THE IMPACT OF VAT ON TOURISM IN BARBADOS

by

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ABSTRACT

The paper attempts to analyse the impact of the three-year old value-added tax (VAT) on the tourism sector in Barbados. The results show that on average the VAT has been passed on to the tourists in the form of higher hotel room rates. This may be due to the fact that while the VAT on hotel accommodation was levied at 7.5% as opposed to 15% imposed on most other goods and services, this concession represents a 50% increase from the previous 5% sales tax. Thus hoteliers, who prior to the VAT were already less competitive than their Caribbean counterparts, are now more disadvantaged by this new tax policy. The paper therefore calls for Government to recognise the fragility of the tourism sector and strive towards implementing policies that will enhance the industry's future competitiveness.

Keywords: Value-added tax, tourism, hotel room rates.

I: INTRODUCTION

The value-added tax (VAT) was introduced in Barbados on January 1, 1997. The VAT, along with the excise tax which was levied on alcohol and tobacco, motor vehicles and petroleum products, replaced a burdensome tax structure which consisted of eleven taxes carrying exorbitant tax rates on a small range of items [Dalrymple, 1998].[1] More specific to the analysis here, VAT replaced the hotel and restaurant sales tax in the tourism sector. Since the tourism industry is the main foreign exchange-earner and makes a significant contribution to the Barbados economy, even before the implementation of VAT, many vented their concerns over its impact on this vital sector.

An earlier study found that within the tourism industry, accommodation was the single most important sub-sector.[2] It is against this background that a concession was granted to hoteliers with the VAT being levied at a rate of 7.5% on hotel accommodation, half of that levied on most other good and services. Consequently, the paper limits its analysis to accommodation, in general, and hotel accommodation in particular.

At the outset no predetermined notions of whether the VAT has had a negative or positive impact have been formulated. Thus, the paper tries to give a very unbiased assessment of the effect of this tax policy on the hotel industry in Barbados. The remainder of the paper is presented as follows. Section 2 gives a background to the tourism industry in Barbados. A sketch of some of the costs that hoteliers in Barbados face and a comparison with selected regional territories are given in Section 3 of the paper. An explanation of how the VAT works and the concessions granted to the tourism industry in light of its importance to the Barbados economy are presented in Section 4. The methodology is presented in the following section where a pooled regression is used to model VAT's impact on hotel room rates. The paper concludes with a summary of the findings and their implications for policy.

II: BACKGROUND TO TOURISM IN BARBADOS

Tourism emerged as a major economic activity in Barbados in the late 1950s and early 1960s. Prior to this period, sugar was the mainstay of the economy contributing significantly as an employer, to gross domestic product (GDP) and comprising well over 70% of the country's domestic exports. But the upsurge in air travel from First World countries and later the emergence of cruise tourism would later prove to be a great source of wealth for not only Barbados, but other agricultural dependent economies around the world.

Contribution to the Economy

Tourism's contribution to the economy grew rapidly in the 1960s and 1970s with the share of total GDP rising from 2% in 1956 to 10% in 1980. Thereafter (1981 to 1998), tourism's average annual contribution to real domestic output was estimated at approximately 13%. Between 1956 and 1980, foreign exchange-earnings from tourism rose from a meagre $8.6

[1] Taxes on hotel and restaurant sales, consumption, surcharge on overseas telephone calls, travel ticket, public entertainment, pleasure cruises, surcharge on rental income, luxury goods, quarriable minerals and airline business make up the entire list of taxes that the VAT replaces.

[2] In their paper on the estimation of the impact of a VAT, Dalrymple *et al* (1996) separated the tourist sector into two components accommodation and other tourism. They estimate that accommodation accounts for 58.7% of the tourist industry , leaving 41.3% to other tourism.

million to $502 million. During this period, tourism receipts surpassed those from sugar exports - the main foreign exchange earner at the time whose earnings increased from $36 million to $106 million during the same period. In the decade 1988-1999, travel credits continued to rise, recorded at an average of $1,133.6 million per annum. This trend resulted in tourism being regarded as a billion dollar industry.

Statistics on employment in the industry do not go back as far as 1956, however at the end of 1997, tourism sector employed some 12,300 persons, more than each of the other foreign exchange-earning sectors of agriculture and fishing and manufacturing. This employment in 1997 represented an increase of 2,800 persons from the total in 1991.

Trends

In 1956, long-stay arrivals to the island was recorded at a mere 17,829. At this time, the Commonwealth Caribbean islands – with a share of 41% of total arrivals – made up the single largest share. Ten years later, the United States (US) took over as the largest market segment in Barbados with a share of 31%, compared with 23% in 1956. In the meanwhile, the United Kingdom (UK) market was not well established and accounted for only 10.5% of all arrivals [Phillips, 1982].

Total arrivals reached the 100,000 mark in 1968 when arrivals amounted to 115,697, growing at an annual average rate of 42.2% between 1956 and 1968. In the following decade, arrivals rose by an average of 16.9%. The UK took over from the US as the market leader in 1994: In 1999, the UK has fully established itself as the largest market segment in Barbados.

Cruise tourism took off in Barbados in the 1970s attracting in excess of 100,000 passengers per annum. Since 1986 cruise passengers have been on the rise, expanding by an annual average of 30.2%. However, the growth in this industry started to slow down in 1995 and actually contracted in 1998 and 1999; the first since 1984. However, some 444 ship-calls into the Bridgetown port were responsible for bringing 506,610 cruise passengers to our shores in 1998. Although the exact contribution of cruise tourism to the domestic economy is still uncertain, the severe competition from nearby regional destinations particularly St. Lucia and change in itinerary of some cruise liners have been posing problems to the industry in recent times.

III: COSTS CONCERNS IN THE HOTEL SECTOR

Although Barbados has for many years been marketed as a high-priced destination, there is concern that, with a VAT, the sector can no longer compete with other Caribbean destinations. The strength of the Barbados dollar vis-a-vis other Caribbean currencies has resulted in a high cost of living in Barbados. This high cost is reflected in the tourism industry where generally high wages and the overall cost of doing business in Barbados makes cost of providing hotel accommodation higher than in most other Caribbean territories.

Fixed vs Variable Cost

The cost of providing hotel accommodation may be divided into fixed and variable cost. Fixed costs is defined as the operating cost. These costs include utilities (water and electricity), maintenance and taxation. On the other hand, variable cost include cost that are less constant such as wages and salaries and the costs not incurred on a day-to-day basis. The latter include spending on refurbishment, renovations, marketing and advertising.

Wages

Table 1 shows the breakdown of operating cost of a typical hotel in Barbados and comparisons with a selected number of countries in the Caribbean region. The table reveals that despite popular consensus, Barbadian hotel workers were not paid the highest wages in the region. In fact, the highest wage earners came from the Cayman Islands. There, the average weekly wage rate for the unskilled labour was US$292.4, compared to US$75. Other high wage earners in the region include the US Virgin Islands and the Bahamas. The lowest price of labour among the selected countries are US$21.46 (in Jamaica) and US$35.75 (the private workforce in Dominican Republic) per week. St. Lucia too has very low wages (US$ 40 to US$ 50 per week) but this is somewhat offset through the provision of fringe benefits. Skilled labour in the Cayman attract average wages of US$355.6 per week, while those in Barbados earned US$225 for a similar period.

TABLE 1: Cost comparison of a typical hotel in the Caribbean

Country	*Wages*	*Utilities*		*Tax system*
		Water	*Electricity*	
Antigua and Barbuda	Minimum wage rate is US$93 per week.	Commercial rate is US$ 4.18 per m^3.	The basic charge is US$0.17 per 300 units and US$0.38 per unit thereafter	Property Tax:7% annually of valuation Corporation Tax: 40% Restaurant Tax: 7% Sales Tax: 6% Departure Tax: US$10.00
Bahamas	Average minimum wage rate per week is US$ 170	Commercial consumer rate charge is US$ 0.02 per m^3.	Minimum charge for commercial consumers - US$6.78 per month	Real Property Tax: 0.5% to 1.5% per annum for property value above US$100,000 Stamp tax on property transfers: 3%-10% Hotel occupancy tax: 8% Departure Tax: US$15.00
Barbados	Average weekly wages range from US$75 to US$225.	Commercial water rate is US$1.06 per m^3	Rates vary from US$0.10 per kWh to US$0.09 per kWh.	Corporation Tax: 40% Value-Added Tax: 15% Hotel Occupancy Tax: 7.5% Departure Tax: US$12.50
Bermuda	N/A	N/A	Average cost of supply per kWh is approximately US$0.22 per unit for all users.	Hotel Occupancy Tax: 7.25% Departure Tax: US$20.00 Stamp Tax on property transfers: 2%-5%
British Virgin Islands	Minimum wage rate is US$ 120 per week for unskilled labour	N/A	Rates US$0.1675 to US$0.24 per kWh	Corporation Tax: 15% Sales Tax: 0% Room Tax: 7% Departure Tax: $10.00
Cayman Islands	Average rates are approximately: US$292.4 per week for unskilled labour. US$355.6 per week for skilled labour	N/A	Average commercial rate is US$0.12 per kWh	Room Tax: 10% Departure Tax: US$10
Cuba	N/A	N/A	low	Corporation Tax: 30% Departure Tax: US$15

Country	*Wages*	*Utilities*		*Tax system*
Dominican Republic	Minimum wage of the private workforce is about US$35.75 per week	Industrial water rate is US$0.36 per m^3	Rates are US$0.08 per kWh for commercial users and US$0.11 for industrial users	Corporation Tax: 0% Sales Tax: 8% Room Tax: 23% Departure Tax: US$10
Jamaica	Minimum wage rate is US$21.46 per week. Various social taxes are 11.5% of payroll	The water rate is US$33.24 per m^3	Rate is US0.105 per kWh	Corporation Tax: 33.3% Consumption Tax: 15% Departure Tax: US$15
St Lucia	Average adjusted weekly wage ranges from US$40 to US$50, plus fringe benefits	Rates is on average below the other territories	Rates are US$0.16 for industrial, commercial and hotel users. The fuel surcharges averages US$0.05.	Land Tax: 7% Consumption Tax: 5%-15% Room Tax: 8% Departure Tax: US$10
US Virgin Islands	Average weekly rate in hotel sector is US$220	N/A	N/A	Corporation Tax: 37.4% maximum Annual Property Tax: 1.25% of 60% of the assessed value Hotel Occupancy Tax: 8% Departure Tax: US$3

Source: Caribbean Tourism Organisation, *Caribbean Tourism Investment Guide*, 1997.

Utilities

In terms of the cost of utilities, Barbados appears to be very competitive. The commercial water rate is estimated at US$1.06 per m^3, which is well below Antigua and Barbuda (US$4.13 per m^3) and Jamaica (US$33.24 per m^3). However, the water authority in Bahamas is able to supply water for as low as US$0.02 per m^3, with the closest rival being the Dominican Republic at US$0.36 per m^3. The water rate in St. Lucia is regarded as generally lower than most of the other regional territories.

Barbados' cost of supplying electricity is on par with the rest of the region. More specifically, the US$0.10 per kWh compares favourably with the Dominican Republic (US$0.08 to US$0.11 per kWh), Jamaica (US$0.105 per kWh) and Cayman Islands (US$0.12 per kWh). Electricity costs in St. Lucia and Antigua and Barbuda were just above these figures, with the rate recorded at US$0.16 per kWh and US$0.17 per kWh, respectively. However, the cost of electricity is relatively steep in Bermuda and the British Virgin Islands.

Tax System

Throughout the region, the corporation tax rate ranges from 0% in the Dominican Republic to 40% in both Barbados and Antigua and Barbuda. Overall Antigua and Barbuda and Barbados appear to have similar tax structures with hotel and sales/restaurant tax in the region of 6-7%, while in Barbados the VAT on hotel occupancy is 7.5%. While the profits of hotels are not taxed in Dominican Republic, this is balanced by a room tax that is as high as 23% and a sales tax of 8%. In the other territories, taxes are imposed on either room (or hotel occupancy) or a sales tax but never both as is the case of the Dominican Republic. However, the Dominican Republic appears to be less taxed than Antigua and Barbados.

The least tax burden is bourne by the Bahamas and Bermudian hoteliers who, besides property tax, pay only hotel occupancy tax of 8% and 7.3%, respectively.

Summary

Based on the above analysis, the more price competitive territories can be identified. The Dominican Republic appears to be have the most competitive tourism industry. It has one of the lowest minimum wage rates in the region and very competitive utility charges. This is followed by The Bahamas which not only has the lowest tax structure but also the lowest water charges of the countries sampled. While Barbados' utilities costs compare very well with the rest of the region, its tax system is undoubtedly one of the most burdensome.

IV: HOW VAT WORKS

Value added is the difference between the value of the goods or services sold and the value of the goods or services purchased as intermediate inputs. Thus, value added comprises of wages, rents, interest, and profit. A value-added tax therefore is a tax levied on value added in production through various stages of production [Metcalf, 1995]. There are principally two ways of administering a VAT - the subtraction method and the credit method. In the subtraction method, the VAT authorities would tax the gross sales net of intermediate goods purchased at each stage of production. While in the credit method, taxes the value of sales at each stage of production while allowing a credit for any VAT paid on inputs in production.

The credit method is the most popular method of administering a VAT and it is indeed the one employed in Barbados. Hence, producers or retailers receive refunds for the VAT that they have paid on inputs, thereby ensuring that the output price does not include the taxes already paid on inputs. But there are inputs such as labour which go into the output price for which there is no tax credit. Therefore, if the ratio of labour to output price is high then the burden of VAT can be tremendous. One might therefore expect small labour-intensive hotels to have more difficulty in dealing with a VAT.

Although, the VAT can be imposed on all goods and services, certain interest groups may lobby for an "exemption" or "zero-rating" on particular items. Exempt supplies are not subject to VAT but the business must absorb the taxes paid on its inputs. On the other hand, with "zero-rated" supplies are taxable supplies at a rate of zero percent and a full refund of all taxes paid on inputs is granted to businesses. For a full list of "exempt" and "zero-rated" items in Barbados, see Craigwell *et al* (1996), pp 106-108.

VAT and Tourism

The introduction of the VAT sought to reform the system of indirect taxation in Barbados by:

- Broadening the tax base i.e. imposing taxes on a wider range of goods and services and;
- Reducing the administrative costs associated with many different tax rates by implementing one tax rate on goods and services.

In the tourism industry, the VAT replaced the hotel and restaurant sales tax which was levied at a rate of 5%. The latter was introduced in fiscal year 1974/75 with revenue collections from the tax starting at a meagre $1. 9 million. During the last decade in existence (1987/88 to

1996/97), the tax accounted for an average of $17.7 million in tax revenue or 1.9% of total tax revenue.

The total VAT revenue collected from the tourism industry can be calculated as follows:

$$TR = \tau B \quad (1)$$

where TR is the tax revenue, τ is the tax rate and B is the tax base. From early on, Government recognised the vulnerability of tourism to the new tax system and decided that hotel accommodation would be treated differently from "other tourism" with legislation favouring hoteliers.[3] To this end, legislation sought to exempt hotel accommodation from VAT. However, an exemption would have implied that the tourism sector would absorb some $35 million in input taxes. The other alternative of zero-rating inputs for that sector seemed infeasible [Budgetary Proposals, 1996].

The decision was made to introduce a lower rate on hotel accommodation than that to be applied to other goods and services, thereby allowing hoteliers to offset input tax against output tax in relation to accommodation.[4]

Thus, the tax base for the tourism sector is made up of hotel accommodation and "other tourism" with different tax rates. Equation (1) is rewritten to highlight this.

[3]"Other tourism" refers to restaurants, bars, cafeterias, nightclubs and other entertainment.

[4]A study by Deloitte-Touche Tomamatsu entitled "A VAT in Europe" revealed that countries with significant tourism sectors had concessionary rates on accommodation.

$$TR = \tau_A A + \tau_o O \quad (2)$$

where A represents hotel accommodation and O is "other tourism" and τ_A and τ_o are their respectively tax rates. Simulation with a seven and a half percent on hotel accommodation showed that hoteliers would have received some $7 million refund compared to the $35 million that hoteliers would have had to absorb if exemption was granted [See Craigwell et al, 1996, pp 102].[5] Therefore with a 7.5% levied on hotel accommodation and 15% on "other tourism", equation (2) becomes

$$TR = 0.075A + 0.15O \quad (3)$$

As a follow up to these proposals, in September 1997 the Prime Minister heeded the case of hoteliers and eliminated the VAT on complimentary rooms. These rooms specifically cater for travel agents and others in the travel industry and the extent to which their provision can be made free of charge forms the thrust of any marketing strategy of hoteliers [Budgetary Proposals, 1997].

Table 2 shows what actually happened. In the first year of the implementation, the net payments of VAT by hotel and guest houses amounted to $9.8 million, with refunds estimated at mere $1.7 million. By the end of 1998, refunds had crawled to $2.7 million, while the gross payments of VAT increased to $18.8 million. Thus, over the first two years of the VAT, net

[5]However, with the introduction of the VAT, concessions in the form of waivers granted to the hotel sector were removed.

payments of VAT by the hotel sector almost doubled. However, at the end of the review period, there appears to have been some relief from the VAT as refunds climbed to $9.2 million resulting in a significant decline on the net payment of VAT by the accommodation sector.

TABLE 2: VAT profile for hotels and guest houses

Period	Paid	Refunds	Net Paid
1997 - Q1	4.0	0.0	4
1997 - Q2	4.7	0.2	4.5
1997 - Q3	1.2	0.3	0.9
1997 - Q4	1.6	1.2	0.4
1997 Total	11.5	1.7	9.8
1998 - Q1	7.2	1.0	6.2
1998 - Q2	6.4	0.5	5.9
1998 - Q3	2.4	0.7	1.7
1998 - Q4	2.8	0.5	2.3
1998 Total	18.8	2.7	16.1
1999 - Q1	5.3	1.7	3.6
1999 - Q2	5.0	4.6	0.4
1999 - Q3	2.6	2.4	0.2
1999 - Q4	2.9	0.5	2.4
1999 Total	15.8	9.2	6.6

Source: The Value Added Tax Division, The Customs and Excise Department, 1999

The foregoing analysis suggests that the burden on hoteliers has lessen. However, this relief has come mainly through the increase in refunds. This finding is important as it may suggest that hoteliers now possess a better understanding of the VAT system and can find loop holes. However, it may simply be a result of the high level of renovation/refurbishment occurring in recent times. Because the latter is a vatable input to the operation of the hotels, it qualifies for a tax credit.

From equation (3) more analysis can be done on *Table 2* above. From the second column, the effective tax base for sales in the hotel sector can be calculated. Simple division by 7.5% gives the effective tax base for hotels, while division by 15% gives the base for the vatable inputs into the sector. *Table 3* outlines the sales and vatable inputs of the hotel and guests houses over the first three years of operation of the VAT.

Table 3: Effective tax base

Period	Effective Tax Base Sales	Effective Tax Base Inputs
1997 - Q1	53.33	0.00
1997 - Q2	62.67	1.33
1997 - Q3	16.00	2.00
1997 - Q4	21.33	8.00
1997 Total	153.33	11.33
1998 - Q1	96.00	6.67
1998 - Q2	85.33	3.33
1998 - Q3	32.00	4.67
1998 - Q4	37.33	3.33
1998 Total	250.67	18.00
1999 - Q1	70.67	11.33
1999 - Q2	66.67	30.67
1999 - Q3	34.67	16.00
1999 - Q4	38.67	3.33
1999 Total	210.67	61.33

The level of sales in the hotel industry increased from $153.3 million in 1997 to $250.9 million in 1998. The latter was an excellent year for the industry as the West Indies hosted an international cricket tour. The table also highlights the downturn experienced in 1999, with sales falling by 16% to $210.7 million. The sharp increase in the cost of inputs during that same years is again be related to the large-scale investment undertaken by the sector in the form of renovations and refurbishment. However, as outlined in Section 3 this is a variable cost and is less of a concern that fixed costs to the sector. Unfortunately the net profit cannot be ascertained because the non-vatable inputs such as labour are not captured in column 3 of the table.

V: METHODOLOGY AND DATA

The imposition of a seven and a half percent VAT on hotel accommodation may increase the operating costs to hoteliers. This is due to the structure of the VAT. More specifically, while the new tax system allows a refunds on inputs, the rate of the tax is some 50% more the sales tax it replaced. However, hoteliers will react to any increased cost in one of two ways. On the one hand, the hotelier may absorb the additional cost by simply accepting lower profits. On the other hand, they may try to recover the cost by passing it on to the consumers (tourists). The latter is the more realistic of the two scenarios as basic microeconomic theory suggests that firms always seek to maximise their profits. It is on this premise therefore that one can posit that the impact of the VAT on tourism be modelled by examining the changes in hotel room rates - prior and post VAT.

Hotel room rates represent the price of the hotel product to the tourists. Several factors may help to determine the final price that tourists are expected to pay. From *Section 3* of the paper, one can observe that wages and the level of taxes are a major element of the operating cost of a hotel. This cost in turn is expected to be reflected in the final hotel room rate. Secondly, the number of rooms in a hotel plant may have an ambiguous effect on the hotel rate. Basic economics suggests that with economies of scale in the provision of the hotel accommodation, hotel room rates should fall. However in Barbados, the larger hotels are often the more luxurious ones and therefore generally have higher rates than their smaller counterparts. Thus, the room rates will depend on the type of tourists that the hotels are catering for. Thirdly, it is well known that the West Coast of Barbados houses the more expensive hotels. Hence, it is obvious that the location of the hotel will have an impact of the hotel rate. Fourthly, the facilities offered to tourists vary among hotels. A hotel with facilities such as tennis courts or golf courses will charge a higher price than one without, ceteris paribus. Finally, the type of plan offered by hoteliers i.e. all-inclusive, an *American* or *European plan* is a key factor in determining hotel room rates. More specifically, a tourist opting for an *American plan* would in effect be paying for 'bed, breakfast, lunch and dinner', whereas the *European plan* applies to 'bed only'. On the other hand, with an all-inclusive plan, tourists pay for *all* the hotel services up front. It therefore follows that the room rates at the latter establishments would be highest, simply reflecting the overall costs of a total package.

Data Issues

The data are gathered from forty-five hotels over a time period of 1990 to 1999. The data is sourced from the rates sheets from the Barbados Tourism Authority (BTA) for the relevant years. The sample of 45 hotels comprises of an average of 3,162 bedrooms per annum making up approximately 70% of the average number of rooms available in the hotel plant between 1990 and 1999. The combination of cross section and time series forms a panel. The key advantage of utilising panel data is that it immediately increases the number of observations.

From the previous section, eight variables can be identified as important factors in determining the differences in hotel room rates in Barbados. There are four quantitative variables – *rates, wages, taxes,* and *rooms* – and four qualitative variables – *location, sports, plan* and *vat.* Furthermore, the winter and summer rates are modelled separately.

However, data for wages and taxes paid by each hotel are not available. Therefore, these variables are assumed to be the same across hotels and increasing at the same rate through time and are left out of the final specification of the model. Data are available for all other variables, albeit in the missing for some hotels through time. This resulted in 393 observations for summer rates model and 400 observations for the winter rates model out of a possible 450 thereby producing an unbalanced panel. Fortunately, the missing values in a panel specification do not present a problem in the estimation and thus adds to the attractiveness of this type of modelling framework.[6]

Model Specification

A general model utilising panel data can be represented as follows:[7]

$$y_{it} = \alpha_i + \beta' X_{it} + u_{it} \qquad (4)$$

where i=1..45 and t=1990..1999. The y_{it} is the hotel rates for a standard sized double room. X_{it} are the five explanatory variables mentioned above. The individual effects is α_i, which is the same through time but vary across hotels. Panel data can be examined via two approaches - fixed and random effects. For the present study, fixed effects model is the more appropriate specification because the focus is on a specific number of hotels, which are indeed representative of the population. However, the magnitude on the cross section (N=45) produces a near singular matrix and makes estimation of a fixed effects model impossible. Therefore, using least squares estimation in the *E-Views version 3.1*, the following two pooled regression models, which assume that the individual effects are constant across hotels, were estimated.

[6]For a more detail on the advantages of panel data, see Baltagi (1995), pp 3-7.

[7]An Ar(1) specification may be one way to get around the lack of data for operating costs of each hotel. However, models with a lagged dependent variable violate the assumptions of the classical regression and therefore cannot be estimating via the conventional ordinary least squares (OLS). Instrumental Variable estimation is regarded as an appropriate method of dealing with this problem.

$$wrates_{it} = a_1 + b_1 rooms_{it} + c_1 location_{it} + d_1 sports_{it} + e_1 plan_{it} + f_1 VAT_{it} + u_{it} \quad (5a)$$

$$srates_{it} = a_2 + b_2 rooms_{it} + c_2 location_{it} + d_2 sports_{it} + e_2 plan_{it} + f_2 VAT_{it} + u_{it} \quad (5b)$$

where *wrates* - the rates for the winter season;

srates - the rates for the summer season[8];

rooms - the number of rooms in each hotel plant;

location - dummy variable with 1 for West Coast and 0 otherwise;

sports- dummy variable with 1 for access to tennis courts, golf course or squash and 0 otherwise;

plan - dummy variable with 1 for all-inclusive plans and 0 otherwise;

vat - dummy variable with 1 for post-VAT and 0 for pre-VAT.

[8]According to the Barbados Tourism Authority (BTA) the winter season falls between December 16 to April 15, while summer is from April 16 to December 15 in any given year. Thus for the present analysis, winter 1990 represents December 16, 1989 to April 15, 1990.

Results

The results rates from the model are given in *Table 4*. The t-statistics are in parentheses. Given the prevalence of heteroscedasticity in this type of data, the t-statistics have been formulated from White heteroscedasticity consistent standard errors.[9] Both models produced a reasonably good fit. Furthermore, all the variables are statistically significant and correctly signed. In the model of winter rates, the number of rooms had the smallest impact on the rates, while the location of the hotel had the largest. More specifically, one additional room in any given hotel is expected to increase the winter rate by only US$0.20; this result was also obtained for the model of summer rates.

Table 4: Regression results of models of summer and winter hotel rates

Variable	Coefficient (dependent variable winrates)	Coefficient (dependent variable sumrates)
Constant	65.0 (11.5)	41.9 (10.5)
Rooms	0.2 (2.2)	0.2 (2.7)
Sports	94.4 (6.9)	40.8 (4.8)
Location	144 (9.9)	95.3 (9.7)
Plan	99.6 (6.8)	135.8 (12.2)

[9]Assuming that the nature of the heteroscedasticty is cross sectional, a general least squares (GLS) estimator can be utilised instead of the ordinary least squares to produce consistent standard errors. However, White's method allows for more general heteroscedasticity than the cross section heteroscedasticity as the variances within cross sections are allowed to differ across time.

VAT	30.7 (3.0)	25.6 (3.7)
Adjusted R^2	0.6	0.7

On the other hand, the mean difference between west coast and other locations is approximately US$ 144, but somewhat lower for summer rates (US$ 95.3). The summer rates at all-inclusive properties are on average US$135.8 higher than properties with other plans, while mean difference for winter rates is US$99.6. Access to luxurious sports facilities increases the mean rates by US$94.4 and US$40.8 in the winter and summer seasons, respectively.

More importantly, though, *Table 4* reveals that *ceteris paribus*, the introduction of the VAT has raised both the winter and summer rates offered by hoteliers. The average increases are US$ 30.7 and US$25.6 for the winter and the summer season, respectively. This finding indicates that the VAT has been passed on to the tourists in the form of higher room rates. The tax has therefore had a negative impact on hotel industry and confirms the expectations of many in the industry.

VI: SUMMARY AND IMPLICATIONS

Taxation is the primary source of Government's revenue. It is essential for the provision of health and education services and for infra-structural development. The VAT accounts for around 30% of total revenue, with the hotel industry contributing an average of 2.4% of VAT collections.

There is no doubt that the tourism industry is the most important industry in the economy of Barbados. However, this should not imply that the industry be insulated from taxation but rather that the industry be treated differently from other industries. However, even with the concessions of 7.5% on hotel accommodation, the industry was still adversely affected by the VAT. This finding compounded with the currently high level of taxation faced by hoteliers (compared with other tourism dependent countries in the region), implies that the VAT has pushed Barbados further out of line with regional competition. This suggests that Government may need to rethink its taxation policies on the tourism sector because the future economic development of Barbados depends on the prosperity of this very fragile sector.

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