



**Statistics Netherlands**

*Postbus 4000  
2270 JM Voorburg  
The Netherlands  
[www.cbs.nl](http://www.cbs.nl)*

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## **Integrating the TSA and Input-Output Methodology in Tourism Impact Studies**

**Annemieke M. van de Steeg<sup>1</sup> and Albert E. Steenge<sup>2</sup>**

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<sup>1</sup> Annemieke van de Steeg is currently employed at Statistics Netherlands and works on a dissertation at University of Groningen. Contact details: [ASEG@CBS.NL](mailto:ASEG@CBS.NL), Postbus 4000, 2270 JM Voorburg, The Netherlands, +31-70-337 51 68. The views expressed in this paper are those of the author and do not necessarily reflect the views of Statistics Netherlands.

<sup>2</sup> Albert E. Steenge, University of Groningen, Faculty of Economics and Business, P.O.B. 800, 9700 AV Groningen, and University of Twente, Faculty of Management and Business, P.O.B. 217, 7500 AE, Enschede, both The Netherlands, email: [a.e.steenge@rug.nl](mailto:a.e.steenge@rug.nl) or [A.E.Steenge@utwente.nl](mailto:A.E.Steenge@utwente.nl)

## **Abstract**

Tourism is a rapidly expanding industry in many countries. Its impact, however, usually varies significantly over the various segments of the hosting country or area. Typically, positive effects such as rising income and employment or improved infrastructure are off-set by negative effects such as pollution and loss of natural reserve. Therefore, empirical work that offers a sufficient amount of detail is most important for analytical or policy purposes.

Input-output based impact studies face the problem that tourism does not belong to the set of activities distinguished by the United Nations in its standard classification schemes. A major reason for this is that tourism typically is demand oriented. That is, the characteristics of the consumer essentially determine which activities belong to the sector and which not. As a consequence, tourism relevant data are dispersed throughout the National Accounts, and not easily brought together in a consistent way.

To address this problem, the UN has advocated the development of an additional satellite to its System of National Accounts (SNA). The so-called Tourism Satellite Account (TSA) unifies all relevant data on tourism within one consistent framework. Its 10 tables basically offer the concepts, definitions, and accounting rules to measure the extent of tourism. Implementation of the new system has recently started in a number of countries. A next step involves integrating the TSA within currently existing I-O frameworks. In this context, the TSA's task basically is to assist us in compiling an additional final demand category, usually inbound tourism. (The intermediate part of the I-O framework is much less affected).

In the paper empirical results are presented for a small Caribbean island state with a large role for in-bound tourism, Aruba. In this case, the relatively small scale of the Aruban economy offered a unique opportunity to build scenarios at, basically, the micro level. In future studies we expect the model we have developed to enable us to take a look at additional investments in the form of, say, a relatively large hotel. Important in such cases is whether there is full capacity and/or full employment because otherwise leaking will occur through increased imports. Also other questions can be addressed such as, on the methodological side, the question of employing marginal rather than average input coefficients in research of this type.

## 1. Introduction

From the second-half of the twentieth century, tourism has increased steadily throughout the world. This trend is expected to continue world wide. The increased importance of tourism for many countries in combination with an intensification of competition between countries and regions to attract tourists has led to an increased awareness of the role and impact of tourism in the economy, on employment as well as its social and environmental implications. However, until recently statistics on tourism were restricted to data on numbers of visitors, socioeconomic characteristics of visitors, duration of stay, hotel capacity and occupancy, etc. These statistics however, generally supply insufficient information on the economic impact of tourism (such as on total production and value-added). They are definitely insufficient to develop a set of strategies for the entire tourism industry. Policy makers should be able to consider the benefits and expenditures of a specific strategy. Therefore, countries and also regions will need a statistical system which produces, for example, statistics which can be used to benchmark their positions vis-à-vis other travel destinations.

Increasingly, policy makers are seeking *more complete information regarding the whole set of activities relating to tourism*. They are interested in the economic aspects of tourism at the individual and the branch level, i.e. the micro and meso level, and in the overall national and international context. Also, the environmental and social implications of tourism need to be related to its economic aspects. In fact, there is a need for an integrated, complete and consistent framework in which tourism can be understood. There is, of course, such a framework in the form of today's System of National Accounts. However, this system often is not able to zoom in on specific aspects of an economy. So-called satellite accounts have been developed to close that gap.

Satellite accounts are connected to the main national accounting framework, sharing the definitions, concepts and accounting rules but are separated from the main framework in that specific issues can be made explicit. The satellite accounts facilitate the incorporation of different aspects of a society, such as the environment, within the System of National Accounts (SNA). An example of one such extended framework is the NAMEA, the 'National Accounting Matrix including Environmental Accounts' (De

Haan, 2004). This is a modular information system which combines the central national accounting framework with environmental modules. Also for tourism such an extension has been designed. The introduction of the Tourism Satellite Account (TSA)<sup>3</sup> fulfils the need for harmonized and more detailed statistics. TSA-results can be related to other variables and bring to the fore their mutual relationships.

What makes tourism different is the answering the question of “what belongs to tourism”. That is, in each separate case, there should be a set of rules or concepts determining whether a specific consumer is “a visitor”, yes or no. Clearly, industries do not need to supply their complete production to visitors and therefore often belong only partly to the “tourism” industry. There are no clear limits to the industries which are involved in tourism or with which visitors have a transaction with. Basically, the activities of tourism should encompass all that visitors do in preparation for a trip or while on a trip. This is not restricted to what could be considered as ‘typical’ tourism activities such as sightseeing, sunbathing, practicing sports, etc. Being a visitor is a transient situation, related to a specific trip or a specific visit. Once the trip is over, the individual loses his/her status as a visitor. Tourism thus is a demand-oriented concept. That is, it depends on the characteristics of the consumer if its expenditure is included in tourism expenditure. The purchase of a carton of milk by an American resident visiting Amsterdam is considered tourism expenditure, while the purchase of the same carton of milk by a local resident is considered normal consumption.

*Implicitly* tourism production, consumption, employment, etc. is already found in the System of National Accounts. Tourism shares are “hidden” in the classic industries such as retail, hotels and restaurants. Despite the wealth of detail in the statistics, a special tourism industry related set of data is *not* part of the SNA standard classifications. In fact, the determination of the industry category of an enterprise is made using the turnover or share of output of products produced by the enterprise. The characteristics of the consumer are not part of this determination process. Therefore, a tourism industry is *not* a category in the standard classification schemes. This means that the statistical

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<sup>3</sup> Tourism Satellite Accounting is the outcome of years of effort and international discussions dating from the late 1970s. In 2001 a common conceptual framework for the development of a TSA was established with the publication of the manual ‘Tourism Satellite Accounts: Recommended Methodological Framework’ (TSA: RMF; UNSD et al, 2001).

data which might be needed are present in the National Accounts, but dispersed over categories that have been defined with other purposes in mind.

The impact of tourism on a country or region varies widely. In some countries tourism is the main activity and foreign exchange is primarily earned through inbound tourism. These countries are, therefore, relatively vulnerable to external shocks in tourism. For a country such as Aruba, a small island in the Caribbean, tourism is relatively important. Aruba has about 600,000 international tourism arrivals annually. According to the Central Bureau of Statistics Aruba, inbound tourism constitutes about 18 percent of Gross Domestic Product (GDP) in 1999 (Van de Steeg, 2005a). With tourism playing such an important role in the Aruban economy, Aruba is realizing the necessity for a better understanding of tourism. The last decade of rapid tourism development has not only contributed to the Aruban foreign exchange reserve, but has also brought a large expansion in the tourism industry with all its consequences. The relative importance of tourism for Aruba and the availability of relatively detailed National accounting and tourism information, make the country an excellent choice to investigate the power of a well-developed TSA.

For policy purposes, an input-output table is a most important tool. Input-output tables are normally part of the System of National Accounts. Many countries produce these tables on their own or as a derivative of a make-use table. A symmetric input-output table shows the inputs and outputs of a production process in one table. The table usually is of the industry by industry type, and is often compiled using the so-called make-use tables. Supply and use tables are square or rectangular tables, which show the use of intermediate goods and services for each industry for the production (making) of goods and services. Often specific algorithms are used to transform the set of make-use tables into a standard input-output table (Konijn,1994). Input-output tables can also be constructed using basic data sources on the inputs which are required for a certain output (production). For our study, input-output models for Aruba have been developed. The Aruban input-output table has been compiled using basic data. The goal is be able to perform multiplier studies varying, for instance, the number and the composition of the yearly visitors to the country as a response to, say, shifts in international trends, or environmental or political changes. .

Next to compiling a good input-output table, a good “final demand vector” is essential for multiplier studies. The information contained in the TSA and the input output table enables us to construct a column of final expenditures of visitors; below we shall go into this process somewhat deeper. Using the available information this so-called tourism final expenditure can be expressed as a column in the input output table. For the estimation of the indirect effects it is necessary to refer to multiplier theory. This requires a combination of TSA-methodology and established I-O theory to come to an integrated I-O based framework. In this paper we will present I-O based multipliers for Aruba. However, we will start by defining tourism and introducing the TSA framework.

## **2. The Tourism Satellite Account**

For any type of tourism-related analysis, it is essential to define clearly what tourism is. Tourism is defined as “the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited” (TSA: RMF, 1.1). The persons referred to in this definition of tourism are called visitors. A visitor is “any person travelling to a place other than that of his/her usual environment for less than 12 months and whose main purpose of trip is other than exercise of an activity remunerated from within the place visited” (TSA: RMF, 2.4)<sup>4</sup>. Within this definition the term ‘usual environment’ of a person is defined as consisting “of the direct vicinity of his/her home and place of work or study and

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<sup>4</sup> Visitors can be categorized as international visitors and domestic visitors. International visitors have a different country of residence than the country visited. Included in international visitors are nationals residing permanently abroad. Domestic visitors are resident in the country they visit. This category includes both nationals and foreigners (TSA: RMF, 2.25).

other places frequently visited” (TSA: RMF, 2.6)<sup>5</sup>. The ‘usual environment’ is primarily relevant in the measurement of domestic tourism<sup>6</sup>.

As mentioned in the introduction, tourism statistics are determined *on the basis of the characteristics of the consumer*, instead of the producer of the goods and services as in most economic statistics. Due to this aspect of tourism, the measurement of tourism is not specifically included in the System of National Accounts. The TSA has been developed to address the problems caused by this. .

Satellite accounts are, on the one hand, linked to the central framework of the System of National Accounts and therefore to the main body of integrated economic statistics. This connection guaranties the crucial consistency and comparability with other macro-economic statistics. On the other hand, satellite accounts are also linked to the information system specific to the field or topic selected or analysed (SNA93; UN et al, 1993, chapter XXI). A TSA is deducted from the national accounts, drawing from each industry the tourism component without disturbing the industry totals.

Satellite accounts allow for (SNA93, par. 21.4, 21.50):

- Provision of additional information
- Use of alternative or complementary concepts and more dimensions
- The presentation of a partial domain instead of covering all economic life
- Linkage of physical data to the monetary accounting framework
- Introduction of relevant indicators and aggregates for further analysis
- More details on costs and benefits of human activities

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<sup>5</sup> This definition of ‘usual environment’ seems obvious but what “direct vicinity” and “frequently visited” means, has to be determined fitting the country or region studied. The boundaries of usual environment can be established using dimensions like frequency of visits, distances travelled or formal boundaries of localities. The application of ‘usual environment’ determines what domestic tourism encompasses in a country. The standard classifying variables for ‘usual environment’ are difficult to apply on a small island like Aruba. Almost all locations on the island can be reached under one hour by car and with only few recreational establishments available on the island, these establishments are often frequented. In the Dutch TSA, visitors are all persons going on a trip for more then 2 hours (including travel time from home or work) with a recreational or business motive. An international comparison of the interpretation of ‘usual environment’ can be found in a paper in a WTO publication (Canadian Tourism Commission et al, 2003).

<sup>6</sup> Tourism is divided into three forms in the TSA. The first form is domestic tourism which is defined as “the tourism of resident visitors within the economic territory of the country of reference”. This includes the domestic portion of outbound tourism consumption (TSA: RMF, 2.62). Inbound tourism is “the tourism of non-resident visitors within the economic territory of the country of reference” (TSA: RMF, 2.63). Outbound tourism covers “the tourism of the resident visitors outside the economic territory of the country of reference” (TSA: RMF, 2.64).

Tourism is located primarily in certain industries but it is approached differently from other classifications. Industries are established on the basis of the production characteristics of enterprises. However, as we have seen, tourism is a consumption concept. That is, the characteristics of the consumer determine whether the consumption of a product belongs to tourism or not. Tourism supply takes place when the product is consumed by a visitor (TSA: RMF, 4.79). This is the reason tourism cannot be properly identified as a separate industry within the National Accounts. Tourism thus includes parts of various industries like hotels, restaurants, entertainment and transportation. The Tourism Satellite Account (TSA) should capture all these parts, thereby defining tourism and its specific characteristics.

The present TSA framework consists of *ten recommended tables*, standing for tourism supply, visitor consumption, tourism gross fixed capital formation, tourism collective consumption, employment in the tourism industry and tourism related non-monetary indicators (TSA: RMF; UNSD et al, 2001).

The ten tables as recommended by the TSA:RMF

1. Inbound tourism consumption (Visitor final consumption expenditure in cash)
2. Domestic tourism consumption (Visitor final consumption expenditure in cash)
3. Outbound tourism consumption (Visitor final consumption expenditure in cash)
4. Internal tourism consumption (table 4 of the TSA: RMF set of recommended tables)
5. Production accounts of tourism industries and other industries
6. Domestic supply and internal tourism consumption
7. Employment in the tourism industries
8. Tourism gross fixed capital formation of tourism industries and other industries
9. Tourism collective consumption
10. Non-monetary indicators

The core of the TSA is the presentation of the supply of goods and services by industries, and the consumption of goods and services by visitors. In the table ‘domestic supply and internal tourism consumption’ the production of the various industries, such as meals for restaurants and excursions for the entertainment industry, are consumed by domestic and inbound visitors. Each good or service which is consumed by a domestic or inbound visitor, needs to be produced domestically or imported. The computations of tourism value-added, the tourism part in Gross Domestic Product (GDP) and their individual components are estimated in this table.



The TSA is a relatively new statistical tool compared to the System of National Accounts. Most countries at present do not compile the complete set of TSA tables, but concentrate their efforts on the estimation of tourism production and consumption. These statistics are concentrated in the first 6 tables of the TSA framework and count, therefore, as the core of the TSA.

### **3. Deriving an IO table with a tourism expenditure column**

For the compilation of a symmetric input-output table different *methods* are in use. These methods vary greatly in their use of established economic theory and the associated assumptions. For Aruba an industry by industry I-O table has been developed using supply and use tables (SUT) information and totals, and different sets of basic data. This is in line with general practice in this area (see e.g. Thage, 2005).

The Aruban IO table for 1999 is presented in table 1. The Aruban National Accounts are published on a regular basis and consist of supply-use tables, institutional sector accounts and a cross classification of industry tables. As an exercise a table has been compiled on inbound tourism for the year 1999. The Aruban supply-use tables and inbound tourism table have been combined into an I-O table. The TSA includes the estimation of tourism consumption, which is a final expenditure category. This is presented in the inbound supply and consumption table (see table 3). To incorporate tourism an extra column has to be added to the I-O table. In the case of Aruba this is the final expenditures of inbound tourism or, in other words, tourism exports. In table 1 this extra column is presented, giving for each product category the consumption by inbound visitors. Visitors spend most of their money at the hotels. This column therefore can be used to model the effects changes in inbound tourism has on the Aruban economy and to estimate the indirect effect of inbound tourism.

#### **3.1 I-O technical details**

The I-O table for Aruba has been compiled using sets of basic data, the supply and use tables (especially the marginal totals), and economic theory. Below, some technical details are provided on how the table was constructed. For the compilation of the Aruban table, imports, taxes on production and imports less subsidies, and trade and

transport margins had to be extracted out of the different final expenditure categories consisting of intermediate consumption, final consumption expenditure, gross capital formation and exports. For each product category the share of imports, trade and transport margins and taxes on production and imports less subsidies was calculated. For the estimation of the amount of imports, trade and transport margins and taxes less subsidies included in the various industries and final expenditure categories, these shares are used. It is assumed that all use categories (intermediate consumption, final consumption, gross capital formation and exports) have an equal share in local production, imports, taxes less subsidies and trade and transport margins, except for export from the freezone. This is because freezone exports are not subject to taxes on production and imports and subsidies and consist completely out of imports. For all product categories of the supply and use tables it has been determined which industry produces them and/or if imports are involved. This determines their allocation in the I-O table.

In the Aruban supply and use tables financial intermediation services indirectly measured (FISIM)<sup>7</sup> have been allocated to a notional unit as intermediate consumption. In building the I-O table, FISIM has been distributed over the different industries as intermediate consumption and the notional unit is taken out of the table. The individual industry totals of intermediate consumption and value added are therefore no longer equal to the published figures in the supply and use tables. However, total intermediate consumption and total value added of the economy have not been altered.

Trade and transport margins are primarily produced by the wholesale and retail industry, and the transportation industry, but other industries may also include some minor sales and transportation activities. In the supply table basic prices of goods, i.e. producer prices, are transformed into purchaser price by adding among other things the trade and transport margins to these goods in a separate extra column. The purchase of a good is linked to the purchase of a trade and/or transportation service. Because trade and transport margins are included in goods at the time of purchase it is difficult to estimate which part of the value constitutes the good and which part involves the

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<sup>7</sup> FISIM is calculated because financial intermediaries provide services for which they do not charge explicitly by paying or charging different rates of interest to borrowers and lenders. The System of National Accounts must use an indirect measure, FISIM, to value the services for which the intermediaries do not charge explicitly. (SNA93, 6.124-6.126, Annex III)

margin. Like FISIM it is not clear who is the user of the trade and transport service for which the margin is calculated.

Trade and transport margins are included in the I-O table as a separate row and column outside the matrix containing intermediate consumption. Excluding the margins from the part of intermediate consumption in the table will, when calculating the Leontief inverse<sup>8</sup>, generate smaller multipliers. As the trade and transport margins are payment for a sale and/or transport service it seems justifiable to include these expenditures as intermediate consumption of the different industries and final expenditure categories.

The wholesale and retail industry in Aruba are the primary producers of trade and transport margins as transportation is very limited in this relatively small island of about 30 by 8 kilometres. For the Aruban I-O table we opted to include the trade and transport margins within intermediate consumption. Besides increasing the multipliers this has had also consequence for the final expenditure vector of tourism export. The purchase of a retail and trade service is now included in the final expenditure modelled.

In compiling the I-O table special attention was paid to imports. Aruba has a small agricultural and manufacturing base which is reflected in a high level of imports of agricultural and manufactured goods. Looking at the tourism exports in the I-O table of Aruba, the share of imports is relatively small. Most of the food items, souvenirs and non-food items like textiles and jewellery are imported. However, these imports refer only to goods directly bought by non-resident visitors.

The imports which are included in the services bought by non-resident visitors can be found in the column of the respective producing industry, like hotels and restaurants. Taking into account these import as well, it becomes clear that the share of imports in tourism exports is significant.

### **3.2 Combining the TSA and I-O table**

Tourism is implicitly already included in the supply and use tables and therefore in the central framework of SNA. The TSA is developed to make tourism explicit, i.e. to

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<sup>8</sup> The elements of the Leontief inverse are the so-called multipliers. Most impact studies are based on this matrix or functions thereof.

extract the tourism shares from the supply and use table. Because of this, the TSA does not interfere with the intermediate consumption part of the use table.

A most important contribution of the TSA framework is the construction of a final expenditure vector specific for tourism. The tourism final expenditure vector denotes the consumption of visitors in the economy of reference of all kinds of goods and services from various standard industries. The purchase of meals in restaurants and groceries in a local supermarket are all included in this vector.

Table 4 Tourism final expenditure vector by product

	Tourism exports/ total inbound tourism demand
Hotel and other lodging services	343,89
Food serving services; beverage serving services for consumption on the premises	247,38
Land transport services	30,55
Air transport services	70,01
Supporting and auxiliary transport services	25,58
Real estate services for timeshare sales	
Leasing or rental services without operator	42,10
Support services	2,47
Gambling and betting services	157,97
Other recreational, cultural and sporting services	51,16
Retail trade services	81,97
Telecommunications services; information retrieval and supply	10,07
Other professional, scientific and technical services	2,36
Non specific goods and services	226,88
Total output	1292,39

The tourism final expenditure vector is presented in table 4 by product. For this vector to be incorporated in the input output table, the different expenditures have to be matched with the supplying industry. This is because the input output table is of the industry by industry kind and not product by product.

The effect of changes in tourism expenditure, such as an increase or decrease of tourism expenditure, can be simulated using this vector. The contribution of the TSA is a detail tourism final consumption vector. It is not the case that with other means such a vector cannot come into existence. There are cases where a rough estimation of tourism expenditure suffices and for these cases a general share of each product category such as

meals and overnight stays can be attributed to tourism. This is a very coarse method and may result in an over- or underestimation of tourism expenditure and therefore tourism.

#### **4. Some modelling results**

Input-output models can be used to estimate the overall impact of a change in final expenditure in an economy. Direct effects initially take the form of requirements for direct inputs which then require a “chain” of indirect inputs. The sum of direct and indirect inputs then represents total inputs (UNSD, 1999). An I-O analysis shows how a specific composition of demand spreads its effects in the economy and summarizes all sequences of partial effects.

A multiplier for tourism export, calculated with the use of the Leontief inverse, indicates the extra production which is required to produce one extra unit of tourism export. However, we can develop several types of multipliers, based on the same table, essentially depending on the assumptions that are part of the modeling effort. From the set of multipliers in Table 3, one may conclude that one extra unit of tourism export will generate extra output in the range of 1.40-1.55. About 31 percent of output and 29 percent of value added is directly and indirectly related to tourism export in 1999. The direct and indirect effect on compensation of employees related to tourism export measures about 35 percent. Unfortunately, for Aruba there is no information available on the number of jobs and labour volume so no indirect effect on these variables can be calculated.

It may be useful to devote some words to other studies in this area. In previous publications of Cole and Razak (2004) the direct and indirect share of tourism in Aruba was estimated to range from 60 to 65 percent of GDP. These numbers are in contrast with the about 28 percent of GDP, which follows from the I-O multipliers calculated here with the assistance of the TSA. It should be noted, however, that the percentage calculated here only concerns inbound tourism whereas the estimates of Cole and Razak (2004) refer to total expenditure and value-added of tourism in the Aruban economy and therefore include domestic tourism. On the other hand, domestic tourism in Aruba is expected to be very small. Within the small island of Aruba there are not many places

for residents to leave their 'usual environment' and spend money<sup>9</sup>. Within the study by Cole and Razak (2004) no separate estimation of the direct share of tourism in the Aruban economy is included or information on the I-O model used is given in the study and, therefore, it is not entirely clear if the estimated percentage of tourism in the Aruban economy results from a relatively higher multiplier or a larger direct share of tourism in GDP.

## 5. Conclusion and final remarks

We have seen that the Tourism Satellite Account supplies the essential detailed information on tourism expenditure. This enables us to adjust an I-O table to include a *separate* tourism expenditure category. Including this specific category of final expenditure opens the possibility of I-O analysis of tourism or parts of tourism. Small tourism dependent countries like Aruba can gain valuable insight in the relative importance of the tourism industry in their country from the construction of the TSA. We hope to have shown that including TSA information in an I-O table increases the scope of I-O based studies and makes estimating the indirect effects of tourism in the economy possible.

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<sup>9</sup> As mentioned in note 5 of this paper, the 'usual environment' is dependent on frequency or distance travelled. The small territory of Aruba also includes view places to be outside the usual environment. Some residents of Aruba do stay for weekends in resorts on Aruba but the amounts concerned do not add up significantly.

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**Table 1: Input-output table of Aruba 1999 (in AFL Million)**

	Agriculture, hunting, forestry; Fishing;	Mining and quarrying	Manufacturing	Electricity, gas and water supply; Manufacture of refined petroleum products	Construction	Wholesale and retail trade; Repair of motor vehicles and household goods	Hotels	Restaurants	Transport, storage and communications	Financial intermediation	Other business activities	Public administration; Compulsory social security;	Education	Health and social work	Other community, social and personal service activities	Total	Household and government final consumption	Regular export	Tourism export	Gross capital formation	Total
Agriculture, hunting, forestry; Fishing;	0,34	0,00	2,86	0,08	8,43	0,02	2,17	0,67	0,08	0,01	0,04	1,84	0,01	0,26	0,21	17,02	4,60	0,04	0,48	0,21	22,35
Mining and quarrying	0,00	0,00	0,00	0,08	4,81	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,89	0,08	0,01		0,08	5,06
Manufacturing	0,93	0,17	16,12	31,23	37,97	9,30	15,33	19,62	5,03	1,25	4,01	3,61	0,60	2,98	8,59	156,76	55,89	16,82	24,30	17,46	271,23
Electricity, gas and water supply; Manufacture of refined petroleum products	1,20	0,07	3,62	135,15	1,33	13,64	40,69	6,87	18,43	0,88	6,93	10,03	0,37	2,38	7,63	249,22	119,28	360,70	6,12	0,45	735,77
Construction	0,04	0,02	0,13	4,68	41,82	0,80	2,63	0,34	1,55	0,44	3,05	5,04	0,33	0,23	1,08	62,19	19,43	3,00		456,53	541,15
Wholesale and retail trade; Repair of motor vehicles and household goods	2,26	0,31	31,51	48,87	58,05	40,19	26,36	25,82	16,47	1,99	8,16	6,43	1,12	5,58	14,12	287,23	136,20	43,67	133,63	68,73	669,46
Hotels	0,00	0,00	0,00	0,00	0,00	0,00	8,19	0,00	1,67	0,00	0,00	0,00	0,00	0,00	0,00	9,86	4,39	0,00	476,27	0,00	490,52
Restaurants	0,02	0,01	0,44	2,19	0,42	2,84	0,93	0,43	6,87	1,09	1,88	1,74	0,17	0,49	1,67	21,17	72,44	0,00	162,56	0,00	256,17
Transport, storage and communications	0,62	0,30	5,74	10,56	3,72	17,21	20,80	3,74	110,31	9,16	13,29	6,98	1,17	1,95	7,04	212,60	76,03	141,75	130,22	0,13	560,73
Financial intermediation	0,73	0,06	3,45	16,62	8,12	45,90	15,88	7,19	23,17	76,86	16,17	6,25	0,88	1,94	6,52	229,73	54,13	3,35	0,00	0,00	287,21
Other business activities	0,99	0,34	12,33	46,07	8,49	37,72	21,93	13,21	45,09	12,36	35,07	34,16	1,29	3,34	14,93	287,31	352,70	52,69	43,81	0,50	737,01
Public administration; Compulsory social security; Education	0,01	0,00	0,12	0,17	0,13	2,46	1,18	0,22	0,30	0,30	0,40	8,74	0,64	0,07	0,50	15,22	407,91	0,00		0,00	423,13
Health and social work	0,00	0,00	0,20	1,10	0,18	0,99	0,71	0,21	0,31	0,13	0,82	0,67	1,94	0,31	0,78	8,35	108,74	0,00		0,00	117,09
Other community, social and personal service activities	0,01	0,00	0,00	0,03	0,01	0,08	0,05	0,01	0,12	2,21	0,04	0,09	0,01	0,16	0,50	3,32	137,97	1,60		0,00	142,89
Total	7,24	1,29	76,93	297,38	174,81	172,03	160,92	79,97	230,33	106,85	91,91	88,95	9,00	20,33	65,80	1583,75	1694,23	623,63	1128,97	544,09	5574,67
Imports	5,61	1,31	77,04	240,33	174,91	93,85	110,10	67,39	87,38	28,11	55,25	34,80	3,43	20,71	47,45	1047,68	524,52	535,20	125,90	376,89	2610,19
Taxes on production and imports less subsidies	0,55	0,09	8,33	18,07	17,96	6,27	8,41	10,25	12,00	3,03	3,34	2,32	0,32	1,54	5,41	97,88	57,57	14,26	37,52	31,23	238,46
Total	13,39	2,69	162,30	555,78	367,69	272,15	279,43	157,60	329,71	138,00	150,51	126,07	12,75	42,59	118,66	2729,31	2276,32	1173,09	1292,39	952,21	8423,32
Total output at basic prices	22,35	5,06	271,23	735,77	541,15	669,46	490,52	256,17	560,73	287,21	737,01	423,13	117,09	142,89	314,90						5574,67
Total gross value added at basic prices	8,96	2,37	108,93	179,99	173,46	397,31	211,09	98,57	231,02	149,21	586,50	297,06	104,34	100,30	196,24						2845,36
Other taxes less other subsidies on production	0,08	0,03	0,76	1,21	0,46	6,28	3,01	0,44	1,76	1,18	2,89	0,21	0,12	0,56	18,82						37,81
Compensation of Employees	5,73	2,17	74,29	85,7	138,14	238,06	202,27	74,05	123,33	102,65	157,53	270,71	94,56	81,71	122,47						1773,37
Operating surplus/ mixed income, gross	3,15	0,17	33,88	93,08	34,86	152,97	5,81	24,08	105,93	45,38	426,08	26,14	9,66	18,03	54,95						1034,18



**Table 2: Multipliers for Aruba 1999**

1.016	0.001	0.012	0.001	0.018	0.001	0.005	0.004	0.001	0.000	0.000	0.005	0.000	0.002	0.001
0.000	1.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.056	0.044	1.073	0.062	0.090	0.053	0.045	0.091	0.020	0.009	0.009	0.015	0.007	0.027	0.035
0.080	0.028	0.031	1.236	0.018	0.084	0.114	0.046	0.057	0.010	0.015	0.035	0.006	0.026	0.038
0.004	0.005	0.002	0.010	1.085	0.006	0.008	0.003	0.005	0.003	0.005	0.014	0.003	0.003	0.005
0.139	0.086	0.154	0.110	0.156	1.200	0.086	0.139	0.056	0.018	0.019	0.029	0.015	0.055	0.065
0.000	0.000	0.000	0.000	0.000	0.000	1.017	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000
0.004	0.004	0.004	0.006	0.003	0.016	0.005	1.004	0.017	0.006	0.003	0.005	0.002	0.005	0.007
0.055	0.087	0.046	0.038	0.030	0.115	0.069	0.038	1.258	0.059	0.028	0.029	0.016	0.025	0.039
0.087	0.046	0.061	0.071	0.065	0.294	0.076	0.079	0.091	1.376	0.039	0.034	0.016	0.036	0.050
0.085	0.096	0.083	0.108	0.054	0.208	0.081	0.090	0.125	0.072	1.059	0.099	0.018	0.040	0.070
0.002	0.001	0.002	0.002	0.002	0.012	0.004	0.002	0.001	0.002	0.001	1.022	0.006	0.001	0.002
0.001	0.001	0.002	0.003	0.001	0.005	0.002	0.002	0.001	0.001	0.001	0.002	1.017	0.003	0.003
0.001	0.000	0.001	0.001	0.001	0.003	0.001	0.001	0.001	0.011	0.000	0.001	0.000	1.001	0.002
0.005	0.003	0.003	0.002	0.004	0.005	0.009	0.008	0.003	0.001	0.003	0.009	0.004	0.005	1.008

**Table 3 Tourism supply Aruba 1999 (million Aruban florin)**

	Characteristic tourism activities										Non-characteristic activities													
	Hotels	Time-share resorts	Apartments, villa's	Bars	Full service restaurants	Fast food restaurants and caf�-terias	Night-clubs, dinner theaters	Taxi and busses	Scheduled air transport	Other supporting transport activities	Renting of land transport equipment	Sporting activities and relates services; also sport-fishing and hunting	Casino activities	Water-sport activities	Other recreational activities	Retail trade	Telecommunications	Photographic activities	Total tourism supply	Non-specific activities	Total domestic supply	Imports (incl. cif/fob adjustment)	Taxes less subsidies tourism tax	Total supply at purchasers' prices
Characteristic services																								
Hotel and other lodging services	252.94	72.94	2.35																328.23	3.55	331.78		19.51	351.29
Food serving services; beverage serving services for consumption on the premises	74.56	13.03		8.00	129.60	45.75	6.99				1.48	2.98		2.10					284.49	70.00	354.49			354.49
Land transport services								30.55											30.55	9.09	39.64		-6.00	33.64
Air transport services								132.76											132.76	22.86	155.62	14.50		170.12
Supporting and auxiliary transport services									28.16										28.16	152.17	180.33	11.10	-0.08	191.35
Real estate services for timeshare sales	0.47	83.21																	83.68	0.00	83.68			83.68
Leasing or rental services without operator	0.65									41.45									42.10	34.93	77.03	31.15		108.18
Support services								2.47											2.47	91.44	93.91			93.91
Gambling and betting services	49.46											126.80							176.26	4.86	181.12			181.12
Other recreational, cultural and sporting services											9.14		19.20	28.93					57.27	31.85	89.12	13.89	-0.77	102.24
Non characteristic goods and services																								
Retail trade services	0.41				0.22	0.36					0.02	0.32	4.80	0.37	75.47				81.97	314.60	396.57			396.57
Telecommunications services; information retrieval and supply	5.69	2.77														1.61			10.07	159.27	169.34	40.40		209.74
Other professional, scientific and technical services																	2.36		2.36	100.73	103.09	98.66		201.75
Non specific goods and services																				3318.95	3318.95	2400.5	225.8	5945.25
<b>Total output</b>	<b>384.18</b>	<b>171.95</b>	<b>2.35</b>	<b>8.00</b>	<b>129.82</b>	<b>46.11</b>	<b>6.99</b>	<b>30.55</b>	<b>135.23</b>	<b>28.16</b>	<b>41.45</b>	<b>10.64</b>	<b>130.10</b>	<b>24.00</b>	<b>31.40</b>	<b>75.47</b>	<b>1.61</b>	<b>2.36</b>	<b>1260.37</b>	<b>4314.30</b>	<b>5574.67</b>	<b>2610.20</b>	<b>238.46</b>	<b>8423.33</b>
Total uses at purchasers' prices	170.64	91.06	0.76	5.68	76.64	30.71	5.26	7.18	148.46	6.00	13.80	6.28	41.47	11.69	15.74	31.08	0.35	1.33	664.14	2065.18	2729.32			
Total gross value added at basic prices	213.54	80.89	1.59	2.32	53.18	15.40	1.73	23.37	-13.23	22.16	27.65	4.36	88.63	12.31	15.66	44.39	1.26	1.03	596.23	2249.12	2845.35			
Taxes less subsidies on products	15.03	4.34	0.14							-0.08									19.43	219.03	238.46			
Other taxes less other subsidies on production	2.35	0.54	0.01	0.01	0.17	0.08	0.01	0.07	0.11	0.12	0.26	0.05	18.03	0.09	0.11	0.38	0.00	0.02	22.41	15.40	37.81			
Compensation of employees	141.84	55.19	0.41	1.79	39.80	12.18	1.98	0.28	21.54	12.78	10.06	1.89	43.31	6.87	8.24	32.34	0.26	0.73	391.48	1381.89	1773.37			
Operating surplus/mixed income, gross	69.35	25.16	1.17	0.52	13.21	3.14	-0.26	23.02	-34.88	9.26	17.33	2.42	27.29	5.35	7.31	11.67	1.00	0.28	182.34	851.83	1034.17			
<b>Total gross value added at market prices</b>																								<b>3083.81</b>