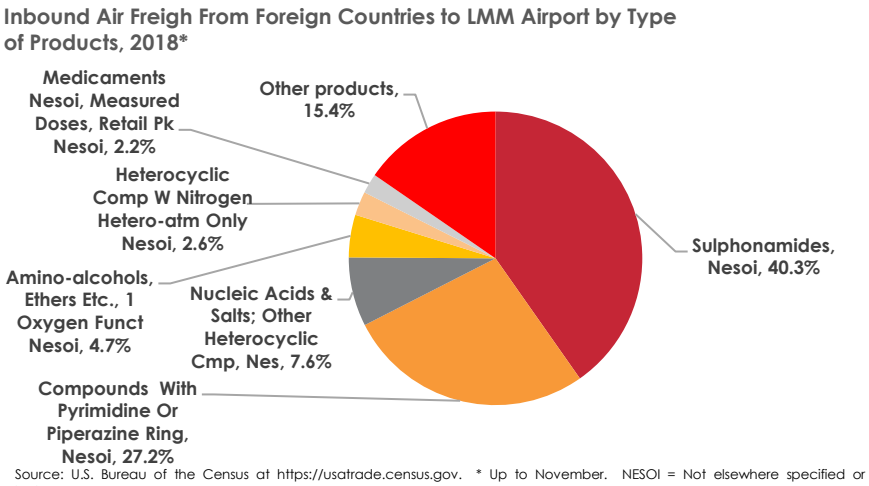
FIGURE 29

Outbound AIr Freight to Foreign Countries From LMM Airport, 2018*



Source: U.S. Bureau of the Census at https://usatrade.census.gov. * Up to November. NESOI = Not elsewhere specified or indicated.

FIGURE 30



Source: U.S. Bureau of the Census at https://usatrade.census.gov. * Up to November. NESOI = Not elsewhere specified or indicated.

Given the fact that PR's trade with the mainland represent the majority of its total trade, and due to the high degree of concentration of pharmaceutical and medicinal products in it, as described before, the proportions that these products represent in the total air freight value could be greater.

4.4 Trends in world air freight market

Although much of Puerto Rico's air freight trade is with the mainland, the foreign component is important, as indeed it would for the proposal under consideration. According to the International Air Transport Association (2019):[21]

1. Industry-wide world air freight in the period 2018-2022 (In terms of tonne kilometers) "is expected to grow by 4.9% on average each year, helped by a stronger economic and trade backdrop compared to the period 2012-2017."
2. By major trade lane, growth will be concentrated on the Asia-North America trade lane (3.9%) and Asia-Europe (4.05), followed by Europe-North America (3.9%).
3. The fastest growth areas are e-commerce and pharmaceutical.

The forecasts, though, are tempered by two key downside risks: increasing protectionism, as evidenced in the trade struggle between the US and China, and with Europe, and a slowdown in expected real GDP, which could translate into lower freight trade. It should be noted, according to the report, that "1.0% of the total trade volumes are flown by air (35.0% in value terms).[22]

[21] International Air Transport Association (2018). Forecasting air freight demand: Forecasts for the 2018-2022 period (March 2018). At: https://www.iata.org/publications/economics/Reports/freigh-forecast/Forecasting-air-freight-demand.pdf.

[22] IATA (2018), p. 6.

4.5 Airline connectivity

Currently a total of 24 airlines provide passenger service between Puerto Rico, the Mainland and foreign countries.

TABLE 14

Luis Muñoz Marín International Airport (SJU) Airlines
Air Century
Air Sunshine
Air Flamenco
Air Europa
Allegiant Air
American Airlines
Avianca
Cape Air
Condor
Copa Airlines
Delta Air Lines
Frontier Airlines
Iberia
interCaribbean
JetBlue Airways
LIAT
Seaborne Airlines
Spirit Airlines
Southwest Airlines
Sun Country Airlines
Tradewind Aviation
United Airlines
Vieques Air Link
WestJet

Source: Luis Muñoz Marín International Airport (2019). *Passengers.*

Most of them are from the U.S., but there are several foreign carriers. They provide regular service to and from several cities, mostly from Florida, New York/NewJersey, Texas, Atlanta, Chicago, Cincinnati, and Cleveland, the Dominican Republic, Panama, and several Caribbean islands, plus Madrid and Frankfurt airports.

There are international carriers that are not flying to San Juan, but could be potentially interested. Indeed, some of them did provided at one time service, like Mexicana, Lacsa, BWIA, British Airways, and Air France.

FIGURE 31

Airline Service From/To San Juan International Airport

TABLE 15

Airlines Not Flying to San Juan
Aerolíneas Argentinas
AeroMexico
Air Canada
Air France-KLM
British Airways
BWIA West Indies Airways (Based in Kingston, Jamaica)
Continental
Lacsa (Costa Rica)
Lan Chile
Lufthansa
Mexicana
Northwest
USAir

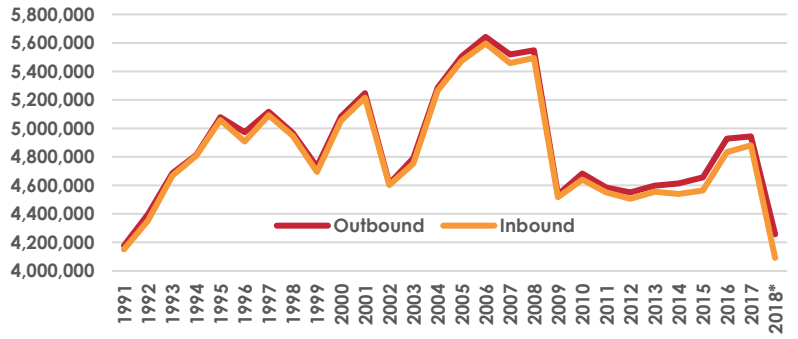
4.6 Passenger Movement

Since fiscal year 2000, according to data from the U.S. Bureau of Transportation Statistics, the volume of total passengers handled by Puerto Rico has trended downward. From a peak in fiscal year 2006 of 5.6 million outbound and 5.6 million inbound passengers, the volume decreased to 4.9 million outbound and 4.1 million inbound in fiscal 2017 (See Appendix A for a detail).

Between fiscal years 2000 and 2006, outbound passengers increased at a CAGR of 1.8% and those inbound at 1.7%; in the period 2007-2017, the numbers fell to -1.1% and -1.1% respectively.

FIGURE 32

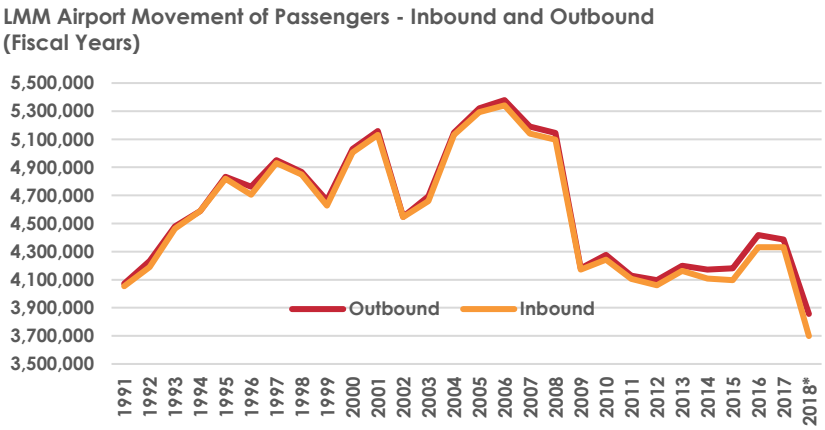
Total Movement of Passengers - Inbound and Outbound (Fiscal Years)



Source: Bureau of Transportation Statistics (2019). Air Carrier Statistics, Form 41 Traffic, T-100 Segment, All Carriers. * First half of year includes month of Hurricane María.

The trend has been set by that at LMM airport (See Figure 32). Between fiscal years 2000 and 2006, the number of outbound and inbound passengers increased at a CAGR of 1.1%; in the period 2007-2017, the numbers fell to -1.7% respectively.

FIGURE 33



Source: Bureau of Transportation Statistics (2019). Air Carrier Statistics, Form 41 Traffic, T-100 Segment, All Carriers. * First half of year includes month of Hurricane María.

While the total movement of passengers at LMM International Airport peaked in fiscal year 2005 at 11.0 million passengers, down to 9.8 million in fiscal 2017, that at Aguadilla (BQN) and Ponce airports was up, in particular in the case of the Aguadilla airport.

TABLE 16

Total Movement of Passengers, LMM, Aguadilla, Ponce and Mayaguez (Fiscal Years)

Year	LMM	BQN	Ponce	Mayaguez
1991	8,328,833	55,374	60,626	87,936
2000	10,136,760	28,031	17,383	52,761
2005	10,978,100	243,611	10,336	26,041
2010	9,324,936	481,402	183,885	8,609
2015	9,219,226	389,755	195,877	11,701
2017	9,825,320	551,983	209,371	11,617
2018	8,349,226	472,356	168,203	12,074

Source: Bureau of Transportation Statistics (2019). Air Carrier Statistics, Form 41 Traffic, T-100 Segment, All Carriers.

4.7 Load factors

Load factors at both airports – LMMM and Rafael Hernández (BQN), have increased over time, with a high in 2017 (See Table 17). The data for 2017, though, is affected by the high movement in passenger traffic during qthe last quarter of the year, as a result of Hurricane Maria. If we consider 2018, the trend has been slightly downward. In the U.S. the load factor for all carriers was 86.42, and worldwide 81.90, so the load factors for Puerto Rico are not out of line.[23]

[23] U.S. Bureau of Transportation Statistics (2019), Load Factor (Passenger-miles as a proportion of available seat-miles – All Airports, at: https://www.transtats.bts.gov/Data_Elements.aspx?Data=1; Statista – Passenger load factor of commercial airlines worldwide 2005-2019, at: https://www.statista.com/statistics/658830/passenger-load-factor-of-commercial-airlines-worldwide/.

TABLE 17

Average Load Factors LMM and Rafael Hernández (Aguadilla) Airports

Calendar Year	Domestic	International	Total	Domestic	International	Total
	LMM			Rafael Hernandez (BQN)		
2005	77.23	64.12	76.12	87.50	48.84	87.35
2010	88.06	67.91	86.48	84.65	75.62	84.64
2015	89.19	69.99	87.59	90.33	---	90.33
2017	90.97	74.05	89.44	93.57	93.37	93.57
2018	87.14	74.02	86.42	87.14	74.02	86.42

Source: Bureau of Transportation Statistics T-100 Segment data.

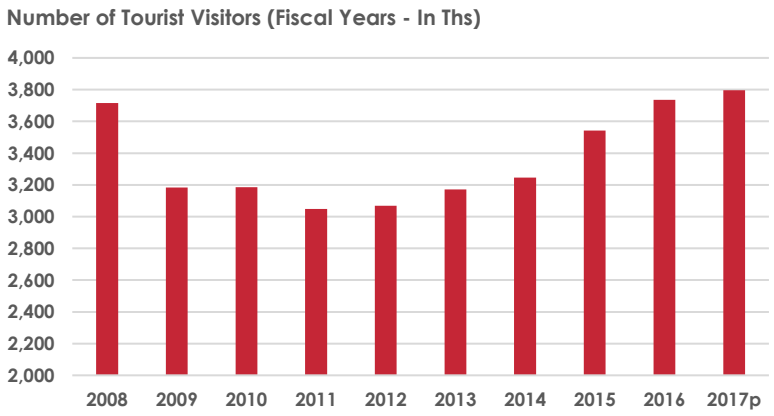
4.8 Benefits of the Visa Waver Program

The arrival of foreign students, academics, and other professionals is an important source of talent for training and knowledge, that can be positive intellectual inputs to the local economy. According to data from the U.S. Department of Homeland Security, the number of persons entering Puerto Rico under the program, as tourist and business travelers, rose from 57,642 in 2012 to 61,852 in 2017.[24]

4.9 Tourist visitors

Tourism is an important economic activity in Puerto Rico, in its two key segments, that of staying visitors, and those on cruise ships. After declining by fiscal year 2012, the number of tourist visitors rebounded, rising to 3.8 million in fiscal 2017 (See Figure 33).

FIGURE 33



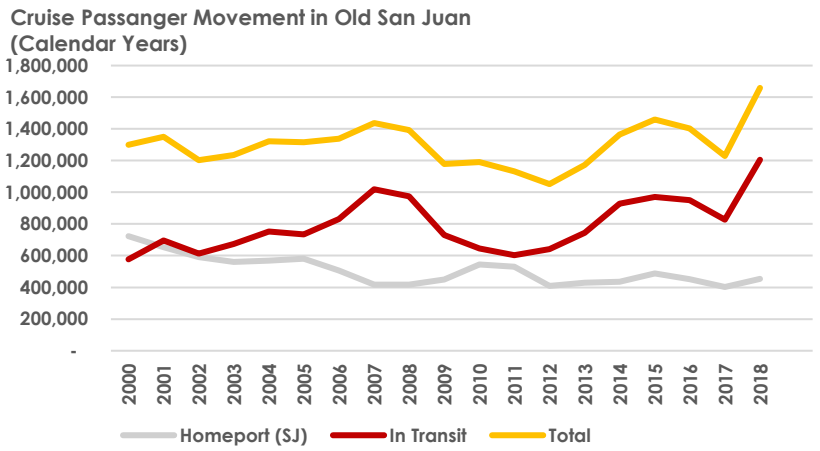
Source: P.R. Planning Board (2018). *Statistical Apendix 2017*, Table 17.

Cruise passengers are one segment which have become an importat component of tourist visitors. Between 2000 and 2012 the total number decreased, from 1.3 million to 1.0 million. Aftwerward there was an upward trend as the number of those in transit, that is,

[24] U.S. Department of Homeland Security (2019). *Table 30.Noninmigrant Admissions (I-94 Only) by Selected category of Admission and Satet or Territory of Destination*, 2012 and 2017. At: https://www.dhs.gov/immigration-statistics/yearbook/2017/table30.

those that fly to SJ to take the cruise, has been increasing. As a matter of fact, their share in the total have been steadily increasing, from 44.4% in 2000, to 73.% in 2018, while that of local residents declined. In 2018 this segment registered its best results in years, with the total number rising to 1.6 million, from 1.4 million in 2016 (See Appendix A).

FIGURE 34



Source: P.R. Tourism Company (2019). Cruise Passanger Movement.

4.9.1 Origin of visitors

The great majority of the visitors to the island come from the Mainland (90.7%), with the states of New York and Florida occupying the top positions, followed by New Jersey. Visitors from foreign countries represent a small proportion of the total, 9.3% in 2017, with the Dominican Republic and Canada the two top countries of origin.

TABLE 18

Origin of Visitors by State/Country, 2017

State/Country	Dist. %
New York	22.1%
Florida	15.7%
New Jersey	6.6%
Massachusetts	6.3%
Texas	4.6%
California	3.8%
Other States	31.6%
United States	**90.7%**
Dominican Republic	1.8%
Canada	1.7%
Colombia	0.9%
Spain	0.9%
United Kingdom	0.4%
Germany	0.3%
Argentina	0.2%
Other foreign countries	3.1%
Total foreign countries	**9.3%**
	100.0%

Source: P.R. Planning Board (2018). *Perfil de los Visitantes 2017*. San Juan.

4.10 Miami Airport

Miami Internatinal Airport is one of the key competitors of Puerto Rico in the region, in both, passenger movement and air freight. It is already well established as an air transportation hub, together with the Fort Lauderdale airport on the north. It occupies the 12th position in terms of the total passengers it handles among major U.S. airports,.[25] The number of passengers it handles annually is almost ten times that of of Puerto Rico's LMM, at 40.8 million total pasengers in 2017, with a total load factor of 83.90 in 2018 (As of September 2018).[26] While Miami International handled a total of 319,356 flights in 2017, LMM's moved 94,158 flights.[27]

TABLE 19

Passenger Movement Miami International Airport

	Outbound	Inbound	Total
2005	14,731.6	14,731.8	29,463.4
2010	16,748.2	16,712.8	33,461.0
2015	20,596.4	20,554.6	41,151.0
2017	20,398.7	20,413.7	40,812.4
2018*	15,546.8	15,426.4	30,973.2

Source: Bureau of Transportation Statistics T-100 Market data.
* Up to September international.

MIA occupies the fourth place in terms of total cargo handled among major U.S. airports. Worldwide it occupies the 14th place in cargo traffic.[28] The volume has remained fairly consistent since 2010.[29] It exceed by far that of LMM's International Airport.

TABLE 20

MIA Outbound and Inbound Freight (Th's pounds)
2005, 2010, 2015, 2017, 2018*

Year	Outbound	Inbound	Total
2005	1,599,814,196	2,107,511,911	3,707,326,107
2010	1,726,749,111	1,906,174,490	3,632,923,601
2015	1,659,785,198	2,318,028,252	3,977,813,450
2017	1,615,742,555	2,288,447,178	3,904,189,733
2018*	1,238,388,213	1,754,577,448	2,992,965,661

Source: Bureau of transportation Statistics (2019). *Air Carrier Statistics* [T-100 Market (All carriers)].
*Jan-Sep

[25] Miami International Airport (2018). *U.S. and Worldwide Airport Rankings Passengers and Freight 2017*. At: http://www.miami-airport.com/cargo.asp.

[26] Miami International Airport 2017.

[27] U.S. Bureau of Transportation Statistics (2019). Flights – All Carriers. At: https://www.transtats.bts.gov/Data_Elements.aspx?Data=5.

[28] Aiports Council International (2019). *Cargo Summary – Cargo Traffic 2017 Final* (January 8). At: https://aci.aero/data-centre/annual-traffic-data/cargo/2017-cargo-summary-annual-traffic-data/.

According to a recent report, airport congestion is a global trend.[30] A key contributor to the problem is that of airport capacity. In the U.S., the five most congested airports that will need additional capacity by 2020 were (in 2011 baseline year for the analysis) the three in the NYC area, Philadelphia and Atlanta, with MIA having a cautionary status (Assuming NextGen implementation is not delayed).[31]

4.11 Movement of pasengers and freight at competing regional airports

Besides Miami, the other immediate competing airports in the region are those in the Dominican Republic and Panamá. Both countries also have strong commercial and tourist linkages with Miami.

4.11.1 Dominican Republic

The Dominican Republic and Panama handle more passengers than Puerto Rico, one reason being that the Dominican Republic has more international airports than the island. At the aggregate level, the DR handled a total of 14.5 million pasengers in 2018, from 11.3 million in 2014. Separately, the main airport by passenger movement is that at Punta Cana, followed by the Las Americas International Airport next to the capital, in which case they handle less passengers than LMM International Airport.

TABLE 21

Dominican Republic: Total Movement of Passengers by Airport, 2018

Airport	Inbound	Outbound	Total
Internacional Punta Cana	3,944,536	3,935,040	7,879,576
Las Americas Int. Airport	1,837,689	1,865,459	3,703,148
Internacional del Cibao	786,707	822,121	1,608,828
Internacional Puerto Plata	438,935	437,053	875,988
Other regional airports	212,467	218,314	430,781
Total	7,220,334	7,277,987	14,498,321

Source: Departamento de Estadísticas , Dirección General de Migración (DGM).

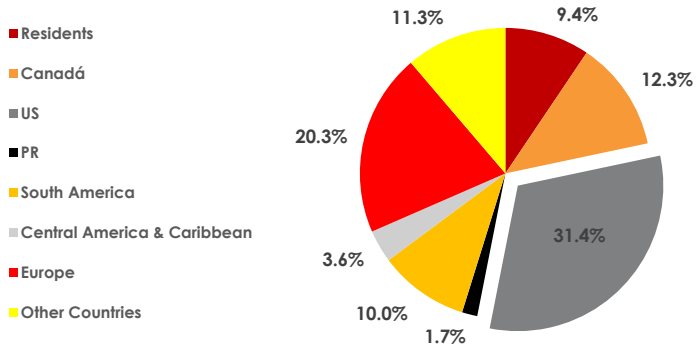
By origin, the majority of inbound passengers come from the US and Europe. While the share of the US increased, from 19.4% in 2000 to 31.4% in 2017, that of Europe visitors decreased from 39.3% to 20.3% in the same period. Another important source of passengers is Canada, which accounted for 12.3% of the total in 2017, from 7.4% in 2000 (See Figure 31 and Table 22).

[30] Vicente Padilla (2016). *Trends in airport congestion*, Aertec Solutions (October 31). At: https://aertecsolutions.com/2016/10/31/trends-in-airport-congestion/?lang=en.

[31] Federal Aviation Administration (2015), *FACT3: Airport Capacity Needs in the National Airspace System* (January 15), p. 20. At: https://www.faa.gov/airports/planning_capacity/media/FACT3-Airport-Capacity-Needs-in-the-NAS.pdf.

FIGURE 31

Dominican Republic: Inbound Air Passengers by Country/Region, 2017



Source: Registros Administrativos, Sector Turismo, Departamento de Cuentas Nacionales, Banco Central de la República Dominicana (2019).

TABLE 22

Dominican Republic: Movement of Passengers

				Inbound (%)	
	Inbound	Outbound	Total	US	Europe
2000	3,314,063	3,358,302	6,672,365	19.4%	39.3%
2001	3,179,869	3,250,425	6,430,294	21.5%	36.4%
2002	3,104,709	3,148,143	6,252,852	22.9%	33.7%
2003	3,583,847	3,605,602	7,189,449	24.3%	35.4%
2004	3,783,365	3,842,521	7,625,886	24.7%	34.0%
2005	4,081,295	4,047,582	8,128,877	24.7%	34.2%
2006	4,383,765	4,370,479	8,754,244	24.9%	32.5%
2007	4,428,005	4,454,476	8,882,481	24.8%	30.3%
2008	4,398,743	4,415,041	8,813,784	25.2%	29.8%
2009	4,414,756	4,436,804	8,851,560	26.1%	27.3%
2010	4,586,264	4,725,917	9,312,181	26.6%	24.9%
2011	4,776,473	4,866,316	9,642,789	27.2%	23.7%
2012	5,047,021	5,131,138	10,178,159	29.3%	21.7%
2013	5,163,682	5,227,114	10,390,796	31.4%	20.9%
2014	5,648,743	5,717,411	11,366,154	32.4%	20.1%
2015	6,151,003	6,214,884	12,365,887	33.3%	17.9%
2016	6,558,982	6,639,816	13,198,798	32.5%	18.6%
2017	6,831,883	6,929,598	13,761,481	31.4%	20.3%
2018	7,220,334	7,277,987	14,498,321	ND	ND

Sources: Registros Administrativos, Sector Turismo, Departamento de Cuentas Nacionales, Banco Central de la República Dominicana (BCRD); Departamento de Estadísticas , Dirección General de Migración (DGM).

In the case of air freight, the bulk of the movement is concentrated in the Las Américas International Airport, close to the capital and several free trade zones.

TABLE 23

Dominican Republic: Freight Movement by Airport ($mm)

Outbound Freight	2012	2013	2014	2015	2016	2017	2018
AEROPUERTO INTERNACIONAL JOSE FRANCISCO PEÑA GÓMEZ LAS AMÉRICAS	$654.4	$1,867.0	$2,389.5	$2,122.2	$2,578.5	$2,606.7	$2,553.1
AEROPUERTO INTERNACIONAL LICEY SANTIAGO	$72.6	$80.9	$85.2	$97.2	$95.4	$96.1	$102.7
AEROPUERTO PUNTA CANA	$7.4	$11.1	$23.1	$44.3	$38.8	$50.9	$53.6
AEROPUERTO INTERNACIONAL GREGORIO LUPERÓN PUERTO PLATA	$6.1	$8.3	$6.6	$10.6	$10.0	$10.9	$10.3
AEROPUERTO INTERNACIONAL LA ROMANA	$1.9	$1.0	$1.3	$1.8	$1.7	$1.6	$2.0
AEROPUERTO JUAN BOSCH (EL CATEY)	$0.3	$0.4	$0.2	$0.2	$1.1	$0.7	$0.6
AEROPUERTO DR. JOAQUÍN BALAGUER	$0.0	$1.2	$0.1	$0.1	$0.0	$0.1	$0.3
Total	**$742.7**	**$1,969.8**	**$2,506.0**	**$2,276.3**	**$2,725.5**	**$2,767.1**	**$2,722.5**
Inbound Freight	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
AEROPUERTO INTERNACIONAL JOSE FRANCISCO PEÑA GÓMEZ LAS AMÉRICAS	$1,516.3	$1,621.8	$1,717.3	$1,771.9	$2,068.9	$2,150.8	$2,231.1
AEROPUERTO INTERNACIONAL LICEY SANTIAGO	$158.3	$94.4	$108.6	$83.2	$84.4	$87.4	$90.7
AEROPUERTO PUNTA CANA	$19.0	$15.8	$17.8	$20.6	$29.8	$29.0	$29.6
AEROPUERTO DR. JOAQUÍN BALAGUER	$1.0	$1.3	$3.0	$3.2	$4.8	$6.6	$15.6
AEROPUERTO INTERNACIONAL GREGORIO LUPERÓN PUERTO PLATA	$4.3	$3.1	$3.9	$9.6	$8.3	$7.3	$4.7
AEROPUERTO INTERNACIONAL LA ROMANA	$1.4	$1.8	$1.3	$1.3	$1.4	$1.7	$3.2
AEROPUERTO JUAN BOSCH (EL CATEY)	$0.0	$0.0	$0.1	$0.0	$0.0	$0.0	$0.0
Total	**$1,700.2**	**$1,738.3**	**$1,851.9**	**$1,889.7**	**$2,197.6**	**$2,282.8**	**$2,375.0**

Source: Dirección General de Aduanas (2019). *Time Series* .

According to a report from the Junta de Aviación Civil República Dominicana (2018), in 2017, of the total air cargo exported from the Dominican Republic, 65.0% were vegetable products, mostly destined to the U.S. and Canada, while in the case of imports, 30.% were machinery and appliances.[32] In terms of value (FOB-USD), 13.0% of ts total imports of merchandise come vía air freight.[33]

4.11.2 Panama

The economy of Panama has ben experiencing positive growth during the past several years, and its Tucumén airport is a well-kown transportation hub for Central and South America.

TABLE 24

Panama: Total Movement of Passengers

	Domestic	North America	Central America	South America	West Indies	Europe	International	Inbound Passengers Int.	Outbound Passengers Int.	Direct Transit Passengers	Total Domestic, Int. and Direct Transit
2010	269,443	1,117,967	421,193	1,206,127	224,934	128,959	3,099,180	1,551,109	1,548,071	2,083,175	5,451,798
2011	289,197	1,118,074	421,284	1,404,330	280,088	176,172	3,399,948	1,666,481	1,733,901	2,520,150	6,209,295
2012	273,244	1,173,206	454,726	1,543,086	295,838	190,629	3,657,485	1,786,449	1,871,036	3,334,684	7,265,413
2013	274,769	1,231,145	475,244	1,562,322	324,979	211,582	3,805,272	1,833,807	1,971,465	3,831,157	7,911,198
2014	286,493	1,398,260	515,352	1,592,393	354,255	290,934	4,151,194	2,017,923	2,133,271	4,249,242	8,686,929
2015	280,683	1,464,251	559,972	1,541,008	337,772	336,678	4,239,681	2,061,511	2,178,170	4,555,493	9,075,857
2016	303,437	1,398,919	554,565	1,725,670	326,285	497,301	4,502,740	2,185,401	2,317,339	5,039,845	9,846,022
2017	275,938	1,371,418	604,751	1,549,286	376,918	643,541	4,545,914	2,219,875	2,326,039	5,525,344	10,347,196

Source: Departamento de Análisis de Transporte Aéreo, Dirección de Transporte Aéreo, Autoridad Aeronáutica Civil (2019).

Between 2010 and 2017, its total movement of passengers increased a a CAGR of 9.6%, led by the increase in direct transit passengers, but it is the movement of passengers from Europ which has increased the most, 26.0%, while that from North America increased at

[32] Junta de Aviación Civil República Dominicana (2018). *Air Transport Statistics Report Dominican Republic 2017* (March 2018), pp. 20 - 22. At: http://www.jac.gob.do/transparencia/phocadownload/Estadisticas/2017/Air%20Transport%20Statistics%20Report%202017.pdf

[33] Oficina Nacional de Estadísticas. *Anuario Comercio Exterior 2017* (February 19, 2019), table 2.4. At: https://www.one.gob.do/publicaciones?ID=5101.

an annual rate of 3.0%. Still, the total movement of passengers is lower than that of the Dominican Republic.

According to official data, the total movement of air freight (Domestic and international) decreased at a CAGR of 4.1% between 2010 and 2017, mostly because of the decrease in domestic freight. By region, that from Europe increased the most, 11.8%, followed by the West Indies (8.2%).

TABLE 25

Panama: Air Freight Movement (Thousands of Pounds)

	Domestic	North America	Central America	South America	West Indies	Europe	International	Inbound Freight	Outbound Freight	Total
2010	1,356,001	72,322	43,827	98,257	5,148	19,266	238,820	114,119	124,701	1,594,821
2011	1,424,460	83,585	47,414	97,018	4,550	21,409	253,977	120,995	132,981	1,678,437
2012	1,131,092	93,876	45,047	96,844	6,135	22,796	264,698	132,902	131,795	1,395,790
2013	1,041,155	84,161	47,857	94,688	4,967	24,394	256,066	128,817	127,250	1,297,222
2014	1,095,785	75,510	52,251	85,609	7,119	26,116	246,604	126,394	120,210	1,342,390
2015	1,033,358	66,980	53,049	74,050	6,559	27,227	227,865	117,690	110,175	1,261,223
2016	1,085,686	77,571	51,100	75,719	7,326	36,111	247,828	128,885	118,943	1,333,514
2017	927,222	78,149	55,706	73,678	8,964	41,949	258,445	133,874	124,571	1,185,667

Source: Departamento de Análisis de Transporte Aéreo, Dirección de Transporte Aéreo, Autoridad Aeronáutica Civil (2019).

4.11.3 Colombia

Of the two countries examined above (Dominican Republic and Panama), Colombia moves a much greater number of passengers, at levels similar to those of Miami International, mostly through its international airport in Bogota.

Between 2008 and 2018, its total movement of passengers increased at an annual rate of 8.8%. Inbound and outbound movement increased at an average annual rate of 9.4%. The bulk of the movement are domestic passengers, which increased 8.5%.

TABLE 26

Colombia: Total Movement of Passengers

	Domestic	Inbound Passengers	Outbound Passengers	Total
2008	9,595,399	2,662,316	2,737,570	14,995,285
2009	10,665,217	2,802,456	2,803,918	16,271,591
2010	13,945,337	3,094,664	3,123,994	20,163,995
2011	14,604,147	3,446,096	3,501,255	21,551,498
2012	16,935,152	3,858,847	3,899,111	24,693,110
2013	19,752,218	4,413,474	4,454,643	28,620,335
2014	20,990,331	4,953,889	4,993,560	30,937,780
2015	23,116,229	5,487,068	5,492,594	34,095,891
2016	23,556,988	5,828,735	5,952,468	35,338,191
2017	23,343,279	6,151,154	6,125,561	35,619,994
2018	24,030,584	6,883,604	6,892,863	37,807,051

Source: Aeronáutica Civil de Colombia (2019). *Estadísticas de las actividades aeronáuticas*.

The movement of air freight, in particular international, has not been positive, having remained almost stagnant between 2008 and 2018, after and upward trend by 2015. Domestic trade, though, increased by 8.5% in those years.

TABLE 27

Colombia: Total Movement of Air Freight

	Domestic	Inbound Freight	Outbound Freight	Total
2008	1,504,444,422	1,845,425,071	2,088,612,795	5,438,482,288
2009	1,437,413,285	2,002,692,996	2,203,679,813	5,643,786,095
2010	1,518,884,130	1,409,166,014	1,491,497,282	4,419,547,427
2011	1,943,389,680	1,456,858,609	1,535,383,064	4,935,631,352
2012	2,251,875,839	1,476,359,978	1,579,135,882	5,307,371,699
2013	2,507,220,316	1,637,242,698	1,869,252,827	6,013,715,841
2014	2,893,193,911	2,052,285,392	2,211,703,325	7,157,182,628
2015	4,169,641,339	2,137,208,522	2,320,213,810	8,627,063,670
2016	3,832,921,348	1,811,120,838	1,906,676,110	7,550,718,296
2017	3,511,962,741	2,035,197,711	2,142,934,392	7,690,094,844
2018	2,191,257,412	1,666,979,928	1,809,478,978	5,667,716,318

Source: Aeronáutica Civil de Colombia (2019). *Estadísticas de las actividades aeronáuticas*.

Of the total inbound and outbound international freight (See Table 28), in 2008 the U.S. represented 63.0% of the total; by 2018 that share declined to 43.0%. A similar trend happened in the case of the freight trade with Europe; from a high of 32.0% in 2009 it fell to 10.1% in 2018, indicating that other markets/sources have gained in importance, possibly from the rest of South America.

A similar trend occurred in the case of the total movement of international passengers. The share of Europe remained the same, 13.0%, while that of U.S. decreased to 26.4% in 2018, from 35.0% in 2008.

TABLE 28

Colombia: Movement of Passangers and Air Freight

	Air Freight		Passengers	
	Europe	United States	Europe	United States
2008	241,347,520	2,477,145,637	725,329	1,865,781
2009	1,345,101,987	1,839,185,218	772,645	2,031,424
2010	437,894,017	1,340,113,394	806,345	2,315,340
2011	243,408,524	1,269,562,960	1,000,910	2,206,727
2012	227,628,680	1,232,562,164	1,024,968	2,362,420
2013	291,663,950	1,365,140,130	1,060,763	2,734,228
2014	1,172,718,529	1,309,696,555	1,146,297	2,976,089
2015	1,143,925,152	1,460,179,515	1,309,563	3,176,229
2016	333,435,272	1,534,317,204	1,501,008	3,298,394
2017	390,386,567	1,540,340,726	1,639,150	3,206,929
2018	350,574,432	1,489,215,234	1,886,952	3,640,792

Source: Aeronáutica Civil de Colombia (2019). *Estadísticas de las actividades aeronáuticas*.

4.12 Investment in local airports

Besides the LMM International Airport, there are nine local airports: Isla Grande, Arecibo, Humacao, Aguadilla, Mayaguez, Vieques, Fajardo, Ponce, Culebra, and Ceiba. They are currently managed by the P.R. Ports Authority who is searching for a private entity to administer them. Of the nine, the biggest in terms of movement of passengers and freight is that in Aguadilla (BQN).

According to the Capital Improvements Program of the P.R. Ports Authority (2018), a total of $180.5 million in investment would be spent on the nine airports, most of which will go to the Aguadilla Airport. In the case of Ceiba, the total investment is small, $11.4 million.

TABLE 29

Capital Improvements Local Airports, Fiscal Years 2019 - 2023*

	Investment ($Mm)
2019	$38.1
2020	$20.0
2021	$9.4
2022	$37.8
2023	$75.2
Total:	$180.5

Source: P.R. Ports Authority (May 7, 2019).

* For the nine local airports: Isla Grande, Arecibo, Humacao, Aguadilla, Mayaguez, Vieques, Fajardo, Ponce, Culebra, Ceiba

5 The Need for New Approaches to Sustain Growth

The proposal under consideration of Puerto Rico looks for air cabotage liberalization as one instrument of positive impact on the wider economy. For the past decades there has been movements toward the liberalization of the international air market. Since 1992, for instance, the U.S. has enacted "open skies" bilateral agreements with other countries, where air carriers of the two countries can operate any air route without significant restrictions. The most prominent example of this liberalization has been the European Union single aviation market.[34]

Granted that any exemptions of existing regulations/laws on air service, will be considered within the context of the U.S.'s interests and concerns, the fact that it has already undertaken the "open skies" initiatives is a positive step toward the goal of air cabotagge liberalization for Puerto Rico.[35]

A 2009 and 2015 reports by InterVistas-EU presents evidence on the positive impact of liberalization of international air markets:[36]

1. The EU single aviation market "greatly increased competition on many routes;
2. Liberalization of the EU marked doubled the rate of growth in air traffic;
3. There is a "link between increased air traffic and growth in employment and Gross Domestic Product";
4. In the case of Chile, with an open skies policy since the late 1970's, liberalization of market access led to an increase in international traffic, in the number of tourist visitors, and additional economic activity in the supporting on-land air services.[37]
5. In a more wider sample of countries report (2015) on passenger traffic, it was found that "liberalization increases air traffic by 17.0%, with the impact on air traffic continuing to be high" (from the 2009 report).[38] The report also concluded that there is "still the need of "major progress in air service liberalization";[39]
6. A study by Piermantini and Rousová (2013), focused on four aspects of liberalization, one of them being cabotage, found that the "adoption of free determination of

[34] InterVistas-EU Consulting Inc. (2009). *Impact of International Air Service Liberalization on Chile* (July 2009), pp. i – ii. At: https://www.iata.org/publications/economics/reports/chile-report.pdf.

[35] The present Convention on International Civil Aviation (the Chicago Convention of 1944) incorporated the wider definition of cabotage used by the United States, which included the traffic between a territory and its colonies and possessions. See Douglas R. Lewis (1980), "Air Cabotage: Historical and Modern-Day Perspectives," *Journal of Air Law and Commerce*, 45: Issue 4, Article 10, pp. 1061 – 1062. At: https://scholar.smu.edu/cgi/viewcontent.cgi?article=2283&context=jalc.

[36] See InterVistas Consulting Inc. (2009). The sources of the reports are quoted in InterVistas-EU (2009), p. ii; InterVistas-EU Consuting Inc. (2015), *Economic Impact of Air Service Liberalization* (June 11). At: http://www.intervistas.com/wp-content/uploads/2015/07/The_Economic_Impacts_of_Air_Liberalization_2015.pdf.

[37] InterVistas-EU (2009), pp. iii – iv.

[38] InterVistas-EU Consulting Inc. (2015), pp. 17 – 18. The countries/regions included in the study were ASEAN, Australia, New Zealand, Malaysia, Thailand, U.S., Japan, and India. See chapter 4 of the report.

[39] InterVistas-EU Consulting Inc. (2015), p. 62.

capcity and free pricing would lead to a 5.0% and 9.0% increase in traffic volumes respectively," worldwide.[40]

The above studies at the very least demonstrate the positive impacts of air service liberalization on the economy and air traffic. Thus, there are potential benefits for Puerto Rico which would contribute to positive long-term growth.

[40] R. Piermantini and L. Rousová (2013), The Sky Is Not Flat: How Discriminatory is the Access to International Air Services? *American Economic Journal: Economic Policy*, 5(3), as quoted in InterVistas-EU Consulting Inc. (2015), pp. 8 and 11.

Appendix A

Number of Puerto Rico Freight, Air Passengers and Flights

Fiscal Years 1991-2018

	Outbound Passengers	Inbound Passengers	Outbound Freight (Pounds)	Inbound Freight (Pounds)	Outbound Flights	Inbound Flights
1991	4,176,892	4,151,941	127,644,508	162,219,112	50,169	50,118
1992	4,397,965	4,352,694	141,284,557	156,831,425	58,990	58,888
1993	4,686,507	4,666,854	132,665,832	153,219,381	55,666	55,743
1994	4,814,694	4,809,023	126,119,656	159,558,895	57,474	57,403
1995	5,078,887	5,059,252	139,844,684	167,302,955	62,035	62,066
1996	4,972,347	4,908,918	131,980,141	156,344,501	58,216	58,153
1997	5,117,682	5,093,297	138,072,320	156,135,180	59,517	59,403
1998	4,968,838	4,948,990	133,540,328	141,710,828	59,530	59,315
1999	4,729,803	4,695,089	130,763,702	170,523,155	59,233	59,028
2000	5,082,597	5,054,163	207,461,417	253,726,886	67,785	67,537
2001	5,247,856	5,215,157	163,200,738	204,956,433	73,058	72,563
2002	4,611,602	4,603,114	160,402,247	208,798,542	64,071	63,806
2003	4,790,512	4,753,287	290,605,732	376,001,848	77,289	76,806
2004	5,286,033	5,265,333	347,676,280	436,895,957	86,117	85,481
2005	5,504,624	5,473,476	348,067,791	431,497,875	88,938	88,042
2006	5,642,198	5,595,959	335,239,177	421,597,020	94,296	93,404
2007	5,517,725	5,457,475	340,504,039	426,215,058	87,332	86,635
2008	5,547,717	5,493,508	322,524,023	423,451,584	84,022	83,551
2009	4,536,003	4,517,434	250,969,338	337,674,781	78,802	78,499
2010	4,684,198	4,640,738	207,507,280	281,030,826	82,007	81,775
2011	4,585,275	4,550,464	217,381,627	279,838,803	85,215	85,022
2012	4,551,978	4,505,509	222,752,449	272,885,726	88,884	88,545
2013	4,598,894	4,556,049	233,789,663	299,787,047	83,957	83,847
2014	4,613,438	4,539,113	234,071,586	303,792,837	92,732	92,679
2015	4,655,768	4,563,458	276,161,187	336,542,711	101,149	100,801
2016	4,928,680	4,833,945	238,894,094	325,037,307	102,861	102,222
2017	4,944,414	4,880,906	227,422,691	301,929,115	95,608	94,433
2018*	4,257,771	4,091,455	229,696,398	378,468,673	69,183	68,572

Source: Bureau of Transportation Statistics (2019). *Air Carrier Statistics, Form 41 Traffic, T-100 Segment, All Carriers.*

* First half of year includes month of Hurricane Maria.

Number of Luis Muñoz Marín International Airport Freight, Air Passengers and Flights

Fiscal Years 1991-2018

	Outbound Passengers	Inbound Passengers	Outbound Freight (Pounds)	Inbound Freight (Pounds)	Outbound Flights	Inbound Flights
1991	4,071,356	4,052,956	117,773,507	150,627,609	45,276	45,205
1992	4,233,478	4,191,328	126,575,914	139,999,288	51,720	45,205
1993	4,480,286	4,463,816	119,892,632	138,590,558	50,034	51,604
1994	4,589,397	4,589,954	120,198,945	151,219,762	52,846	50,090
1995	4,833,130	4,818,153	131,565,547	160,420,133	57,137	52,783
1996	4,762,733	4,705,009	120,859,444	147,063,597	53,438	57,176
1997	4,951,711	4,931,003	112,284,881	136,286,176	54,854	53,415
1998	4,866,774	4,849,565	104,424,803	122,739,418	55,373	54,813
1999	4,663,892	4,628,486	102,320,479	139,143,620	55,600	55,309
2000	5,031,940	5,006,645	153,372,441	206,781,154	63,741	55,453
2001	5,159,479	5,131,880	158,999,426	202,918,879	68,615	63,734
2002	4,548,281	4,546,323	151,944,513	204,522,714	60,515	68,405
2003	4,694,013	4,660,379	213,458,296	292,549,352	70,195	60,562
2004	5,146,462	5,132,099	237,201,533	327,559,288	75,304	69,704
2005	5,319,718	5,294,070	238,501,341	318,009,081	74,218	74,828
2006	5,378,735	5,341,222	240,124,149	320,177,975	76,445	73,423
2007	5,190,122	5,139,853	245,500,708	328,841,589	71,562	75,698
2008	5,144,027	5,097,924	231,536,614	323,200,091	68,236	71,133
2009	4,181,218	4,171,918	181,385,911	263,241,840	62,759	67,892
2010	4,275,947	4,242,271	137,130,698	209,430,755	62,683	62,662
2011	4,129,211	4,105,861	126,781,140	184,741,307	57,640	62,942
2012	4,096,563	4,061,051	123,693,245	181,895,291	59,889	57,876
2013	4,199,748	4,163,504	114,709,836	186,633,962	59,329	59,963
2014	4,172,433	4,109,244	121,764,460	194,400,181	60,470	59,625
2015	4,181,195	4,096,586	129,423,043	202,671,738	59,473	60,616
2016	4,416,940	4,331,453	139,685,808	218,063,443	60,358	59,298
2017	4,385,712	4,331,081	136,185,166	210,854,308	57,805	60,788
2018*	3,856,307	3,698,933	170,942,288	301,509,695	48,126	57,002

Source: Bureau of Transportation Statistics (2019). *Air Carrier Statistics, Form 41 Traffic, T-100 Segment, All Carriers.*

* First half of year includes month of Hurricane Maria.

Recorded Exports and Imports by Region

Fiscal Years 2008-2017

Exports	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
United States	$47,262.3	$43,543.9	$41,989.2	$45,872.7	$41,798.0	$44,665.8	$44,853.1	$51,433.1	$54,592.5	$55,257.1
Virgin Islands	$141.9	$121.8	$142.1	$180.6	$162.9	$232.8	$293.8	$280.5	$343.8	$295.0
Foreign countries	$16,549.4	$17,140.9	$19,526.0	$18,822.6	$16,953.1	$17,498.2	$17,310.3	$17,677.4	$16,919.7	$15,550.3
Africa	$32.3	$24.1	$16.4	$16.6	$13.4	$23.4	$35.5	$54.1	$72.2	$64.8
Central America	$238.1	$101.3	$164.9	$178.4	$294.5	$312.2	$160.7	$105.1	$236.4	$77.1
North America	$531.7	$362.7	$342.2	$548.0	$604.3	$439.1	$429.0	$398.1	$385.7	$463.2
South America	$409.7	$292.2	$287.7	$538.9	$315.6	$404.2	$511.8	$401.2	$248.0	$301.5
Asia	$2,265.8	$2,291.2	$2,821.3	$3,753.1	$3,833.6	$3,245.0	$2,798.4	$2,992.2	$2,864.5	$2,453.5
Australia and the Pacific	$313.7	$264.5	$428.5	$276.5	$238.3	$229.9	$308.4	$146.6	$89.4	$93.6
Caribbean	$1,699.5	$1,209.5	$881.3	$775.3	$689.7	$725.8	$1,118.2	$1,123.8	$927.9	$961.8
Europe	$11,058.5	$12,595.5	$14,583.7	$12,735.8	$10,963.8	$12,118.7	$11,948.2	$12,456.4	$12,095.5	$11,134.9
Total	$63,953.6	$60,806.6	$61,657.2	$64,876.0	$58,914.1	$62,396.9	$62,457.2	$69,390.9	$71,856.1	$71,102.4
Imports										
United States	$21,322.1	$19,069.1	$20,895.5	$20,579.1	$19,837.1	$20,454.9	$20,063.9	$22,333.8	$24,076.2	$24,589.0
Virgin Islands	$1,575.2	$1,608.1	$1,573.4	$2,015.0	$1,775.1	$8.8	$10.6	$15.1	$1.3	$236.0
Foreign countries	$22,031.0	$19,973.8	$18,341.2	$22,076.5	$24,962.4	$24,575.0	$22,401.1	$20,884.1	$19,242.6	$21,378.9
Africa	$2,407.0	$595.5	$267.8	$237.9	$826.1	$517.6	$177.1	$194.6	$133.3	$84.5
Central America	$332.3	$299.5	$262.3	$255.9	$273.5	$260.3	$244.8	$252.0	$233.2	$240.5
North America	$808.9	$698.3	$640.3	$1,066.4	$1,055.8	$1,339.3	$1,159.8	$988.9	$1,055.2	$1,015.0
South America	$1,889.4	$1,312.7	$1,303.6	$985.7	$2,062.3	$2,014.0	$1,714.8	$2,238.1	$1,358.4	$2,277.2
Asia	$3,565.9	$4,516.6	$5,053.3	$6,379.2	$7,263.2	$7,391.5	$7,233.6	$6,355.4	$5,942.4	$5,816.5
Australia and the Pacific	$35.3	$41.3	$38.8	$33.1	$62.1	$32.1	$28.4	$2.6	$8.8	$3.2
Caribbean	$1,148.4	$1,181.8	$1,342.9	$1,704.9	$930.7	$1,230.1	$1,272.0	$1,074.6	$831.0	$832.3
Europe	$11,843.7	$11,328.1	$9,432.3	$11,413.4	$12,488.6	$11,790.1	$10,570.7	$9,777.9	$9,680.1	$11,109.7
Total	$44,928.3	$40,651.0	$40,810.1	$44,670.6	$46,574.6	$45,038.7	$42,475.6	$43,233.0	$43,320.1	$46,203.9

Source: Puerto Rico Planning Board (2018). *Selected Statistics on Puerto Rico's External Trade.*

Cruise Passanger Movement in Old San Juan (Calendar Years)

Year	Homeport (SJ)	In Transit	Total	Homeport (SJ)	In Transit
2000	723,105	576,970	1,300,075	55.6%	44.4%
2001	653,662	696,455	1,350,117	48.4%	51.6%
2002	591,559	612,352	1,203,911	49.1%	50.9%
2003	560,940	674,052	1,234,992	45.4%	54.6%
2004	568,534	752,559	1,321,093	43.0%	57.0%
2005	580,840	734,239	1,315,079	44.2%	55.8%
2006	506,395	831,624	1,338,019	37.8%	62.2%
2007	417,137	1,020,102	1,437,239	29.0%	71.0%
2008	417,254	975,370	1,392,624	30.0%	70.0%
2009	449,670	729,352	1,179,022	38.1%	61.9%
2010	545,395	645,660	1,191,055	45.8%	54.2%
2011	529,884	602,255	1,132,139	46.8%	53.2%
2012	409,337	642,382	1,051,719	38.9%	61.1%
2013	428,541	744,190	1,172,731	36.5%	63.5%
2014	436,117	928,180	1,364,297	32.0%	68.0%
2015	488,813	971,176	1,459,989	33.5%	66.5%
2016	451,840	950,026	1,401,866	32.2%	67.8%
2017	402,383	826,731	1,229,114	32.7%	67.3%
2018	453,367	1,205,455	1,658,822	27.3%	72.7%

Source: P.R. Tourism Company.