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# THE IMPACT OF AVIATION ON GUYANA'S ECONOMY

A REPORT FOR THE GUYANA CIVIL AVIATION  
AUTHORITY

MAY 2017

## Oxford Economics

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To discuss the report further please contact:

Dan Levine  
Practice Leader, Location Strategies  
Oxford Economics  
5 Hanover Sq. 8<sup>th</sup> Floor  
New York, NY 10004 USA  
Tel: +1 646-503-3067  
[DanLevine@OxfordEconomics.com](mailto:DanLevine@OxfordEconomics.com)

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# EXECUTIVE SUMMARY

**3.2% of  
GDP**

is the overall GDP  
impact of the civil  
aviation industry

**12,000  
jobs**

are supported by civil  
aviation, including  
foreign tourism

The economic impact of the aviation sector in Guyana is substantial. The most direct activities associated with aviation create G\$20.7 billion in annual economic activity. This represents 3.2% of Guyana's total GDP in 2015. Moreover, nearly 12,000 Guyanese jobs are supported by the aviation industry (the majority in either transportation or tourism). This accounts for nearly one in twenty jobs in Guyana. Air passengers also generated roughly G\$1.7 billion in travel tax revenue for the government.<sup>1</sup>

To better understand the relationship between aviation and industries throughout the country; we interviewed business leaders in Guyana. We combine the insights of these experts with independent research to quantify the importance of aviation to key industries throughout Guyana. These interviews and research demonstrated that aviation's importance to the country's economy goes well beyond our calculated impacts. For industries and communities located in the interior of the country, air travel is the only viable transportation option in and out of the region. In fact, few of Guyana's key industries could function without aviation's contribution as highlighted by the following examples:

- **Mining and Extraction:** One of Guyana's most important industrial sectors is dependent upon aviation for both its development and on-going operation. Current mine operations are dependent upon aviation for fuel delivery and medical evacuations; on-going offshore drilling operations will depend upon air transport for all supply support.
- **Tourism:** Tourism in Guyana would not exist but for the support of the aviation industry. The natural wonders that attract visitors to the country are in areas largely inaccessible except by air. Moreover, international air transport is the only option for both foreign and expatriate visitors to reach the country.
- **Retail:** Aviation supports retail operations throughout the country. For example, Cuban traders use air transport to move apparel and household products purchased in Guyana back to Cuba for resale. In addition, Georgetown based retailers rely on aviation to manage growing retail opportunities in Lethem (serving a large Brazilian customer base).

Many of those interviewed noted that increased international air service to major markets in Europe and North America would bring substantial benefit to Guyana's economy. Our research confirmed that impression. We find that today there is a unique opportunity in Guyana to further leverage aviation's contribution. This opportunity arises because of the soon to be completed runway extension at Cheddi Jagan International Airport (CJIA International) which will make possible the accommodation of more and larger planes. In addition, Exxon's announced plan to begin offshore drilling is generating significant attention in the international business media. The improvement in airport infrastructure,

<sup>1</sup> See Ministry of Finance, "Budget Estimates 2016 – Volume 1", table 4(b). <http://finance.gov.gy/documents-publications/category/budget-estimates>

coupled with the visibility of Exxon's investment, create a new opportunity to re-introduce and transport to Guyana new potential investors and tourists. This report can be used to help generate interest in supporting this vision for economic growth.

# 1. INTRODUCTION

**The Guyana Civil Aviation Authority (“GCAA”) commissioned this study to measure and analyze the economic impact of the aviation sector on Guyana’s national economy so that stakeholder and relevant policy discussions can be better informed.** The study measures the economic footprint of aviation in the economy—in terms of the jobs, GDP and wages supported by the aviation industry, including those related to the expenditure of foreign tourists arriving by air.

**It also examines domestic benefits accruing to industries and communities in Guyana that are not captured in the calculations of economic impact.**

These are described as domestic “connectivity benefits”. Although not accounted in our measures of economic activity, wages or jobs, the connectivity benefits described are nonetheless real and substantial. These include, for example, the critical support to industry that aviation provides in Guyana. Since much of Guyana lacks land-based infrastructure such as roads or railroad, and rivers to the interior of the country are not widely navigable, any significant commercial activity that occurs away from the Atlantic coastline, requires air access to survive. Taking an important example, our connectivity section describes how aviation fills this gap in its support to the mining industry. However, our calculated impact results do not consider the jobs or economic consequences that would beset this industry or Guyana’s economy if air support did not provide this support.

Likewise, communities in the interior of the country also struggle from a lack of transportation. For the people who live in these communities, aviation provides a critical lifeline that connects them to the outside world. The economic opportunity created in remote communities by eco-tourists, or the availability of medical evacuation are examples of tangible societal benefits that are not quantified in the numerical results we present.

## 1.1 REPORT STRUCTURE

The report is broken into several chapters—each evaluating an aspect of aviation’s contribution to national output:

- **Chapter 3: the impact of aviation operations.** This chapter assesses the impact of aviation operations on GDP, wages, and jobs.
- **Chapter 4: the impact of aviation on tourism.** This chapter assesses the number of business, tourist and resident passengers transported by air and measures the economic impact generated by these passengers.
- **Chapter 5: total measured impact in Guyana.** This chapter sums the operational and tourism benefits, and compares them to Guyana’s GDP.
- **Chapter 6: international and domestic connectivity effects.** This chapter describes the wider contribution made by aviation to the economy in Guyana but that is not captured in our impact model.
- **Chapter 7: Conclusion.** This chapter presents a summary of findings.

## INTRODUCTION TO ECONOMIC IMPACT ANALYSIS

Oxford Economics constructed an input-output model that describes Guyana's economy. An input-output model characterizes and follows the flow of spending through the economy, thereby capturing and quantifying effects on supply chains, consumer and payroll spending, economic leakages and even government taxes. The model incorporated the most current data available from the Guyana Office of Statistics (see the technical appendix for a more detailed description). Using this model, we calculate the impact resulting from three channels of economic activity:

- **Direct:** The payroll and wages of those directly employed by the major airports or air carriers in Guyana; plus, the profits (and taxes) that the industry generates in Guyana.
- **Indirect:** The vendors and supply chain that support and service the aviation sector. This is the business-to-business spending that occurs between the sector and its suppliers.<sup>2</sup>
- **Induced:** Commonly referred to as the “multiplier effect”, this is the employment and economic activity that results as the direct employees of the aviation sector, and employees in its supply chain spend their wages in Guyana.

In accordance with standard economic impact assessments, the scale of the impact of the industry is measured using three key metrics:

- **Gross Domestic Product (GDP):**<sup>3</sup> The GDP contribution of an industry is made up of three components:<sup>4</sup> labor income<sup>5</sup> and Gross Operating Surplus (GOS)<sup>6</sup> and Taxes on Products and Imports (TOPI).<sup>7</sup> This is most simply understood as revenue (i.e. value of sales) minus the cost of supply chain goods and services used up in the production process.
- **Employment:** Employment is generally measured in terms of headcount of workers.
- In addition, **labor income**, a component of GDP, is broken out as well.

**Unless otherwise stated, all monetary impacts are presented as Guyanese dollars (“G\$”).**

<sup>2</sup> Note that a company's supply chain is defined by the items it purchases as inputs to the production process. It does not include, for example, investments in capital. Similarly, it includes airport services only when they are purchased from Guyana-based suppliers. They do not include public sector or government supported suppliers.

<sup>3</sup> GDP is the main 'summary indicator' of economic activity in the Guyana economy. This is closely related to Gross Value Added (GVA). For purposes of this report, the terms GDP and GVA can be understood as having essentially the same meaning.

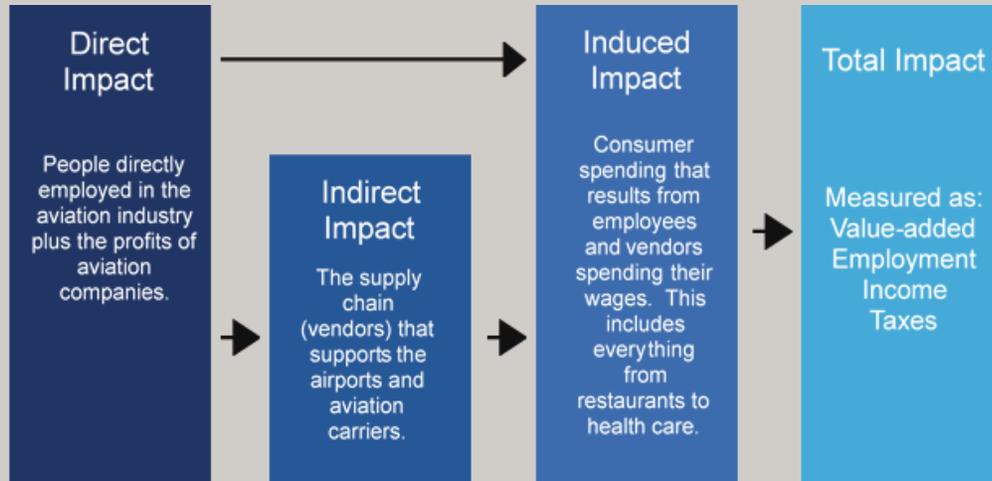
<sup>4</sup> Also included is mixed income, i.e. self-employment income, which is a mixture of employee compensation and profits. For the purposes of this report, mixed income is considered part of Gross Operating Surplus.

<sup>5</sup> This includes wages, benefits, and taxes paid out of wage income such as social security.

<sup>6</sup> This is business operating profits, before interest payments, corporate income taxes, and depreciation of capital.

<sup>7</sup> These include Value Added Tax, certain other excise taxes, and import duties. Importantly, these do not represent the full tax impact, as personal and corporate income and social security taxes are part of employee compensation and Gross Operating Surplus.

Fig. 1: The channels of economic impact



## 2. THE OPERATIONAL IMPACT OF AVIATION IN GUYANA

The analysis in this chapter presents the economic footprint resulting from the aviation sector's operations in terms of its gross value added contribution to GDP, the labor income it generates and the employment that is supported in Guyana. These effects are further categorized as direct, indirect and induced. As set out in the methodological introduction in the previous chapter:

- Direct effects relate to the activities of airports and air carriers and the staff they employ.
- Indirect effects relate to the activities and employees of business suppliers selling goods and services needed by airport or air carriers to operate flights in Guyana.
- Induced effects refer to the economic impact generated as these employees and suppliers' employees spend their wages throughout Guyana in the consumer economy.

These terms are more fully explained in the sections that follow. In exploring the direct economic impact of the aviation sector in the country we have focused on three important categories of companies:

- **Airport operations:** There are the two major airports in Guyana (Cheddi Jagan International and Eugene Correia International, formerly Ogle Airport) as well as many local airports and runway strips located throughout the interior of the country. Our study included the operations of the main two airports only. (Smaller airports generally have limited operational expenditures.)
- **Air carriers:** There are numerous airlines operating flights to or within Guyana. Some of these are passenger only, some cargo only, and many are a combination of both cargo and passenger. Our study included specific operating profiles obtained from five domestic carriers and one international carrier, representing the large majority of the market.<sup>8</sup>

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<sup>8</sup> The carriers providing detailed data were Air Services Limited, JAGS Aviation, Roraima Airlines, Trans Guyana Airways, Wings Aviation, and Fly Jamaica Airways. Carriers not providing operational data are not included in our industry operational profile, but their exclusion is unlikely to materially change the impact results. Our passenger impacts include all visitors to Guyana regardless of the carrier on which they were transported (section 3).

- **Supporting companies:** In general, the spending associated with support companies (“supply chain”) was either included in the data obtained from airport operations (e.g., cargo handling) or was derived from the overall spending generated by a combination of airport operations and air carriers. In the tables that follow, this is the activity included in the columns labelled “indirect” impacts.

Not all direct aviation expenditure or activity could be included in the impact calculations. For example, airstrips and secondary airports in the south of the country (e.g., Lethem) were not included. In addition, helicopter flights, although an emerging component of the aviation sector, were also not included, as the scale of helicopter operations was yet not regarded as significant enough to be captured in the analysis. We note, however, that helicopter support is required by the major oil companies as a pre-condition for operating offshore drilling rigs in Guyana’s waters. Consequently, helicopter operations can be expected to grow substantially in tandem with the development of offshore drilling activity.

Fig. 2: below specifies what is included in our impact estimates and what is not.

**Fig. 2: Description of operational impacts included in totals**

Included in impacts	Not included in impacts
Operations at two main (Georgetown) airports	Operations at Lethem airport and at landing strips
Operations of 5 main domestic fixed-wing carriers	Any other domestic carriers, including all helicopter operations
Operations of Fly Jamaica Airways	Operations of other international carriers
Supply chain of airlines and airports (included as indirect impacts)	Any one-time capital investments

## 2.1 GDP IMPACT

Fig. 3: describes the Gross Domestic Product (GDP) impact on of aviation. By our estimate, aviation contributes G\$6.8 billion to Guyana’s economy through the actual operations of the air carriers and airports operating in the country. This includes a G\$1.6 billion direct impact,<sup>9</sup> G\$3.9 billion in indirect supply chain impact, and G\$1.3 billion induced impact from spending out of workers’ wages.

<sup>9</sup> Note that the direct GDP impact only includes direct labor income (i.e., the direct columns in Fig. 3: and Fig. 4: are identical). Put another way, other components of the direct value add, namely gross operating surplus (profits) and taxes paid directly, are not estimated.

**Fig. 3: GDP impacts from air operations in Guyana in 2015<sup>10</sup>**

	GDP (thousands G\$)			
	Direct	Indirect	Induced	Total
Agriculture, fishing, mining & construction	\$0	\$70,500	\$331,600	\$402,100
Manufacturing	\$0	\$625,100	\$251,900	\$877,000
Utilities	\$0	\$22,900	\$26,300	\$49,200
Trade, transport & communications	\$1,657,800	\$639,000	\$474,600	\$2,771,400
Hotel & restaurant	\$0	\$40,600	\$11,900	\$52,500
Finance, real estate & business	\$0	\$2,130,500	\$155,200	\$2,285,600
Education, health & public admin	\$0	\$311,300	\$38,600	\$349,900
Personal services	\$0	\$15,400	\$23,200	\$38,600
<b>Total</b>	<b>\$1,657,800</b>	<b>\$3,855,300</b>	<b>\$1,313,300</b>	<b>\$6,826,400</b>

Source: Oxford Economics

Not surprisingly, when considering the impact of aviation’s direct operation, the largest sector affected includes transportation<sup>11</sup>. In fact, over 40 percent of aviation’s GDP contribution is in transport and communications. The next largest sector is finance, real estate and business services, whose activities are closely tied to aviation operations. In later sections, when we examine the expenditures made by air passengers, the hotel and restaurant sector will dominate economic activity.

## 2.2 LABOR INCOME IMPACT

Figure 4 presents the amount of labor income in Guyana supported by the operations of the airline industry. Roughly half of this income (G\$1.7 billion) is paid to those directly employed by the airports and air operators. Another G\$1.2 billion is earned by those employed in the industry’s supply chain, and the remaining G\$0.4 billion results from the additional economic activity throughout Guyana as airline and airport employees spend their wages in the broader economy, generating wages for employees in those wider sectors. These channels bring the total labor income impact to G\$3.3 billion.

<sup>10</sup> Throughout, values are rounded to the nearest G\$100,000, and 10 jobs, and totals may not add due to rounding.

<sup>11</sup> The indirect impact is disproportionately concentrated in the finance, real estate, and business sector (roughly 55% of the total indirect GDP impact). This is due in large part to the lack of industry detail in airport spending, which the model allocates to supporting transport services, part of this category.

**Fig. 4: Labor income impact from air operations in Guyana in 2015**

	Labor income (thousands G\$)			
	Direct	Indirect	Induced	Total
Agriculture, fishing, mining & construction	\$0	\$23,700	\$78,500	\$102,200
Manufacturing	\$0	\$71,800	\$124,400	\$196,300
Utilities	\$0	\$28,000	\$30,700	\$58,700
Trade, transport & communications	\$1,657,800	\$121,300	\$114,700	\$1,893,800
Hotel & restaurant	\$0	\$24,000	\$7,000	\$31,000
Finance, real estate & business	\$0	\$784,100	\$64,800	\$849,000
Education, health & public admin	\$0	\$152,200	\$14,800	\$167,000
Personal services	\$0	\$1,800	\$2,200	\$4,100
<b>Total</b>	<b>\$1,657,800</b>	<b>\$1,207,100</b>	<b>\$437,200</b>	<b>\$3,302,000</b>

Source: Oxford Economics

### 2.3 EMPLOYMENT IMPACT

Figure 5 provides an estimate of the overall employment in Guyana that is supported by the operations of the aviation industry. The industry itself directly employs approximately 900 workers. A further 2,010 employees work for companies that indirectly support the aviation sector. Some of these workers work for suppliers closely associated with air transport, many working at the airports themselves. The distinction of being “indirect” employment of civil aviation merely means that they do not work directly for the airport or air operators themselves. An additional 570 workers are supported in the broader economy as wages are spent. This brings the total number of jobs supported by the operations of the aviation sector to 3,490.

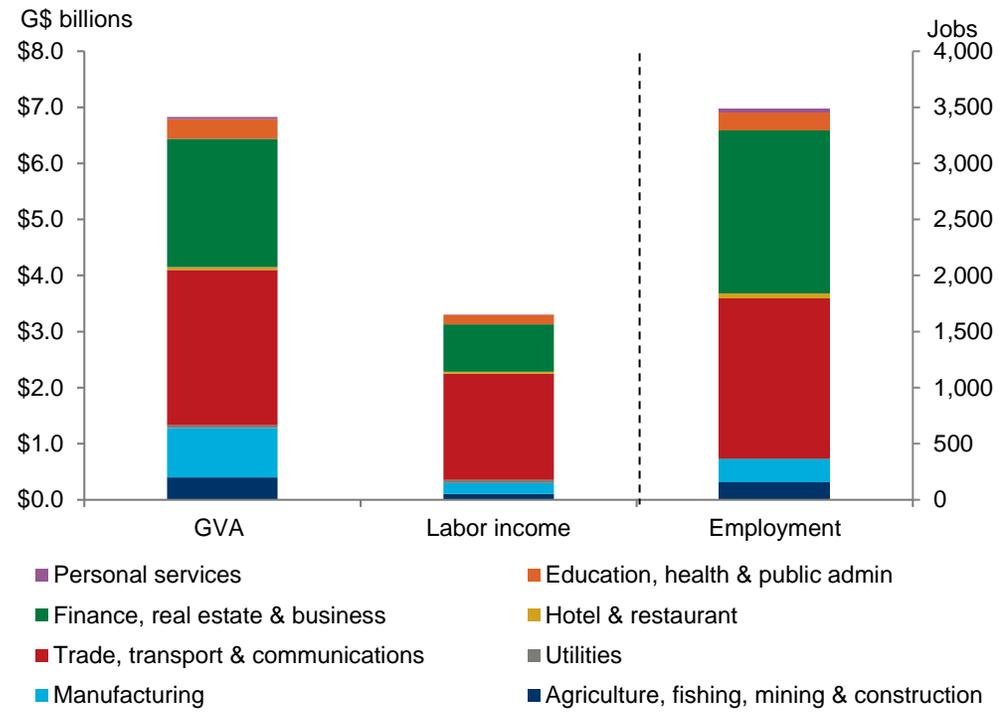
**Fig. 5: Employment impact from air operations in Guyana in 2015**

	Employment			
	Direct	Indirect	Induced	Total
Agriculture, fishing, mining & construction	0	30	130	160
Manufacturing	0	80	130	210
Utilities	0	0	10	10
Trade, transport & communications	900	340	190	1,430
Hotel & restaurant	0	40	10	50
Finance, real estate & business	0	1,380	70	1,450
Education, health & public admin	0	140	20	160
Personal services	0	10	20	30
<b>Total</b>	<b>900</b>	<b>2,010</b>	<b>570</b>	<b>3,490</b>

Source: Oxford Economics

Fig. 6: summarizes the total impact (direct plus indirect plus induced) of airport operations by industry for GDP, labor income, and employment.

**Fig. 6: Economic impacts of air operations in Guyana in 2015**



Source: Oxford Economics

## 3. THE IMPACT OF AVIATION ON TOURISM IN GUYANA

Direct international flights jump-start economic activity, particularly in the interior.

**Air transport lies at the heart of global tourism and business travel.** Through its speed, convenience and affordability, air transport has expanded the possibilities of world travel for tourists and business travelers alike, allowing an ever-greater number of people to experience extraordinary locations and cultures such as Guyana and to spend money in the local economies they visit. The economic footprint of this aviation-facilitated visitor spending is substantial and has an immediate impact on economic growth in the country. In fact, increased international flights that bring additional tourists to the country is one of the fastest ways to bring added economic activity to the country (and particularly to the interior regions).

The economic contribution that these arrivals make through their spending in the country and the jobs that this expenditure supports can be quantified in a similar way to the operational impact described in the previous section. Here we explore the economic impact that results from tourists and business travelers (domestic and foreign) who travel by air to Guyana<sup>12</sup>. When reviewing these calculations, it is important to note that the average per daily spend of \$25 corresponds to the spending by all visitors to the country (including the bulk of passengers who are returning expatriates staying with family). The relatively low spend of visiting expatriates brings down the overall average, notwithstanding that foreign visitors on holiday spend substantially more while in Guyana. As noted below, our average spend considers the average of both classes of visitor.

In quantifying the benefits from visitor arrivals, we seek to capture the spending by tourists and business people on accommodation, food, recreation and other activities beyond their airfare. We note the impact of foreign exchange is quite substantial, although this benefit is not a consideration in our calculations. Tourists, however, are an excellent source of foreign currency for the country and can help offset foreign currency shortfalls that may be experienced as other key exports such as sugar and rice (reportedly) decline.

The numbers presented below represent the economic activity and jobs that are facilitated by aviation, rather than directly attributable to it. Fig. 7: presents a list of assumptions behind the total spend quantified here.

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<sup>12</sup> The passenger data analyzed in our study primarily refers to passengers arriving on an international flight. These passengers are primarily expatriates but also include business travelers and (non-expatriate) foreign visitors to the country. Implicit in our tourist spending calculations is the availability of domestic air travel to the interior. The operations of the domestic market air carriers were captured in our direct aviation impacts reported in our prior section.

**Fig. 7: Tourism assumptions<sup>13</sup>**

<b>A. 2015 Arrivals</b>	207,000
<b>B. Average nights stayed</b>	22
<b>C. Total visitor nights (A x B)</b>	4,554,000
<b>D. Spend per visitor night in USD</b>	\$25
<b>E. Spending in USD (C x D)</b>	\$114 million
<b>F. Exchange rate</b>	\$206.5
<b>G. Spending in G\$ (E x F)</b>	G\$23 billion

<sup>13</sup> Arrivals and nights per arrival for 2015 are from the Guyana Tourism Authority. Spending per night is from the Oxford Economics Travel & Tourism databank. As described more fully in the Appendix, spending per visitor was modified somewhat from what was indicated by these sources. Specially, based on interviews, we know that a small number of tourists spend a great deal of money on extended eco-tours. Moreover, some returning Guyanese expatriates will take brief tourist excursions to the interior of the country and that some air travelers purchase merchandise for resale in their home country. After taking all these extraordinary travelers in account, our per visitor daily spend was increased from \$17 to \$25 (spending per person per day for all visitors).

### 'LEAKAGE' IN TOURISM BENEFITS FROM GUYANA

A comparison of Fig. 7: (above) with Fig. 8: (next page) reveals the somewhat surprising result that the G\$23 billion in total spending attributed to passengers arriving in Guyana (Fig. 7:), only translates into G\$14 billion GDP in new economic activity in Guyana (Fig. 8:).

It is generally true that not all spending results in a 1:1 benefit in new economic benefit. Imports are one obvious explanation. If a tourist spends G\$100 on an imported piece of merchandise, the economic impact is substantially less than if that same tourist spent G\$100 on merchandise produced in Guyana.<sup>14</sup> The phenomenon by which some amount of the economic benefit associated with spending in Guyana is realized outside of Guyana is referred to as economic "leakage". In the above example, a large amount of economic activity associated with the purchase of an imported item occurs in the country where the imported good was produced (and not in Guyana).

Still the G\$14 billion of economic activity resulting from the passenger spend of G\$23 billion indicates a relatively high amount of economic "leakage."

We note three possible explanations:

- **Imports:** The most likely explanation is that, in fact, Guyana imports a high percentage of the merchandise and food consumed or purchased by visitors to the country (including business profits that are repatriated outside the country).
- **Model limitations:** Notwithstanding that the most accurate input-output tables available from the Guyana Bureau of Statistics were used in our modelling, it is possible that the full extent of business to business spending between industries is not fully captured by these tables and hence some amount of economic multiplier is understated. A more accurate economic impact assessment would require the Bureau of Statistics to update and improve its input-output tables (which we note is a significant undertaking). Additionally, more accurate data on what goods and services international travelers to Guyana spend their money on would also change, and possibly decrease, the amount of leakages.
- **Underground economy:** Some amount of spending by visitors might simply go unreported and is therefore not accurately captured in national account figures.

As Fig. 8: demonstrates, notwithstanding our concerns about economic leakage, we calculate that air passengers support more than 8,500 jobs in the country (with nearly 40 percent of these in the hotel and restaurant sector).<sup>15</sup>

<sup>14</sup> Even for the imported good, some value will accrue to local trade and transport service providers.

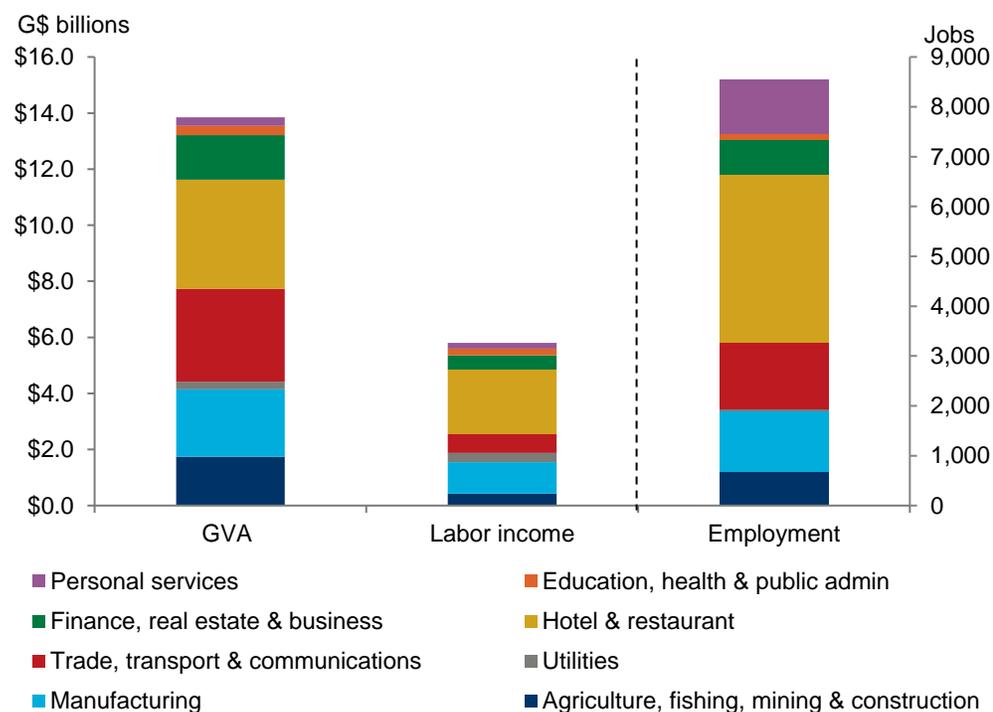
<sup>15</sup> The discussion on economic leakage raises the question of how we handle uncertainty more generally. Often statistics that we report strike us as likely too high or too low a value. In the case of leakage, we suspect the number might cause an understatement of impact results. In other instances, such as our assumption about 22-day average length of stay for all visitors (including business travelers and traders); we suspect an overstatement in impact

**Fig. 8: Tourism impacts in Guyana in 2015**

	GDP (thousands G\$)	Labor income (thousands G\$)	Employment
Agriculture, fishing, mining & construction	\$1,742,500	\$419,700	670
Manufacturing	\$2,403,700	\$1,131,000	1,210
Utilities	\$268,200	\$321,000	50
Trade, transport & communications	\$3,312,700	\$675,700	1,330
Hotel & restaurant	\$3,895,600	\$2,302,000	3,370
Finance, real estate & business	\$1,590,200	\$516,700	690
Education, health & public admin	\$328,500	\$231,000	130
Personal services	\$304,200	\$207,000	1,090
<b>Total</b>	<b>\$13,845,700</b>	<b>\$5,804,000</b>	<b>8,550</b>

Source: Oxford Economics

**Fig. 9: Tourism impacts in Guyana in 2015**



Source: Oxford Economics

results. Our guiding principle is to always use the very best data that we can obtain and base our calculations on that information. On balance, upward and downward biases tend to offset each other. Still this discussion ought to remind the reader that what we present as impact results represent our best estimate but that ranges of possible outcome surround each calculation.

The economics of tourism and aviation in Guyana are completely intertwined. Therefore, it faces the same challenge presented to all countries or regions seeking to increase tourism. Specifically, more demand from tourists makes it easier to justify expanded aviation services. However, without expanded aviation services it is difficult to attract more tourists. In fact, in Guyana today, there appears to be substantially more capacity to accommodate tourists than there are flights to transport them. In some countries, a lack of existing infrastructure to support additional tourists limits growth potential, but that does not appear to be the major constraint in Guyana.

Rather, it seems that tourism, and the economic benefits that flow from it, could be expanded substantially if more direct air services were available into and across the country. For example, subject matter experts interviewed by us for this study repeatedly estimated that Guyana's tourist infrastructure only operates at between 30% and 40% of its total capacity (except for brief peak periods occurring during holiday seasons). Overwhelmingly, these experts cited limited air service as the primary constraint holding back further growth. This constraint was seen as limiting both direct air services to major international markets, and regularly scheduled domestic air services to interior locations. Our tourist expert interviewees referenced several strategies for improving direct access including the following:

- Attract a direct flight from London once the completed runway expansion at Cheddi Jagan International makes this possible. London is a logical market because a large UK-based expatriate community provides a significant demand pool to support regular service. Once service is established, Europeans on lengthy holiday are an excellent market for eco-tourism.
- In conjunction with the establishment of international service, there must be improved integration with domestic service to the interior. Improved integration includes both increased service levels plus greater ease for international travelers to book domestic flights on-line.
- Finally, our interviewees suggested that any major market opening enabled by new direct services needs to be accompanied by an aggressive marketing strategy. Implementing the current tourist marketing strategy (which has reportedly been developed but is now three years old) seemed the most cost-effective strategy.

## 4. TOTAL ECONOMIC IMPACT OF AVIATION IN GUYANA

This section considers the full contribution to GDP and employment by the aviation industry in Guyana as included in our modelling. This includes both the direct operational and tourism benefits described in the previous two chapters.<sup>16</sup>

**In total, we estimate that aviation supported just over 12,000 jobs in Guyana in 2015, including both operational and tourist impacts** (see Fig. 10:).

Economy-wide employment in Guyana in 2012 was approximately 245,000.<sup>17</sup> In other words, nearly 1 in 20 workers in Guyana has a job that is supported through aviation.

**Fig. 10: Total impacts—operations plus tourism—in Guyana in 2015**

	GDP (thousands G\$)	Labor income (thousands G\$)	Employment
Agriculture, fishing, mining & construction	\$2,144,700	\$521,900	830
Manufacturing	\$3,280,700	\$1,327,200	1,420
Utilities	\$317,400	\$379,700	60
Trade, transport & communications	\$6,084,100	\$2,569,500	2,760
Hotel & restaurant	\$3,948,100	\$2,333,000	3,420
Finance, real estate & business	\$3,875,800	\$1,365,700	2,130
Education, health & public admin	\$678,400	\$398,000	290
Personal services	\$342,800	\$211,100	1,120
<b>Total</b>	<b>\$20,672,100</b>	<b>\$9,106,100</b>	<b>12,040</b>

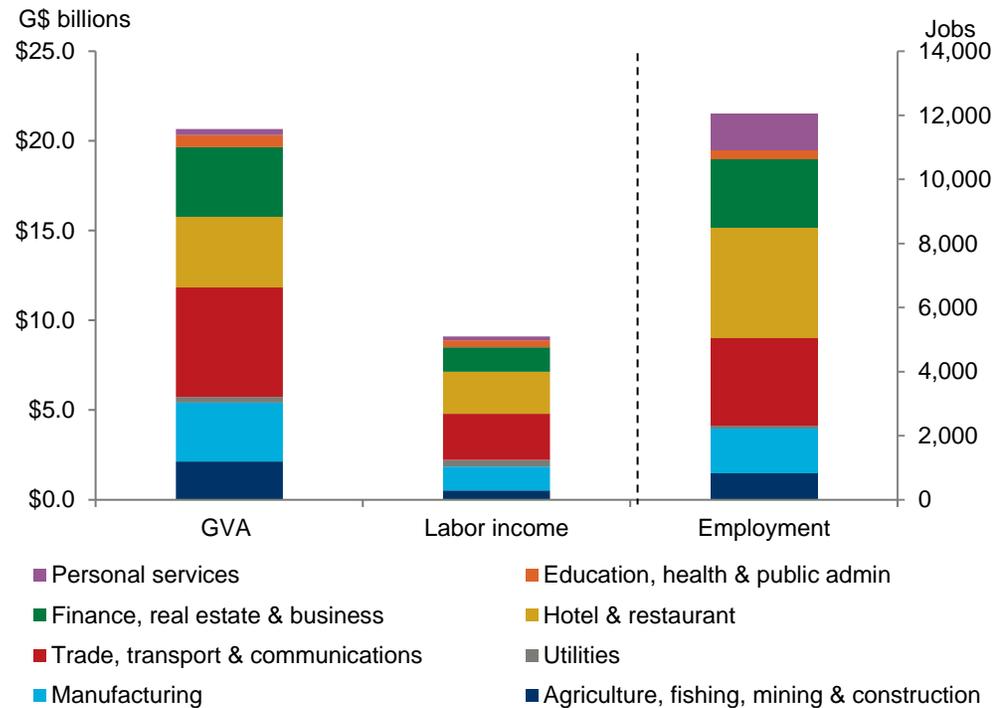
Source: Oxford Economics

These same results are presented graphically in Fig. 11:.

<sup>16</sup> Strictly speaking, this double counts impacts of tourist spending on air transport.

<sup>17</sup> Guyana Bureau of Statistics, Census 2012.

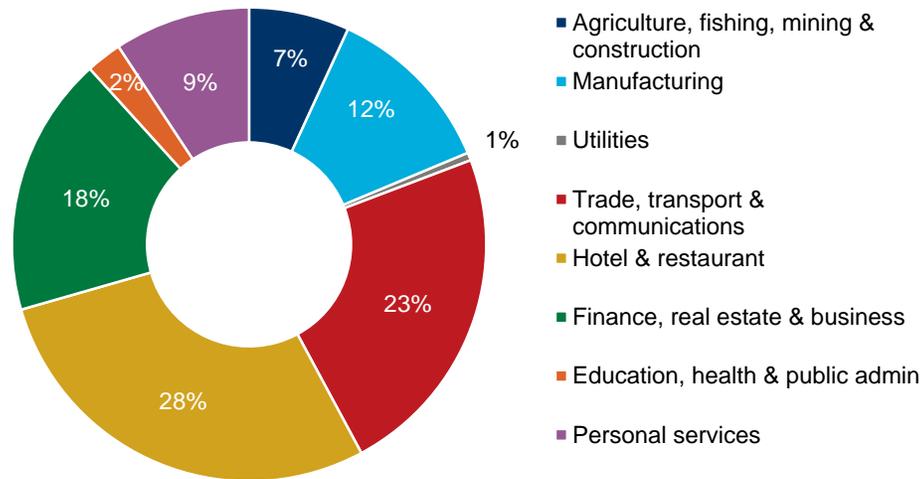
**Fig. 11: Total impacts—operations plus tourism—in Guyana in 2015**



Source: Oxford Economics

It is also worth noting the impressive multiplier. Just under 1,000 direct employees in the aviation industry support just over 11,000 additional workers throughout Guyana's economy. Moreover, 28 percent of all jobs supported by aviation are in the hotel and restaurant sector (Fig. 12:). These statistics correctly convey the impression that marginal expansions in the availability of air service can be expected to have a disproportionately large impact on Guyana's economy. Given the embryonic state of the country's tourism industry compared to other Caribbean tourist destinations, the potential for marginal gains in tourist impact in Guyana is particularly large.

**Fig. 12: Total employment impacts—operations plus tourism—by industry in Guyana in 2015**



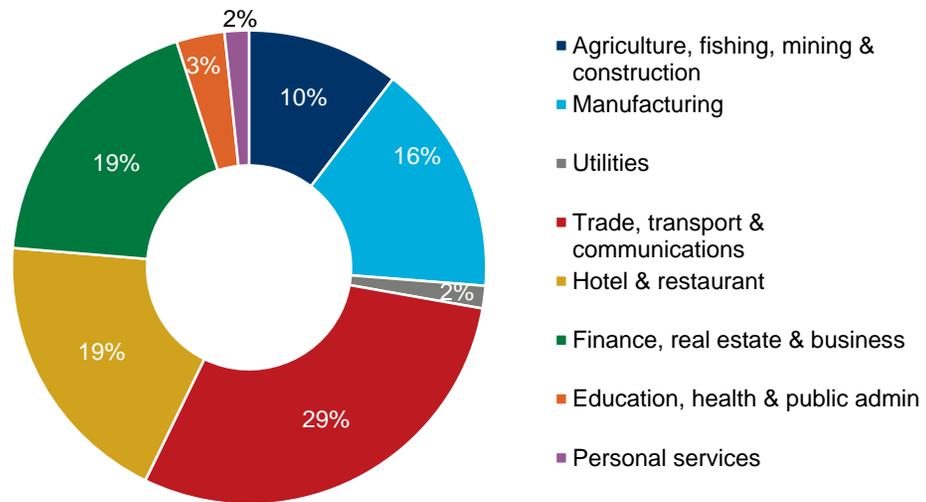
Source: Oxford Economics

**In terms of GDP, the G\$20.7 billion supported by aviation represents roughly 3.2% of the country's total 2015 GDP of roughly G\$654 billion.<sup>18</sup>**

**Approximately 29%** of this GDP impact is in the trade, transport & communications sector (Fig. 13: – see next page). Again, this is impressive. However, as the next section discusses, these quantified effects are only part of the picture of how aviation benefits the Guyanese economy.

<sup>18</sup> Projected figure from the Bureau of Statistics, see <https://www.statisticsguyana.gov.gy/nataccts.html#natdiv> "Current Gross Domestic Product – Revised and Rebased Series (2006 – Budget 2016)."

**Fig. 13: Total GDP impacts—operations plus tourism—by industry in Guyana in 2015**



Source: Oxford Economics

## 5. CONNECTIVITY BENEFITS IN GUYANA FROM AVIATION

**The connectivity enabled by aviation has the potential to reshape the Guyanese economy.** The aviation-facilitated tourism benefits outlined in the preceding chapters represent just one of many specific examples of how greater connectivity enhances economic impact in a country. In fact, the economic impact of aviation goes well beyond its economic footprint, as set out previously. Catalytic impacts capture the wide-ranging economic benefits that are created through what users of air services are enabled to do by the 'connectivity' that aviation provides. Connectivity describes ways in which the availability of air service promotes economic growth simply because it links otherwise disconnected communities and businesses (domestically and internationally). Aviation facilitates business, encourages foreign investment, stimulates tourism and fosters trade, consequently raising the productivity and prosperity of the domestic economy.

In this chapter, we briefly explore the wider catalytic benefits of aviation and examine some of the more tangible domestic benefits of air connectivity for businesses and communities throughout Guyana.

### 5.1 CONNECTIVITY IN THE INTERNATIONAL CONTEXT

**The provision of air services enhances global connectivity for Guyana.**

Connectivity is a measure of the aviation linkages between countries or regions with major cities and markets around the world. Connectivity in the air transport network is a critical asset for a prosperous and vibrant economy. It represents one of the key infrastructures upon which modern businesses depend, thereby supporting long-term sustainable economic growth. All airlines flying into and out of a country contribute in some way to Guyana's connectivity and therefore the economic benefits that result.

**Air connectivity boosts economic growth.** Air connectivity matters because greater integration to the global economy boosts local economic growth. It acts to open new markets and fosters international trade; encourages domestic and foreign investment; stimulates the tourism economy; and facilitates the exchange of ideas and technology across the world. These things encourage innovation, raising the productivity of the local economy, and hence boost GDP and prosperity.

### 5.2 DOMESTIC CONNECTIVITY BENEFITS

Chapters 2 to 4 described aviation's most direct contributions to Guyana's economy. These are the contributions that result from the direct operations of the airline industry itself and the spending attributed to international visitors in the country. Input-output models (such as the one we created for this study) account for these activities reasonably well. We can capture and quantify metrics such as payroll costs or tourist spending reasonably well and thereby include them in our impact calculations.

In this section, we explore ways that aviation further supports Guyana's economy through domestic "connectivity benefits." Although lacking appropriate data by which to quantify impact, these represent tangible and significant benefit to the Guyanese economy.<sup>19</sup>

Indeed aviation's connectivity benefits are especially important to Guyana where there is a single north-south highway, no rail, and no navigable river spanning the length of the country. Consequently, without aviation's support, many communities and businesses would lack access to health care, markets, or critical supplies.

As explained, the impact of airborne tourist travel goes beyond the calculated impact in terms of jobs and GDP. Tourism brings additional societal benefits to communities in the interior of the country and aviation plays a unique role in allowing this expansion to occur. That is because compared to most other Caribbean nations, Guyana's principal tourist attractions are located in the interior of the country. The ruggedness and natural wonders of Guyana's interior are precisely what attract the most affluent and biggest spending tourists to the country. Tourism experts, whom we interviewed, described the very high expenditures associated with very wealthy (often North American) eco-tourist visitors exploring the interior of the country. In this, tourism creates important opportunities for people to earn a living in many interior communities for which few other alternatives exist.

Without tourism, many more families would have to choose between relocating to Georgetown, or having the family's primary income producer work far from home (typically in mining or logging). These family relocations or disruptions would otherwise impose real costs on the families and likely the whole of Guyanese society.

The role of aviation in supporting business development and operations in the interior of the country is so pervasive that almost all economic activity in the interior regions can be said to be dependent, in part, upon air services. Mining presents an excellent case study. Today most of Guyana's known precious mineral deposits are unexploited due to a lack of access. In most instances, full-scale development will require ground transport. In many locations, however, the lack of an airstrip prevents even minimal exploratory development from occurring. Aviation is the vital link that allows business opportunities in the mineral extraction industries to be identified and explored before full scale development can even be considered.

At later stages when a mine is ready for full-scale development, further air support is required. For example, one of our interviewees cited an example of how when a foreign-owned gold mine was ready to start operations, the necessary technical expertise was not available in Guyana. Consequently, substantial numbers of skilled workers from Peru were shuttled in by air to the mine site to make the mine operational. For the mine to remain operational, on-going air support is required to supply the mine with replacement parts and fuel. A similar level of aviation support

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<sup>19</sup> All examples cited in this section were first raised during interviews with business leaders in Guyana.

is critical to the development and operation of other industries in the interior including agriculture and logging.

Taking a different example, connectivity also brings large benefit to the retail sector. While visiting SYCJ International, we had an opportunity to observe substantial amounts of merchandise purchased by Cuban wholesalers being prepared for shipment to Cuba for resale. This is a small but critical example of an opportunity created in unexpected ways because of the benefit resulting from air connectivity. Indeed the expansion of the retail sector in Georgetown has further spill-over benefits to the interior of the country. As the retail sector expands, Georgetown-based retailers are reportedly expanding operations to Lethem. These retailers are dependent upon aviation to maintain span-of-control and management oversight of their expanding retail networks. Connectivity both created the impetus for an expanding retail sector, and then allowed it to migrate to Lethem. Once established in Lethem, it creates an obvious opportunity for the businesses involved, but also supports community development in the interior by bringing retail opportunity closer to Guyana's interior regions.

A further example of the important social impact of air connectivity for Guyana is in healthcare. Take medical evacuation, for example. In Guyana, pilots flying to interior airstrips often learn upon their arrival that a person needs evacuation. The ability to safely fly a sick or injured person to a medical facility has obvious benefit to the community and person involved but also brings wider benefits to industry. Without access to medical care, foreign companies operating in the interior in dangerous occupations such as mining, logging and mineral extraction, would find it harder to recruit, retain and care for their their workforces.

Finally it is important to note that land-based transportation investments also bring connectivity benefits to the interior of the country. Comprehensive infrastructure development in Guyana that includes both improved land and air connectivity can only be good for all sectors of Guyana's society and economy. During our aviation industry interviews, it was often observed that "a mile of airstrip is cheaper to build than 200 miles of highway". However, we would encourage all to consider that investments in each bring mutually supporting benefit. For example, air support alone is insufficient for the country to fully develop its mining potential. On the other hand, improved highway access will be insufficient to develop the full tourist potential of the interior. Strategically investing in both highway and aviation infrastructure seems the most promising approach.

## 6. CONCLUSION

The aviation industry supports nearly 1 in 20 jobs in Guyana and 3.2% of the country's entire GDP (economic activity). These are large impacts but likely understate the industry's importance to the country because aviation supports industries and communities throughout the country in ways that go beyond the impact that we are able to measure. Significant additional societal benefits directly linked to aviation services include everything from allowing expatriates and their families to stay connected, to enabling key industries to operate in the interior of the country. Looking to the future, aviation will be vital to supporting growth in virtually any aspect of Guyana's economy.

Better strategic alignment between policies and programs advanced by the government and the objectives of the aviation sector could accelerate economic growth. Earlier we described strategies for integrating tourist promotion with efforts to attract direct air service. During our interviews, we learned of other issues that are of concern to the industry. For example, when we conducted our interviews (December, 2016) there was much discussion of proposed policy changes to VAT, taxes on foreign sourced loans, and new premium taxes on insurance sourced overseas; and how each of these policies would impose new costs on the aviation industry. Regardless of how these specific issues were ultimately resolved, it is important to consider that new costs that limit air service or its growth will consequently limit Guyana's economic growth as well. Given their large capital and operational budgets, tax policy changes often result in disproportionately large impacts on the airline industry.

Another issue raised by some private air carriers was the tax advantage provided to some carriers by-virtue of their relationship to the government. This situation arises because the Army Air Corp is comprised of registered commercial operators (who enjoy tax exempt status on substantial portions of their operating expenses). When these planes are not engaged in official business, they are often leased out to private parties at very competitive rates; made possible by their tax-exempt advantage.

When one considers the future of Guyana's economy, it is appropriate to think of aviation and the economy as growing in tandem. Each new flight connecting Guyana to a major market in North America or Europe brings economic stimulus to the country. Guyana already has the tourist infrastructure to accommodate substantially more visitors. On the other hand, once additional international flights commence, the tourist industry can only reach its full potential if there is supporting domestic air service to the interior. Continued growth must be strategically aligned. Similarly, we would encourage those in the industry to not view improved highway infrastructure as a competitive alternative to aviation. A growing Guyanese economy is the best possible path for promoting a growing aviation industry.

The economic future of Guyana and the vibrancy of its aviation industry are inextricably linked. Policies and investments that support the aviation sector will have a powerful economic impact that will be felt throughout Guyana's economy.

The aviation industry and the economy of Guyana will grow in tandem.

## 7. APPENDIX

### SOURCES AND METHODS

- **Input-output tables:** Guyana Input-Output tables for 71 industries were obtained directly from the Guyana Bureau of Statistics for 2006. Employment (to GDP) ratios were calculated using data on sectoral employment from the 2012 Guyana Census and from national accounts data from the Guyana Statistical Agency.
- **Operational expenditures:** Each major airport (Cheddi Jagan International and Eugene Correira International) provided data on their revenues, staff costs and non-staff costs (broken down into several categories). In addition, six air carriers provided similar cost and employment information. These represent the large majority of fixed-wing air operations in the country. Only Guyana-based operations were considered in this report. These cost categories were then manually assigned product categories in the IO table.
- **Number of air travelers:** The Guyana Tourism Authority provided data on the number of foreign visitors carried by all airlines into Guyana.
- **Spending by travelers:** Total spend per passenger was estimated based on data from the Oxford Economics Travel and Tourism databank, and interviews with travel and tourism experts in Guyana. This value is reported in Fig. 7:. Because detailed data were not available for Guyana, the breakout of this spend by category of goods and services was based on data for tourist spending in The Bahamas. The largest single category of spend was on hotels & restaurants, at 63% of tourist spend, followed by recreational, cultural, and sporting services at 16%, beverages at 4%, and rental of vehicles at 3%. The remaining 14% of spend is distributed across a variety of goods and services.
- **Calculating impacts:** Total operational expenditure, domestic, and international traveler spend were used as inputs to the Input-Output model described above. Direct impacts (labor income, and employment) were reported directly by air carriers and the two major airport operators. Induced impacts assume that workers spend 75% of their compensation (note that employee compensation includes benefits and labor taxes) per the consumption patterns of households in the IO tables.
- **Exchange rates:** Both inputs and outputs to the model were in G\$. The only exception to this is the presentation of total tourist spend in Fig. 7:, where spending is presented in US\$, and the exchange rate used is presented in that figure.