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Tourism, Economic Growth & Employment

Machel McCatty & Prudence Serju
Research Services Department
Research and Economic Programming Division
Bank of Jamaica

Abstract

Tourism has emerged as a major industry in the small open economies of the Caribbean, given their competitive advantage. In Jamaica, the tourism industry is the largest foreign exchange earner, generating in excess of US$1.0 billion per annum. It is known that the industry provides an important impetus to growth in other sectors such as agriculture, transportation, retailing and manufacturing and is therefore seen as a key component of economic development. However, very little work has been done on the contribution of this sector in Caribbean economies. Given the importance of this sector to Jamaica's development policy, this paper attempts to fill this gap by estimating sectoral impact multipliers. Using these multipliers we estimate the impact on GDP and employment of the anticipated growth in the tourism sector over the next four years. The paper finds that, the output multiplier for the Jamaican tourist industry is small, at 1.00. This means that for every $1.00 spent by this sector, $1.00 in output would be generated from the other sectors of the economy. For every one per cent growth, employment expands by 0.3 per cent.

Keywords: tourism, multiplier, employment elasticity
JEL Classification: C32, C67, E32, J21

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1.0 Introduction

Tourism is one of the major foreign exchange earners and main growth sector for many countries especially the small open economies of the Caribbean. The world tourism market has grown at an average of 3.7 per cent over the past five years and is projected to grow by an average of 4.9 per cent over the next five years[1]. By end 2005 the world travel market was estimated to be 808 million tourists, with Asia and the Pacific regions recording the fastest growth rate.

Jamaica's tourism industry, in particular, is projected to grow by 7.9 per cent per annum over the next 5 years compared to an average of 2.4 per cent in the previous 5 years. This is expected to be facilitated by the construction of 12,000 new hotel rooms that would increase the current room stock by some 50 per cent. Expansion on such a scale will have a significant direct and indirect impact on the rest of the Jamaican economy[2]. This paper aims to quantify the direct economic impact to be derived from the expansion of the tourism sector.

The tourism sector demands inputs such as food and services from other sectors of the economy and as such plays an important socio-economic role in the Jamaican economy. The ability of the tourism industry to generate new employment opportunities, especially among the low-skilled group, makes the industry a critical component in the country's development. Further, its inter-linkage with the agriculture sector makes it an important contributor to rural development. Estimating the inter-linkages and the associated effect on total demand of the tourist sector is therefore important to development policy.

Generally, economic impact analyses trace the flows of spending that arise from an economic activity to determine changes in sales and taxes, as well as changes in income and jobs due to tourism activity[3]. Such analyses therefore involve estimating the *direct*,

[1] See "Tourism 2020 Vision." Facts and Figures. World Tourism Organization. 20 Oct. 2006 <http://www.unwto.org/facts/menu.html

[2] Touris m is one of the key component or cluster in Jamaica's National Industrial Policy.

[3] Sales, income and employment multipliers are often calculated in this analysis.

indirect and *induced* effects of the activity. However, given the absence of an updated input-output model[4] for the Jamaican economy, this paper focuses on the direct effect.

Similar to earlier studies, the output multiplier for the Jamaican tourist industry was found to be small, at 1.00. This means that for every $1.00 spent in this sector, $1.00 in output would be generated from the other sectors of the economy. Additionally, approximately 16,771 jobs would be created within the tourism industry over the next four years. Further, the paper found that the incomes of the eight selected sectors are expected to expand from a dollar spent in the tourism industry. In relation to sectoral employment, agriculture, transport, storage & communication, construction and distribution are the primary beneficiaries from a dollar spent within the tourism industry.

The rest of the paper is organised as follows: Section 2 presents an overview of the development of tourism in Jamaica, followed by a review of related literature on economic impact analysis in section 3. Following this, the methodology to be used will be discussed in section 4. The penultimate section of the paper presents the results. The conclusion and policy recommendations are presented in the final section.

2.0 Jamaica's Tourism Industry

2.1 Historical Development

Jamaica's tourism industry officially began in 1890 with the passage of the Jamaica Hotels Law. This signaled the Jamaican Government's commitment to the growth and development of the tourism industry. In this regard, the law was passed to encourage hotel construction with the Government offering to guarantee capital at three per cent for approved construction and maintenance of hotels, as well as duty free allowances for all building materials and furniture. These initiatives, in addition to the implementation of the Imperial Direct Line for the banana trade by Britain which facilitated more travel by plantation owners to the region, stimulated growth in the hotel sector. Subsequently, in 1904 another Jamaica Hotels Law was enacted. This law allowed entrepreneurs building

[4] The current input-output table is based on 1993 data. The Statistical Institute of Jamaica is expected to release the revised input-output tables and the new tourism satellite account in 2008.

hotels with 40 or more bedrooms duty free allowances, as well as exemptions from increased taxation for ten years from the date of the import license.

The Jamaica Tourist Association was formed in 1910, with the primary responsibility for the marketing of the Island's tourist product as a health and pleasure destination. Tourism grew gradually and it was found that in the 1920s, after the fall out in arrivals due to World War I, the annual number of tourists visiting Jamaica did not exceed a few thousand. In an attempt to further promote tourism in Jamaica, the Government established the Tourist Trade Development Board (TTDB)[5] in 1922. The board was responsible for marketing the tourist product as well as formalising arrangements with hotels and shipping companies. In the face of criticism about its funding of the TTDB, the Government enacted a law in 1935 to impose duties on visitors travelling to Jamaica by sea or air.

During the 1930s, with the ousting of President Machado in Cuba, the escalation of fascism in Italy and the introduction of Pan Am Airline in 1930, tourist arrivals to Jamaica surged. By 1938, tourist arrivals increased dramatically to 64,000. However, with the outbreak of World War II in 1939, pleasure travel was significantly affected.

A rebound in the industry occurred almost immediately after the war. Entrepreneurs aggressively accessed the Government's handsome tourism incentives in light of the potentially profitable travel market. In addition, the Government revamped the TTDB in 1954, establishing the Jamaica Tourist Board. This board, financed by grants, functioned under the Ministry of Trade and Industry and was also given special borrowing privileges. In an attempt to increase their promotion drive, the Board opened sales offices in New York, Miami, London and Chicago. Against this background the number of hotels in the island tripled between 1945 and 1970, with Jamaica attracting primarily wealthy and famous clients.

[5] This board was funded by the Government.

With independence in 1962, the newly formed Government continued to encourage the development of the tourism industry. Accordingly, the Jamaica Hotel and Tourist Association was established in 1961 to represent hoteliers' interests at the Jamaica Tourist Board. Also, a Director of Tourism was appointed in 1963 and was allocated a budget of one million Jamaica Dollars. Consequently, the upward trend in tourist arrivals in the 1950s continued through 1966, where the number exceeded 345,000, and by 1970 was nearly 415,000[6]. The role of larger hotels was strengthened with the help of further hotel incentive legislation in 1968 which continued to transform the industry. In 1968, there were 22 airlines transporting visitors to Jamaica, among which was the national carrier, Air Jamaica.

The tourism industry suffered a major drawback in the 1970s due partly to increased competition from Europe, Bahamas and Barbados, as well as political and social unrest in the Island, which resulted in negative press coverage overseas.

With the election of a new Government in 1980, visitor arrivals rose, attributed primarily to the diminution in political violence, devaluation of the Jamaica Dollar and enormous promotions by the Jamaica Tourist Board. Consequently, net earnings from tourism almost doubled reaching US$437 million in 1986. Tourist arrivals increased by approximately 53.0 per cent over the five-year period from 1981 to 1985, while hotel occupancy rates rose from 41.5 per cent in 1981 to approximately 70.0 per cent in 1986 and early 1987[7].

The tourism industry, after plummeting in 1988 due to Hurricane Gilbert bounced back during the beginning of the 1990s and continued to grow. With the development of cruise tourism and construction of new hotels in the island, the expansion in net earnings from tourism continued. More than one million visitors were recorded by the mid 1990s, more than twice the figure recorded in the 1980s.

[6] http://www.discoverja maica.com/gleaner/discover/geography/tourism.htm
[7] http://countrystudies.us/caribbean-islands/31.htm

2.2 Recent Trends & Prospects

Between 1994 and 2005, tourist arrivals grew at an average annual rate of 3.6 per cent, while real tourist expenditure increased moderately by 2.0 per cent (see Table 1). The growth in tourist expenditure was impeded by the events of 11 September 2001 in the Island's main tourist market, the United States of America (USA). In that year, visitor arrivals declined by 5.1 per cent, which translated into a 10.0 per cent reduction in tourist expenditure. In an attempt to attract visitors to the Island, given the fall in world travel, hoteliers were compelled to offer discounted rates, which further reduced tourist revenues in the following year, in spite of the marginal increase in arrivals. Tourist expenditure on a per capita basis (TEPC) grew marginally by 1.0 per cent, increasing steadily between 1995 and 2000[8], peaking in 2000 then fell subsequently until 2002. Since 2003, TEPC has rebounded, attributed to the recovery in room rates and the development of attractions but to date has not matched the peak obtained in 2000.

Table 1: Real Tourist Expenditure and Arrivals: 1994 - 2005

	Receipts US$Mill		Arrivals		Per Capita*	
	Tourism	Change %	Tourist (Mill)	Change %	Spending	Change %
1994	1029.6	3.3	1.69	-2.60	418.5	1.80
1995	1099.9	6.8	1.75	3.48	443.5	5.96
1996	1092.2	-0.7	1.82	3.91	435.1	-1.89
1997	1105.5	1.2	1.90	4.57	437.0	0.42
1998	1152.0	4.2	1.90	-0.26	451.8	3.38
1999	1204.9	4.6	2.01	5.99	468.8	3.78
2000	1213.9	0.7	2.23	10.81	470.5	0.35
2001	1092.2	-10.0	2.12	-5.12	420.1	-10.72
2002	1054.0	-3.5	2.13	0.77	403.8	-3.87
2003	1155.4	9.6	2.48	16.42	439.3	8.79
2004	1194.1	3.3	2.51	1.29	452.3	2.95
2005	1240.5	3.9	2.61	3.95	459.4	1.57
Average	**1136.2**	**2.0**	**2.10**	**3.6**	**441.7**	**1.0**

** 1996 Prices*

[8] With the exception of 1996, where TEPC registered a decline.

Of the top seven Caribbean tourist destinations, Jamaica ranked fourth in terms of visitor arrivals, behind Dominican Republic, Cuba and The Bahamas and fifth in terms of visitor spending (see Table 2). Between 1999 and 2005, there was significant growth in arrivals to Cuba, Dominican Republic and Puerto Rico and correspondingly expenditure exhibited similar increases. Cuba represented the fastest expanding destination in the Caribbean during the period. This was attributed to investments of approximately

Table 2: Selected Tourism Statistics

	1999	2000	2001	2002	2003	2004	2005		% Chg.	
				Annual Stop-over Arrivals ('000)				**Average**	**05/99**	**05/03**
COUNTRY										
Dominican Republic	2649.4	2972.6	2882.0	2793.6	3268.2	3717.4	3690.7	**3139.1**	**39.3**	**12.9**
Cuba	1602.8	1774.0	1774.5	1686.2	1836.3	2188.7	2319.3	**1883.1**	**44.7**	**26.3**
Bahamas	1577.1	1596.2	1428.2	1402.9	1428.6	1715.8	1514.5	**1523.3**	**-4.0**	**6.0**
Jamaica	1246.8	1322.7	1276.5	1266.4	1350.3	1414.8	1478.7	**1336.6**	**18.6**	**9.5**
Puerto Rico	1090.0	1178.7	1218.9	1278.8	1415.0	1522.4	1449.4	**1307.6**	**33.0**	**2.4**
Barbados	514.6	544.7	507.1	497.9	531.2	560.0	547.5	**529.0**	**6.4**	**3.1**
St. Lucia	261.4	269.9	250.1	253.5	276.9	300.4	317.9	**275.7**	**21.6**	**14.8**
				Visitor Expenditures (US$ Millions)					**04/99**	**04/02**
Dominican Republic	2524.0	2860.2	2798.3	2730.4	3110.4	3180.4		**2867.3**	26.0	16.5
Puerto Rico	2138.5	2387.9	2728.1	2486.4	2676.6	3024.1		**2573.6**	41.4	21.6
Cuba	1714.0	1948.2	1840.4	1769.1	1999.2	2113.6		**1897.4**	23.3	19.5
Bahamas	1582.9	1736.8	1649.7	1762.7	1758.9	1884.5		**1729.3**	19.1	6.9
Jamaica	1279.5	1332.6	1233.0	1208.7	1355.1	1437.9		**1307.8**	12.4	19.0
Barbados	676.2	711.3	686.8	647.8	747.0	763.2		**705.4**	12.9	17.8
St. Lucia	279.6	297.4	233.0	210.0	282.1	325.7		**271.3**	16.5	55.1
				Jamaica's Percentage of Caribbean Total						
Arrivals	7.7	7.8	7.8	8.0	7.9	7.3	8.0	**7.8**		
Expenditure	6.9	6.7	6.3	6.7	7.0	6.8		**6.7**		
Cruise	6.9	6.6	5.6	5.7	6.7	5.8	6.8	**6.3**		

US$400 million been invested in the industry per year. Further, joint ventures were formed with German, Spanish, Italian and Canadian firms. Over the period Jamaica acquired, on average, 7.8 per cent of the 17.1 million stop-over tourists to the Caribbean and 6.3 per cent of the 15.4 million cruise passengers visiting the region. In 2004, Jamaica's share of stopover visitors to the Caribbean fell to 7.3 per cent, attributed to Hurricane Ivan. In addition, there was strong competition from the Dominican Republic

and Cuba, where the growth in arrivals accelerated steadily from 12.2 and 10.6 per cent, in 2000, to 39.3 and 44.7 per cent in 2005, respectively. In regard to visitor expenditure, on average Jamaica received approximately 6.7 per cent of the US$19,399.5 million that tourists spent in the region.

The dominant share of visitors to Jamaica comes from the USA, followed by the United Kingdom and Canada (see Table 3). These countries accounted for approximately 70.8, 10.8 and 7.9 per cent, respectively, of total arrivals to the Island between 1999 and 2005. Over this period, there have been moderate increases in arrivals from the USA and Canada, with arrivals from West Germany, Latin America and Japan showing moderate declines. Arrivals from the USA, Caribbean and United Kingdom grew on average by 4.2, 4.0 and 3.8 per cent, respectively.

Table 3: Non-Resident: Visitor Arrivals

	1999	2000	2001	2002	2003	2004	2005	Average
				Source Country Share				
United States	68.8	70.8	71.6	72.9	71.7	68.6	71.4	70.8
Canada	7.9	8.0	8.6	7.6	7.0	7.9	7.9	7.9
United Kingdom	10.5	10.6	10.3	10.2	11.3	12.2	10.3	10.8
West Germany	3.4	2.1	1.6	1.2	1.3	1.4	1.4	1.8
Other Europe	3.9	3.1	2.9	3.3	4.1	5.0	4.6	3.8
Latin America	1.3	1.2	1.2	1.0	0.9	0.8	0.6	1.0
Japan	0.7	0.6	0.5	0.4	0.3	0.4	0.3	0.5
Caribbean	2.8	3.0	2.8	2.9	2.8	3.2	2.9	2.9
Other Countries	0.6	0.6	0.6	0.5	0.6	0.5	0.5	0.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
				Arrival Growth: Percentage Change				
United States	4.9	9.3	-1.6	1.2	5.3	-5.0	15.3	4.2
Canada	-9.0	7.5	4.2	-12.2	-1.9	12.6	11.2	1.8
United Kingdom	7.4	7.1	-5.6	-1.1	18.3	7.5	-6.9	3.8
West Germany	-10.3	-34.8	-23.8	-24.3	11.8	11.2	9.8	-8.6
Other Europe	-15.1	-15.0	-11.3	13.4	35.9	18.6	3.1	4.2
Latin America	-18.9	-6.0	0.9	-20.2	-8.1	-2.4	-20.4	-10.7
Japan	-22.1	-7.7	-30.0	-14.4	-10.5	6.0	-3.0	-11.7
Caribbean	1.4	15.3	-7.9	0.6	5.4	13.0	0.2	4.0
Other Countries	9.3	-1.9	-2.7	-5.5	21.0	-17.1	0.5	0.5
Total	**1.7**	**6.3**	**-2.7**	**-0.7**	**7.0**	**-0.7**	**10.6**	**3.1**

The Jamaican product rebounded strongly from this shock and by 2005 arrivals from Jamaica's top three tourist markets recorded increases of 16.6, 17.1 and 7.9 per cent.

Given the above noted performance, the industry is the country's major earner of foreign exchange. For the period 1999 to 2005, Jamaica enjoyed an average net surplus of US$1,100 million on the travel account in the balance of payment statistics, representing an average increase of 4.2 per cent. Net surpluses were recorded in all years with the exception of 2001 and 2002. This was attributed to the fall out in arrivals due to the 11 September 2001 attack on the country's main source market. The surplus on the travel account as a percentage of GDP fluctuated between 11.2 per cent and 14.4 per cent, recording an average of 13.2 per cent of GDP, over the period. Tourism exports constituted 66.3 per cent of Jamaica's exports of services and 38.0 per cent of total exports in 2005. The proportion of services export accounted for by tourism remained fairly stable between 1999 and 2005, averaging 64.4 per cent. In 2005, gross tourism foreign exchange earnings represented 89.8 per cent of the value of merchandise exports.

The value added of the tourism industry is captured within the Hotels, Restaurants, & Clubs component of the Miscellaneous Services category in the national accounts. This sub-sector contributes approximately 6.3 per cent directly to the country's gross domestic product (GDP) (see Table 4). This share has remained relatively consistent since 1999[9]. The industry's supporting sectors, namely transportation, agriculture, electricity & water, manufacturing, construction and the distributive trade together represent over 60.0 per cent of GDP. In addition, these sectors account for over 66.0 per cent of the country's employed labour force between 1999 and 2005. Given the relative importance of tourism to these sectors, declines in the industry have a significant impact on the economy.

[9] Of note, plans are afoot for the separation of the tourism industry from the Miscellaneous Services group

Table 4: Selected Industries - Share of Real GDP (2000-2005)

	Share of GDP (%)							
Industry	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**Average**
Agriculture, Forestry and Fishing	7.3	6.4	6.7	6.1	6.3	5.7	5.2	6.2
Electricity and Water	3.8	3.8	3.8	3.9	4.0	4.0	4.1	3.9
Manufacturing	14.3	14.2	14.1	13.9	13.4	13.7	13.3	13.8
Construction and Installation	9.5	9.5	9.6	9.7	9.6	10.0	10.6	9.8
Distributive Trade	22.5	22.6	22.3	22.0	21.8	21.9	21.8	22.1
Hotels Restaurants & Clubs	6.1	6.4	6.2	6.1	6.3	6.5	6.6	6.3

Formal employment in the tourism industry has been growing steadily, albeit slowly, between 1999 and 2005, averaging 30 531 persons per annum. This represents on average 3.2 per cent of the country's employed labour force. There was a significant fall in employment in the sector in 2001 due to the events of the 11 September. However, given the resilience of the sector, employment rebounded in 2002, and by 2005, with 31 227 workers, surpassed the peak recorded in 2000. Besides direct employment, which refers to individuals hired by hotels, restaurants, and other tourist facilities, multiplier effects lead to indirect and induced employment in the industry. The indirect jobs are the ones where backward linkages develop positions that exist to service the tourism industry. For example, farmers, telecommunication companies, construction companies and manufacturers. It is estimated that tourism provides about 62,454 indirect jobs and when combined with direct jobs represented approximately 9.6 per cent of the employed labour force in 2005.

The World Travel and Tourism Council estimates that Jamaica's travel and tourism market in 2006 should represent 0.07 per cent of the world market, with a regional market share of 8.2 per cent[10]. Using a tourism satellite accounting system, the WTTC

[10] The Dominican Republic, Bahamas and Cuba are expected to account for approximately 0.13, 0.06 and 0.08 per cent, respectively of world market in 2006 and 15.9, 7.7 and 10.5 per cent, of the regional market.

forecasts that within the next ten years prospects for growth in Jamaica, with respect to personal travel & tourism, business travel, government expenditures, capital investment, visitor exports and travel & tourism demand would be lower when compared to the rest of the world. This is against the background that Jamaica's product is essentially mature[11].

Recognizing the maturity of the Jamaican product, the Government as a part of its industrial policy has embarked on a number of initiatives to facilitate investments in new hotels, renovation and refurbishing of existing hotels, as well as the diversification of the product. This has led to a new phase, which began in 2004/05, of significant expansion in the industry. During 2005, hotel room stock expanded to 26,039, an increase of 4.4 per cent above the 2004 room stock. This resulted from the opening of the 850-room Spanish-owned property, RUI III and the 360-room Sandals Whitehouse Hotel, among others. It is expected that 12,000 new hotel rooms will be added along the Island's north coast over the next five years. The industry is expected during this period to record average growth of approximately 8.0 per cent as well as a 9.0 per cent increase in tourism receipts.

3.0 Economic Impact Assessment

There are four basic approaches to evaluating the effects of an economic activity on a region or economy. These are:

(i) feasibility studies which look at private rates of returns

(ii) social cost-benefit analysis

(iii) impact studies which quantify the effects of expenditure on national or regional aggregates

(iv) econometric models of the economy as a whole which quantify the long run impact.

Impact studies are the most widely used approach with input-output models being the most commonly used tools. An input-output model (I-O model) is a mathematical model

[11] See Malcolm (2003).

that describes the flows of money between sectors within an economy. Flows are predicted by knowing what each industry must purchase from other industries to produce a dollar's worth of output. Using each industry's production function, I-O models also determine the proportion of sales that is attributable to wages & salaries, proprietor's income as well as taxes. Multipliers (e.g. sales, output and income) can be estimated from input-output models based on the estimated re-circulation of spending within the economy. These are then used to determine the direct effects, induced effects (increase in consumer spending from additional income arising from the direct effect) and the indirect effect (corresponding output generated by supporting sectors).

McDavid (2003) using I-O analysis examined the Jamaican Hospitality and Tourism Sector using STATIN's I-O model that was based on 1993 data. The basic assumptions used in the model were that each sector or activity produced only one output and that inputs were required in fixed proportion, i.e. constant returns to scale in production.

Excluding imports and exports, the nominal I-O accounts can be written as:

$$P_i X_i = \sum_i P_i X_{ij} + P_i F_i \qquad (1)$$

where X_{ij} = Flow of intermediate goods from sector '*i*' to sector '*j*'

X_i = Production in sector I

X_j = Total input of sector '*j*' / total intermediate input of sector '*j*'

Xij = Total intermediate input (or output) in the economy

P_i = The price of output in sector '*i*'

F_i = Final demand for sector I

Assuming constant returns to scale, the intermediate requirements from sector '*i*' per unit of output of sector 'j' (Leontief coefficients) are given by:

$$a_{ij} = \frac{X_{ij}}{X_j} \tag{2}$$

For each year, the ratio of nominal intermediate flows to nominal output is given by:

$$\frac{P_i a_{ij}}{P_j} = \frac{P_i X_{ij}}{P_j X_j} \tag{3}$$

Including the Leontief coefficients and dividing by the price, equation 1 is rewritten as the basic material balance equation of the I-O model:

$$X_i = \sum_{ij} aX_j + F_i \tag{4}$$

In matrix notation:

$$X = AX + F \tag{5}$$

Assuming that the fixed coefficient matrix represents a four-sector model, the material balance equation is as follows:

$$\begin{aligned} X &= a_{11}X_1 + a_{12}X_2 + a_{13}X_3 + a_{14}X_4 + F_1 \\ X &= a_{21}X_1 + a_{22}X_2 + a_{23}X_3 + a_{24}X_4 + F_2 \\ X &= a_{31}X_1 + a_{32}X_2 + a_{33}X_3 + a_{34}X_4 + F_3 \\ X &= a_{41}X_1 + a_{42}X_2 + a_{43}X_3 + a_{44}X_4 + F_4 \end{aligned} \tag{6}$$

If there are many sectors in the I-O tables, the solution would be by matrix inversion from equation 6 i.e.

$$\begin{aligned} X - AX &= F \\ X &= (I - A)^{-1}F \end{aligned} \tag{7}$$

The coefficients from the inverse matrix depict both direct and indirect flows between the sectors. The input-inverse shows the total impact of changes in final demand on sectoral output, while the output–inverse depicts the total impact of the changes in value added on sectoral input.

McDavid (2003) found that the output multiplier for the Jamaican hospitality and tourism sector was small, 1.269. This meant that for every $1.00 spent by this sector it would generate $1.27 in output from the other sectors. This is lower than the output multiplier of 1.94307 estimated by Daniel et al (1985). Domestic purchases represented 65.35 per cent of total inputs while imports accounted for 14.76 per cent[12]. The imports figure is higher than the 11.98 per cent estimated by Daniel et al (1985), suggesting that the imported component of the product has increased.

The Jamaica Tourist Board commissioned a study in 1998 on the economic impact of tourism in the economy. The study found an output multiplier of 1.021 for the sector, compared to 1.269 derived by McDavid (2003)[13]. Using an I-O model, the study found that 1.48 jobs were created for every million dollars in final demand spending, with the transport (taxi) sector being the highest employment-generating sub-industry, producing 6.35 jobs per million dollar spent. Tourism accounted for 7.7 per cent of Jamaica's GDP in 1997. In regard to Government revenue, for every dollar of tourism final demand, the Government received $0.082 in revenue.

Although input-output models are used widely in research, like any other model, they too are subject to a number of criticisms. These models are data intensive and as such their use is an expensive exercise both in terms of cost and time. Also, most secondary data are unsuitable for this method of analysis, because they are rarely accurate at the level of detail needed in input-output models and, in most cases, inter-sectoral transaction data are not available. This means that much of the data must be collected by surveys.

[12] This does not include the import content of domestically produced manufactured items used by the sector.
[13] Both studies used the Jamaican 1993 input-output model.

Wanhill (1983) examined the economic impact of tourism by using sampling methods to derive normalized input-output coefficients instead of a full input-output table. He found that this method reduces the burden of data collection while at the same time enabling a more thorough analysis of linkages than usually possible through ad hoc Keynesian multiplier analysis. He found that the multiplier analysis can provide substantial amounts of information about the effects of tourist expenditure, the information content increasing with the level of disaggregation. He claimed that the multiplier analysis may give insight for policy objectives in relation to employment, distribution of income and output linkages between tourism and other sectors in the local, regional and national economy. Studying a diverse industry as tourism, with a multitude of spill-over effects, Wanhill (1983) posits it has proved to be the best tool currently available.

West (1993) criticized the input-output framework and went about estimating the impact of tourism on the economy by using an integrated modeling framework, which combined the social accounting (cross-sectional) matrix with econometric (time-series) relationships. According to the author, this provides the basis for a much more comprehensive analysis of tourism activity and, as such, is superior to the traditional input-output analysis.

Other models used by researchers include Computable General Equilibrium (CGE) models. CGE models allow factor supplies, input proportions, output levels, and spending decisions to respond to prices, which in turn are determined by market forces. Consequently, CGE models are uniquely suited for analyzing a wide range of development planning and policy issues. A CGE model consists of a set of equations describing the structure of an economy such that: (1) factor and commodity prices are determined endogenously to satisfy specified market-clearing conditions. (2) Supply and demand in each market are derived from optimizing behaviour of economic agents who respond to relative prices and (3) basic macroeconomic constraints are observed. Another approach is the Keynesian multiplier approach. This is based on identifying streams of income and employment which are generated in “rounds” but diminish geometrically as a result of leakages.

4.0 Methodology & Data

Tourist activities impact the economy through several channels, some of which can be felt through employment creation, balance of payments contribution and through its contribution to economic growth. The empirical analysis in this paper focuses on the contribution to sectoral growth and employment.

Given the absence of current input-output coefficients, this paper estimates sectoral impact multipliers for the economy using time series estimation. We use a dynamic system of equations for the sectors' value added similar to that in the input-output model (i.e. equation 6). The multiplier for each sector is estimated in a systems framework using a Seemingly Unrelated Regression (SUR) to account for common sectoral shocks. The resulting system of equations is then solved for the long-run output elasticity for each sector. Employment elasticities[14] are calculated for each sector of interest. Following this, the elasticities calculated from the SUR model are used jointly with the sectoral elasticities to generate sectoral employment that is expected to flow from an increase in tourist activities.

The model uses quarterly value added data from 1996:01 to 2006:02. All variables are in logs and seasonally adjusted. Nine sectors are examined, namely agriculture, manufacturing, construction, electricity & water, transport, storage & communication, distribution and tourism. The other sectors of the economy are grouped as 'Other'.

5.0 Results

The result of the SUR model is shown in Table A in the appendix. The impact on income and employment in Jamaica from a dollar spent in the tourism industry is shown in table 5. Based on the findings, the output multiplier for the Jamaican tourist industry is small, at 1.00. This means that for every $1.00 spent in this sector, $1.00 in output would be generated from the other sectors of the economy. This compares to the output multiplier

[14] Employment elasticity provides a numerical measure of how employment varies with economic growth

of 1.269, 1.943 and 1.021 derived by McDavid (2003), Daniel (1985) and JTB (1998) respectively, for the Jamaican hospitality and tourism sector.

Table 5: Additional Income & Employment Generating from a Percentage Increase in Demand from the Tourism Industry

	Sector								
	Agriculture	Manufacturing*	Construction	Electricity	Transportation	Distribution*	Hotel	Other	Total
Change in Output (%) (From a $1.00 spent in Tourism)	4.0000	1.2706	0.3926	0.0753	1.0100	0.141	0.890	0.286	1.008
Employment Elasticities	0.3191	0.5146	1.8299	8.7196	1.4671	1.578	8.076	0.258	0.258
Change in Employment (%) (From a $1.00 spent in Tourism)	1.2763	0.6539	0.7183	0.6562	1.4818	0.2233	7.185	0.074	0.260
Additional Employment Created (From a $1.00 spent in Tourism)	2471	479	619	41	890	415	2178	232	2469

** Employment Elasticity calculation adjusted for shocks*

The continued decline in the output multiplier since 1993 could be attributed to the underestimation of value added, the maturity of the tourist product and increased substitution of domestic inputs with foreign inputs. With respect to the estimation of value added, the tourist board estimates that entertainment is the third largest item of expenditure by visitors (10.6 per cent of total expenditure in 2005). However, the output of this activity is not fully captured in the national accounts data. The second largest item is shopping (11.2 per cent of total expenditure in 2005). However, while domestic craft items are an important component, a significant number of the consumer and food items are imported. It is reported by the sector that the reasons for the high import content in the product are unreliability in domestic supply and quality and general low quality standards. This is in a context where the visitors expect certain specifications and distinctive qualities (e.g. "marbling" in the beef). It should also be noted that the incentive structure for the industry, which gives duty free imports for construction as well as furnishing purposes, also accounts for the high import content.

The results also show that the incomes of the eight selected sectors are expected to expand from a dollar spent by the tourism sector. Of note, a dollar spent in tourism is expected to instigate a $1.01, $0.39 and $4.00 increase in output in the transport, storage & communication, construction and agriculture sectors, respectively. Output in the 'Other' sector should grow by $0.29 for a dollar spent in the tourism industry.

Distributive trade and electricity have relatively low output multipliers of 0.141 and 0.08 respectively.

In relation to sectoral employment, agriculture, transport, storage & communication, construction and distribution are the primary beneficiaries from increased activity within the tourism industry. For a dollar spent in the tourism industry, 2471, 619, 415 and 191 additional persons are expected to be employed within these sectors, respectively. This is consistent with the distribution of expenditure of stopover visitors to Jamaica, which indicates that tourists spend approximately 62.9 per cent of their budget on accommodation, food and travel. The high employment multiplier for construction could be attributed to the regular refurbishing exercises conducted by hoteliers as well as frequent expansion activities within the industry.

The impact on GDP and employment of the anticipated growth in the tourism sector over the next four years is shown in table 6. The sectors' baseline growth is proxied by their 10-year trend growth. Agriculture, transport, storage & communication and manufacturing are expected to record additional growth of 27, 2.4 and 9.6 per cent above their trend performance. Growth in the sector grouped as 'Other', as expected, would improve marginally by 0.16 per cent. The results show that approximately 16,771 jobs would be created within the tourism industry, 4,109 persons less than that projected by the Planning Institute of Jamaica over the medium term.

Table 6: Potential Impact on Income & Employment: 2007 - 2010

	Sector							
	Agriculture	**Manufacturing**	**Construction**	**Electricity**	**Transportation**	**Distribution**	**Hotel**	**Other**
	Change in Income (%)							
Year								
2007	44.00	13.98	4.32	0.83	11.11	1.56	***11.00***	3.14
2008	25.76	8.18	2.53	0.48	6.50	0.91	***6.40***	1.84
2009	20.00	6.35	1.96	0.38	5.05	0.71	***5.00***	1.43
2010	20.00	6.35	1.96	0.38	5.05	0.71	***5.00***	1.43
Average	**27.44**	**8.72**	**2.69**	**0.52**	**6.93**	**0.97**	**6.85**	**1.96**
Baseline*	**-1.16**	**-0.89**	**1.15**	**3.39**	**4.58**	**0.43**	**4.04**	**1.80**
	Employment Created (#)							
2007	27178	5270	6813	454	9789	4561	26931	2556
2008	15912	3085	3989	266	5731	2670	15669	1496
2009	12354	2395	3097	206	4450	2073	12241	1162
2010	12354	2395	3097	206	4450	2073	12241	1162
Average	**16949**	**3286**	**4249**	**283**	**6105**	**2844**	**16771**	**1594**
Baseline #							**20880**	

** Calculated as 10 year trend growth in each sector.*

 # Forecast by Planning Institue of Jamaica

6.0 Conclusion

Given its natural advantages, the tourism sector is viewed as one of the most important engines of growth and development in the Jamaican economy and as such, is a key focus in the Government's industrial strategy. Tourism main supporting sectors account for more than 60.0 per cent of GDP. In relation to employment, agriculture transport, storage & communication, construction, and distribution are the primary beneficiaries from a dollar spent within the tourism industry. Further, these sectors account for over 55.0 per cent of the employed labour force.

However, the empirical analysis points to the continued low and declining impact of the industry on the overall economy attributed to the underestimation of value added, the maturity of the tourist product and increased substitution of domestic inputs with foreign inputs. The expected boom in the industry over the next four years will have a noticeable impact. However, the estimates of the impact multipliers suggest that the contribution of the sector is below its potential.

Maximizing the potential contribution of tourism will involve (i) the diversification of the product given its maturity, in order to increase visitor spending and (ii) expanding the

capacity of the domestic support sectors, primarily agriculture and manufacturing, to satisfy the demand of tourist sector. The former objective is already the focus of the Government's Tourism 20/20 plan. The latter requires more focused sectoral/micro initiatives to encourage greater investments in the support sectors, the introduction of new technologies and the upgrading of the skills of the labour force. The greater use of hydroponics and green house cultivation in agriculture for example will lead to a more stable and higher quality supply. Finally, the importance of entertainment to the tourism industry and the Jamaican economy in general necessitates more emphasis on the proper measurement of this sector in the national accounts, as well as a greater focus on harnessing the creative skills of the people.

The paper has, in the main, addressed two of the important elements of an economic impact assessment of the tourism industry. Further work to be undertaken includes the computation and comparison of all the sectoral impact multipliers. This can serve to inform the focus of Government's incentive policy. In addition, given that input-output coefficients and tourism satellite account would not be available for some time, sample surveys will be undertaken to compile summary input-output coefficients.

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Appendix

Table A: SUR Estimation Result

	Agri	Manu	Const	Elec	Transport	Distribution	Tourism	Other	AR(-1)	Adjusted R^2
Agri		0.8316 *(0.1121)*					0.1684 *(0.0604)*		0.7173 *(0.1142)*	**0.76**
Manu	0.2768 *(0.0589)*		0.6401 *(0.1048)*				0.0831 *(0.0391)*			**0.43**
Const						0.9456 *(0.0657)*	0.0544 *(0.0174)*		0.6297 *(0.1052)*	**0.52**
Elec		0.8754 *(0.1491)*					0.8821 *(0.1073)*	0.7870 *(0.2627)*		**0.86**
Transport				0.00005 *(0.00003)*			0.1620 *(0.0604)*		0.8407 *(0.0614)*	**0.98**
Distribution			0.0848 *(0.0299)*				0.0629 *(0.0174)*		0.4874 *(0.1058)*	**0.63**
Tourism					0.2545 *(0.0589)*	0.2101 *(0.0664)*	0.4802 *(0.1234)*			**0.86**
Other						0.5095 *(0.2429)*	0.0956 *(0.0391)*		0.5361 *(0.1183)*	**0.66**