Measuring the economic impact of tourism in Malta using the Tourism Satellite Account

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Abstract

This article puts forward an analysis of the first Tourism Satellite Account compiled for the Maltese economy. The resulting Tourism Satellite Account (TSA) compiled for Malta adheres to the European System of Accounts (2010) and is based on the reference year of 2010. It reveals that tourism's direct contribution to Malta's GDP is around 6.1% and that the tourism sector directly employs 8.0% of the total population of gainfully occupied persons (employed or self-employed). Both the symmetrical approach and a variant of the net ratio approach are utilised to derive the tourism value added and tourism gross domestic product. The contribution of tourism to the local economy during 2010 is on par with that of what are generally considered to be the key sectors in Malta, however, the direct contribution to GDP is significantly lower than the estimates presented from past studies. The results presented in the article can be of significant use to further understand the various dimensions of both tourism demand and the tourism supply chain.

Keywords: Tourism Satellite Account, Tourism Industry, Tourism Contribution

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Introduction

Unlike other intermittent key industries in the Maltese economy, tourism has perpetually been considered an important beacon for the economic well-being of the country and its prosperity for economic growth (E-Cubed, 2015; Briguglio, 2002). Despite the ample

development in tourism statistical infrastructure, the Maltese tourism industry stakeholders and policy makers have little access to statistical information on the economic impact of tourism. The existence of several statistical focal points on a number of tourism facets has, over the years, provided

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only a limited view on the actual significance of the economic aspect of tourism as an industry. The measurement of the economic dimension of tourism may have often been limited to simply the total expenditure of tourists for a trip in Malta reported in surveys. Such data may provide insufficient information to discriminate between national earnings and other exogenous supply of tourism services. In response to the statistical vacuum surrounding this phenomenon, the Tourism Satellite Accounts (TSA) framework (UNSD *et al.*, 2008) emerges as an ideal tool which enables tourism, in its entirety as a satellite industry, to be compared with traditional industries as well as providing a better and deeper understanding of the effective role of tourism in the Maltese economy.

Malta features as the state with the highest tourism intensity in the European Union (Eurostat, 2017a), and such a social aspect is certainly felt and acknowledged by the resident population. The tangible nature of the tourism phenomenon especially in a small geographical area such as the Maltese islands makes it prone to the amplification of its economic significance, possibly due to its social impact on the society. The number of tourism arrivals is, in general, a primary cause for overestimating the economic dimension of tourism. Behind the millions of tourist arrivals reported annually in tourism surveys, which may sound extraordinary relative to the local population, nights spent in Malta are an important indicator which allows the derivation of *tourism population* – a numerical value which could be compared with the resident population. *Tourism population* is a concept used mainly for analytical purposes and is linked to the intensity of tourism activity by neutralising the large numbers of tourism arrivals and overnights to population equivalents. This is generally achieved by dividing the number of overnights by the amount of days in the reference period. Such computation yields the average number of tourists present on a particular geographical area at any point in time during the reference period.

Moreover, the tiny geographical scale of the Maltese islands impedes domestic tourism from

reaching significant influence on Maltese internal tourism as in other EU countries and consequently such tourism type may sometimes be omitted from particular tourism economic impact assessments. Although the majority of tourism in Malta is accounted for by inbound tourism, domestic tourism is an integral part of internal tourism consumption. The TSA exercise ensures that the notion of domestic tourism is accounted for as an essential element. Moreover, the concept of 'tourism volume' may vary significantly from one stakeholder to another, each according to the respective perception and main field of interest. For instance, on the one hand, a group of hotels may measure tourism through the utilisation of nights in collective accommodation as this type of consumption would typically reflect in their respective occupancy rate and earnings. Hotels operators typically have little or no interest in same-day visitors arriving by a cruise ship or tourists staying at private accommodation. On the other hand, the Malta International Airport has limited interest in the duration of a tourist's visit but is more likely to show interest in the head count of their arrivals and departures, while an airline operator is interested in the passenger traffic on routes which is currently operating or viable for the future.

The TSA framework provides a solution to one of the primary challenges faced by tourism analysts, that of measuring the tourism activity in a form which is comparable with other industries using the widely-recognised Gross Domestic Product (GDP) approach. Tourism activity is, in essence, recognized as a consumption kind of activity – thus acknowledged when the consumption is effectuated by a specific type of consumer. Contemporary statistical instruments such as the Travel item in the balance of payments current account and the total final consumption expenditure in the form of exports within the national accounts statistical framework does not provide a sufficient set of aggregates which allow for an appropriate comparison with other economic activities or indeed the economic performance of tourism in other countries or regions.

The major challenge confronting the cross-industry comparison is mainly the concept of fitting a final demand 'satellite industry' notion into a system which suits the production side approach of GDP measurement. Meantime, tourism may be logically looked at as a final demand concept and thus, its economic significance may not be sufficiently measured up to merely its direct economic effects. In turn, however, such prospect exposes the inability of tourism as an industrial sector to be compared on a level playing field with other traditional industries outlined by the European Statistical Classification of Economic Activities (NACE), as there is no such classification for Tourism as a production activity.

Although, a TSA may be considered as the approach closest to measuring tourism in a form which is comparable with the classical 'production-side' economic industries, a tourism satellite industry is still conceptually separate to the core national accounts and thus cannot be tallied up with the conventional industries to derive the total economy GVA as it represents a collection of tourism-related industries which do not belong to the tourism domain in their entirety. This means that despite the convenient bridge which the TSA provides between the expenditure approach and the production approach to GDP, tourism as an autonomous economic activity still has to be regarded as a 'satellite industry' as its components implicitly contain various elements from conventional industries such as the accommodation and air passenger transport industries. For this reason, the Tourism Gross Value Added (TGVA), derived as a main aggregate from the TSA does not explicitly add up with the rest of the industries to the total GVA and GDP. Nonetheless, the influence of the TSA as a tool is not directly connected to economic modelling or as an instrument for economic impact assessment (Song, Dwyer, Li, & Cao, 2012) and thus, it should be regarded as a statistical instrument which retrospectively records in substantial detail the influence of tourism on the economy in terms of direct economic effects. As such, a TSA may be considered as a national accounts sub-system or an implied extension to the core framework rather than an instrument for forecasting. The publication of the results of the first TSA for

Malta (NSO, 2017) demonstrates that tourism as an autonomous industry in national accounts is not merely an abstract idea simply used for rhetoric. Furthermore, these results demonstrate that the actual direct contribution of tourism to the Maltese economy is different to what has traditionally been perceived.

Several studies have been undertaken to estimate the economic contribution of tourism to the Maltese economy with significantly different estimates between them. Briguglio (2002), estimates that the economic contribution of tourism ranges between 15 to 20%; using a crude import content assumption. The WTTC claims that tourism accounts for 14.2% in direct impact to GDP (WTTC, 2018) while other studies have estimated that tourism accounts for 30% (Hoti, S., McAleer, M., & Shareef, R., 2007) and 25% (Blake, 2003) of total Maltese GDP. The inconsistency in declared tourism importance on the national economy also coincided with the global challenges and varied developments in the measurement of the economic aspect of tourism. The absence of an official position in Malta regarding the economic contribution of tourism to the economy paved way for speculation and various different interpretations, each based on distinct viewpoints. The latter is particularly highlighted by Cassar *et al.* (2016) which puts forward a critical assessment of the key studies which present empirical estimates for the contribution of the tourism sector to the Maltese economy. This variation in the results of the mentioned empirical studies further highlights the need for a tourism satellite account (TSA) as a tool to undertake a holistic economic measurement of the direct impact of tourism in terms of consumption, GDP and employment. This study shall utilise the TSA to generate estimates for TGVA and TGDP (Tourism Gross Domestic Product) based on two common approaches, as well as to undertake a brief assessment of the impact of tourism demand on employment based on an analysis of TSA Table 7.

Data and Methodology

The TSA framework is regarded as the contemporary standard approach for gauging the economic influence of tourism with a

specific focus on the direct impact of tourism spending and its immediate effects. The methodological design strictly adheres to the national accounts concepts and dimensions of SNA (2008) and ESA (2010) in the process of deriving the main economic aggregates and is supported by a number of international organisations which include the World Tourism Organization (UNWTO), Organization for Economic Co-operation and Development (OECD), and Eurostat. This framework puts forward the guidelines to tourism economic analysts in measuring every layer of tourism consumption in a harmonised and consistent manner which is comparable both across industries as well as across different nations. Since the standard TSA specifically measures the direct contribution of tourism to GDP, it does not account for other indirect and induced effects which are generated in the economy in response to tourism final demand.

The application of the TSA to the Maltese Economy

The methodology of the TSA for the Maltese economy follows the aforementioned framework's guidelines for the construction of Demand-side TSA-Tables (1 to 4), as well as for the derivation of the TGVA and TGDP in table 6, including the conceptual transformation of package tours in TSA Table 5¹.

Within the context of this study, both the symmetric approach and the net ratio approach to TGDP are applied to the main tourism consumption values to obtain the main tourism economic aggregates. This will allow a comparison to be made between the two methods being applied on the same reference period and country. Although no ad-hoc surveys were carried out specifically for the construction of the TSA, all the essential values related to TSA Tables 1, 2 and 4 were generated from a broad set of collected data available from a number of surveys carried out by various organisations contributing to a strong tourism statistical infrastructure at a number of entry/exit points to/from the Maltese islands.

The consumption boundaries of domestic tourism are generally defined according to country-specific criteria based on the

interpretation of 'usual environment' adopted by local statisticians. The interpretation of domestic tourism adopted for the Maltese islands for the purpose of TSA and national tourism statistics is delimited to the Maltese residents visiting Gozo for leisure-related purposes. The 'usual environment' application for the Maltese islands adopted for the TSA is in sync with the interpretation adopted by the NSO (Malta) in related surveys, such as the *National Tourism Survey* (NSO, 2017). This interpretation of usual environment has been defined in this manner in order to avoid overestimating the extent of domestic tourism in Malta and to be compliant with similar interpretations of usual environment and domestic tourism adopted by countries across Europe in terms of distance. In addition to the country-specific interpretation of 'usual-environment', the classification of products 'predominately used for tourism consumption' allows different countries to specify a number of country-niche products which may not be considered tourism-specific products in other geographical locations. The country-specific product considered specific to Malta (other than the conventional ten tourism products defined in the TSA Framework) during 2010, is 'English-language Education'.

The Methods towards achieving TGVA and TGDP

The tabulation of consumption data from various sources into a TSA structure comparable with National Accounts is able to generate a spectrum of indicators related to the tourism related industries and the flow of goods and services involved to meet tourism demand. The derivation and analysis of both the TGVA and TGDP is key to understand the effective direct contribution of Tourism to the overall economy and are amongst the most important tourism economic instruments available in the TSA.

The data required to implement the two approaches used to measure the direct economic contribution of tourism in Malta is gathered directly from the data within the TSA tables. Several countries which maintain the calculation of TSA on a regular basis typically approach the calculation of TGVA by applying the symmetrical approach (Eurostat, 2009) to distribute the value of internal tourism

consumption among the suppliers in the domestic economy. For this reason, the symmetrical approach to TGVA and TGDP will also be applied in this paper to allow relative comparisons between the TSA of Malta and those of other countries. This method distributes the value of derived internal tourism consumption by product generated from inbound and domestic tourism consumption, including domestic expenditure for outbound trips, across the industries of the reference economy according to the respective weight of the particular industry in supplying the specific product. This method is a convenient solution in absence of accurate data by industry directly related to tourism demand on each particular product supplied. The latter is understood to be a very difficult type of data to obtain, not only as it requires further collection of data by industry but also as it is very impractical for suppliers of goods and services to keep a detailed account of their related consumer groups.

The *symmetrical approach* to the main tourism economic aggregates generates tourism output shares by industry in proportion to the industry's weight on the supply of each particular tourism-related product and connected products and may be summarised as follows:

$$TVA_j = \sum_{i=1}^n (GO_{ij} * TS_i) * \left(1 - \frac{II_j}{GO_j}\right) \quad [1]$$

Where: TVA_j = Tourism value added for the j th industry, n = Number of product categories analysed, GO_{ij} = Gross output of the i th commodity of the j th industry, GO_j = Gross output of the j th industry, II_j = Intermediate inputs for the j th industry and TS_i = Tourism share of the output of the i th commodity.

This approach generates industry-based TGVA shares using the same intermediate consumption to output ratio of the overall industry. Consequently, it relies on two key assumptions; firstly, it assumes that the consumption of goods and services used up by visitors strictly follows the cross-industry and import pattern of supply and, secondly, it assumes that any product supplied by a

particular industry requires as much intermediate inputs as the overall industry, whose output is generally dominated by a single product. The former assumption's drawback is that certain industries, despite producing a particular tourist-characteristic service in the domestic economy, may do so specifically to non-visitors. This means that if for instance, the tourism ratio of a particular product is 50%, the symmetrical approach assumes that 50% of any industry supplying the corresponding product was consumed by visitors, however, this is not always the case. Examples of such services include, for instance, sports and recreational complexes which provide accommodation services to non-visitors as a secondary activity. Moreover, from a product point of view, an air carrier supplying air passenger transport services strictly extra-territorial, for instance, may create additional statistical noise in the derivation of intermediate costs required in the supply chain.

This may therefore interfere with a particular product's allocation of internal tourism consumption among industries and may risk providing an odd picture about the origin of tourism-characteristic products being supplied. On the other hand, the second assumption is pivotal in determining the level of TGVA as it assumes that the production process to supply secondary activities are generated using the identical industry overall costs' ratio, even if certain products require significantly different inputs to produce and a totally different supply-chain. For instance, the value of costs incurred by hotels to serve a meal costing 100 euro may not be the same as supplying 100 euro worth of accommodation services or 100 euro of spa services (or any other service) within the hotel.

Consequently, different services supplied by the same industry are assumed to incur the same level of costs. However, the costs structure of each service offered may vary significantly and this may contribute to marginal errors which reflect directly in the TGVA. For this reason, the convenient mechanism of the symmetric approach is able to produce industry-based analysis vis-à-vis TGVA, however may be quite inaccurate as a result of the implied a priori structure of the intermediate inputs, especially in an economic environment

which has plenty of complex industries supplying an abundance of secondary activities. Despite being straightforward due to its symmetrical distribution, this approach to TGVA may also be inaccurate in individual components, especially in terms of the import content and taxes on products. Having the same tourism percentage share on all the components for an entire tourism-related product may be considered as a very simplistic manner to model the pattern of tourism-related transactions.

A second methodological framework towards deriving the TGVA which is adopted by various countries around the world is that of the *net ratio approach* (TSA: RMF 2008). This approach allows for the reduction in the level of assumptions being employed particularly in cases where the specialisation ratios of the main tourism industries are not close to 100% in one particular product, or when the coverage ratio of the main tourism products are not close to 100% by one particular industry. The net ratio approach to derive the main tourism economic aggregates seeks to repel the implied errors emanating as a result of the second aforementioned assumption and apply more detail vis-à-vis the composition of the intermediate costs for producing each particular commodity by different industries. The *net ratio* methodology applied in this study will consist of a variant to the method defined by the OECD (2000). This paper attempts to derive GVA-based ratios from the primary industry of each product and apply them to the value of tourism-induced output. The allocation of intermediate consumption to the tourism share of output will follow an approach synonymous to similar assumptions adopted in the application of Input-Output Tables (IOT). Tourism characteristic products which are produced by more than just their respective main characteristic industry (i.e. activity) are allocated an intermediate consumption value derived from the intermediate consumption to output ratio of the respective main characteristic industry. For instance, food and beverage services provided by hotels are not allocated an intermediate consumption to output ratio derived from the hotel industry, but rather the compatible ratio of the restaurant industry. This procedure is based on the assumption that food and

beverage services within hotels are more likely to accumulate costs similar to those accumulated by the restaurant industry rather than the costs accumulated by the hotel industry which are mainly involved in supplying accommodation services. This distinction ultimately affects TGVA. For instance, in the case of Malta, accommodation services incur fewer costs per 100 euro of services produced than food and beverage serving services.

$$TVA_i = \left(1 - \frac{II_{jp}}{GO_{jp}}\right) * TS_i \quad [2]$$

Where: TVA_i = Tourism value added for the i th commodity, GO_{jp} = Gross output of the j th industry for which the respective product is primary, II_{jp} = Intermediate inputs of the j th industry for which the respective product is primary, TS_i = Tourism share of the domestic output of the i th commodity.

The above equation outlines the methodological practice of using the value added ratio at commodity level derived from the intermediate costs to output ratio of the industry for which the commodity is primary (simultaneously deriving commodity-based TGVA). Using this procedure, the TGVA generated from a particular commodity is the balance between the output and the intermediate costs required to produce it (referring to the inputs of the main industry producing it) multiplied by the proportion of output acquired by visitors.

While the TGVA takes a holistic approach to the levels of output and intermediate uses and is considered the main aggregate which allows the tourism industry to be compared to other fellow industries in the economy, the TGDP supplements the TGVA amount with the tourism share of taxes (less subsidies) on products gathered by the government from the consumption of products by visitors. It should be noted that the degree of adherence to a single TGVA methodological standard is still significantly low across the EU nations and therefore there is a constant need for establishing a uniform treatment (Eurostat, 2009). The purpose of generating TGVA results using both the symmetrical approach and a

variant of the net ratio approach to TGVA in this paper (using the above notation) is to determine if such differing methodologies yield considerable dissimilarities and to highlight the main discrepancies. Ultimately, the analysis will be mainly based on the symmetrical approach to TGVA as this technique is generally favoured across EU nations (Eurostat, 2009c) and is able to provide a breakdown structure of TGVA by industry.

Methodological limitations of the TSA

It should be noted that both methods described are prone to inaccuracies emanating from the simplicity of accounting procedures utilised for a number of tourism products which may be produced by several industries. The limitations related to the compilation of the first tourism satellite account for Malta can be classified in three main typologies: Those related to the data gathered; limitations associated with the completeness of the all the TSA tables; and limitations based on the methodological structure of the TSA.

The TSA is based on the reconciliation between supply and demand data. Supply data, despite being often challenging to collect at a detailed product level (especially those related to tour operator services and the composition of package tours), is often supported by compulsory reporting, such as audited financial statements and tax returns. However, demand data is often subject to non-sampling errors, most notably those linked to respondents' willingness to provide accurate information. In addition to the quality of data gathered, other limitations relate to the vacuum in expenditure information, such as information on the expenditure of same-day visitors (SDVs). The absence of EU legislations imposing mandatory SDV measurement unveils a transversal data gap exposure and Malta, just like other EU countries do not have the statistical infrastructure in place to measure the expenditure of such visitor typology and this data vacuum call for estimations based on a limited set of indicators.

The second type of limitations of the first TSA for Malta relates to the number of tables completed. The core tables (Table 1 to Table 6) and the table related to employment (Table 7)

have been completed for the first exercise, however, the additional tables related to non-monetary indicators (Table 10), tourism collective consumption (Table 9) and the valuable table on Tourism Gross Fixed Capital Formation (Table 8) will all be future supplements which will embellish the statistical picture of Tourism activity in the economy.

The fixed methodological structure of the TSA can also be considered a limitation for the most accurate result of the TGVA and TGDP. This is particularly evident in TSA Tables six and seven. The manner in which the internal tourism expenditure is distributed symmetrically among the supplying industries may not reflect the actual chronicle of events. On a different note, the official table related to tourism employment (Table 7) is structured in a format which records the employment in tourism industries rather than the direct employment generated to cater for tourism demand. The former calculation is comparable and corresponds with Gross Value Added of Tourism Industries (GVATI) rather than TGVA. Moreover, the fact that the TSA relies almost exclusively on the availability of the Supply and Use Tables (SUT) limits the timeliness of data being produced for analysis and creates methodological discrepancies between the TSA and ESA (those related to the net treatment of package tours)². It should be noted that some SUT components may not fully satisfy the requirements of the TSA in terms of detailed tourism-related elements. Most prominently the lack of firm heterogeneity in the conventional SUT for tourism industries may significantly influence the results of the TSA. The issue of firm heterogeneity refers to the different economic performance of firms being bundled up together and classified in the same narrow industry but which may operate in a very different environment. The production inputs and/or the client base may be totally different and in the case of tourism, some firms operating in a tourism-related industry may not be catering for tourism demand at all. The issue of firm heterogeneity further manifests itself in situations where there is vast regional disparity in tourism demand. Different firms may have a very distinct client base (for instance tourism-intensive regions as opposed to regions with low tourism intensity) and

potentially a divergent cost structure and pricing mechanism despite being correctly classified in the same tourism-related industries.

One further notes that since the TSA measures only the direct economic effects, the usage of the TSA by policy makers may to an extent be limited (Smeral, 2006) given that the measurement of the generated estimate for the economic importance will implicitly omit the potentially significant indirect and induced effects on production which may be generated by the tourism sector. This TSA characteristic may also present a challenge to economic analysts trying to gauge the efficiency of the direct tourism satellite industry as firms operating in the tourism-related industries may artificially fluctuate the balance between the direct and indirect economic effects from one year to another depending on the degree of sub-contracting outsourced.

In an attempt to put forward a plausible range of the total impact of tourism activities on the Maltese economy, Cassar *et al.* (2016) presents a critical survey of applied empirical literature. The discussion put forward evaluates resulting estimates derived from both the analysis of input-output multipliers obtained from the Leontief demand driven model (Miller and Blair, 2009), as well as from the application of a computable general equilibrium models applied to the Maltese economy. On the basis of the assessment put forward by Cassar *et al.* (2016), it is suggested that the contribution of tourism activities to the Maltese economy potentially accounts for approximately 12% of total gross value added when taking account of both direct and indirect effects and roughly 17% accounting also for the induced effects on production.

Results and discussion

The results of the first TSA for Malta are statistically consistent with the ESA 2010 methodology which is used by national accounts to determine the GDP level of the Maltese economy and other related macroeconomic indicators. This particular national accounting framework was first published by the Malta National Statistics Office (NSO) during 2014 (NSO, 2014). The

first TSA for Malta is based on the performance of the Maltese economy during 2010, represented by the economic architecture outlined in the Supply, Use and Input-Output Tables (SUIOT) for the reference year of 2010 (NSO, 2016). The SUIOT is a statistical output of national accounts which holds the highest amount of integrated information about the supply and use of goods and services in the entire economy. This, in turn is used to extract significant details about tourism's substance in the national economy during that year.

The first four tables of the TSA prepare the foundations of the internal tourism expenditure data which feed into Table 6 – which is the core table reconciling tourism demand and tourism-related supply from various industries outlined in TSA Table 5³. The shares of tourism output in the tourism-related industries calculated in TSA table 6 are consequently used to derive a set of direct tourism employment values in TSA Table 7.

For the purpose of this paper, the analysis of the TSA results will be mainly based on the results of the TSA generated using the symmetric approach. As described in section 2, the symmetrical approach to TGVA is the technique generally favoured across EU nations and thus, any legitimate like for like comparison would have to be carried out using the same compilation method.

TSA Table 6 presents a synthesis of domestic supply for each of the tourism-characteristic products confronted by the consumption of visitors for each of the listed products. This table may be viewed as the core table of TSA given that the ratios of tourism consumption on total supply of the tourism industries can be defined at a product level of detail. The upper part of TSA-Table 6 is supplemented with columns relating to the tourism share of total production of tourism and other industries. More importantly, the compilation of this TSA table implicitly generates the '*tourism ratio on supply*' by product and undertakes the explicit calculations of '*Tourism Gross Value Added*' (TGVA) and '*Tourism Gross Domestic Product*' (TGDP). The two latter variables are the fundamental elements of the scope of this analysis and thus the importance of this TSA-

Table 1. TSA Table 6, symmetric approach (at purchasers' prices):2010

Computational Code	Industries													
	Accommodation for visitors		Accommodation for visitors (other than 1b)		Accommodation services associated with all types of vacation home ownership		Food and beverage serving		Railway passenger transport		Road passenger transport		Air and water passenger transport (*)	
Products	Output (5.1)	Tourismshare (invalue)	Output (5.1a)	Tourismshare (invalue)	Output (5.1a)	Tourismshare (invalue)	Output (5.2)	Tourismshare (invalue)	Output (5.3)	Tourismshare (invalue)	Output (5.4)	Tourismshare (invalue)	Output (5.5)	Tourismshare (invalue)
A Consumption products (*)														
A.1 Tourism characteristic products	329,593	224,685	245,418	221,185	84,174	3,499	2,242	93	-	-	175	7	600	25
A.1.1 Accommodation services for visitors	236,553	220,775	236,553	220,775	-	-	-	-	-	-	-	-	-	-
A.1.1a (other than 1b)	94,040	3,909	9,865	410	84,174	3,499	2,242	93	-	-	175	7	600	25
A.1.1b Accommodation services associated with all types of vacation home	78,632	50,219	78,632	50,219	-	-	289,605	184,957	-	-	-	-	185	118
A.1.2 Food and beverage serving services	27	13	27	13	-	-	-	-	-	-	45,482	21,815	-	-
A.1.3 Railway passenger transport services	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A.1.4 Road passenger transport services	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A.1.5 Air and water passenger transport services (*)	-	-	-	-	-	-	-	-	-	-	-	-	258,715	218,385
A.1.7 Transport equipment/rental services	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A.1.8 Cultural services	1,224	653	1,224	653	-	-	-	-	-	-	0	0	-	-
A.1.9 Sports and recreational services	13,293	2,102	13,293	2,102	-	-	-	-	-	-	-	-	-	-
A.1.10 Language school services	243	237	243	237	-	-	-	-	-	-	-	-	-	-
A.2 Tourism Connected products														
A.2.1 Retail trade margin on goods	6,126	250	6,126	250	0	0	1	0	-	-	0	-	2	0
A.2.2 Wearing apparel and leather products	27	4	26	4	2	0	-	12	-	-	0	-	1	0
A.2.3 Food products	-	-	-	-	-	-	253	0	-	-	0	-	-	-
A.2.4 Beverages	-	-	-	-	-	-	1	0	-	-	-	-	-	-
A.2.5 Other goods and services	3,763	44	3,546	41	217	3	13	0	-	-	2,710	31	12,784	148
B Nonspecific products (**)														
B.1.1 Other margins	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B.1.2 All other products	388,644	-	12,072	-	376,572	-	55,299	-	-	-	65,962	-	86,655	-
Total output (at basic prices)	821,572	278,205	360,606	274,703	460,966	3,502	3,474,15	185,062	-	-	114,229	21,854	358,942	218,676
Total intermediate consumption (at purchasers' prices)	313,009	152,549	199,117	151,684	113,892	865	236,465	125,961	-	-	65,320	12,497	301,538	186,667
Total gross value added	508,562	125,656	161,489	123,019	347,074	2,637	110,950	59,101	-	-	48,909	9,357	57,404	32,009

(*) The value of A. Consumption products, is net of the gross service charges paid to travel agencies, tour operators and other reservation services.

(**) Air passenger transport has been merged with water passenger transport due to confidentiality flags.

(***) Includes all other goods and services that circulate in the economy of reference.

Note: Totals may not add up due to rounding

Source: NSO (2016).

Table 1. TSA Table 6, symmetric approach (at purchasers' prices): 2010 (continuation)

Computational Code	Industries													
	Transport equipment rental		Travel agencies and other reservation		Cultural		Sports and recreational		Education		Total		Other industries ^(***)	
Products	Output (5.7)	Tourism share (in value)	Output (5.8)	Tourism share (in value)	Output (5.9)	Tourism share (in value)	Output (5.10)	Tourism share (in value)	Output (5.11)	Tourism share (in value)	Output (5.13)	Tourism share (in value)	Output (5.14)	Tourism share (in value)
A Consumption products^(*)														
A.1 Tourism characteristic products	220	10	305	13	123	5	48	2	4,658	3,245	337,974	228,084	88,158	3,666
A.1.1 Accommodation services for visitors									3,407	3,193	238,959	223,968	1	1
A.1.1a Accommodation services for visitors (other than 1b)	-	-	-	-	-	-	-	-						
A.1.1b Accommodation services associated with all types of vacation home	220	10	305	13	123	5	48	2	1,251	52	99,015	4,116	88,157	3,665
A.1.2 Food and beverage serving services	-	-	548	360	5	3	-	-	-	-	368,975	225,647	1,350	862
A.1.3 Railway passenger transport services	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A.1.4 Road passenger transport services	2,059	988	-	-	-	-	-	-	91	44	47,659	22,889	1,558	747
A.1.5 Air and water passenger transport services ^(**)	894	827	988	835	-	-	-	-	-	-	260,597	220,048	-	-
A.1.7 Transport equipment rental services	40,777	16,241	-	-	-	-	-	-	-	-	40,777	16,241	39	16
A.1.8 services	-	-	120,469	64,275	-	-	-	-	109	58	121,801	64,905	630	336
A.1.9 Cultural services	0	0	0	0	18,409	10,883	-	-	-	-	18,409	10,883	105	62
A.1.10 Sports and recreational services	-	-	-	-	-	-	94,493	14,940	-	-	107,785	17,044	1,514	239
A.1.11 Language school services	-	-	283	277	-	-	-	-	21,861	21,367	22,387	21,881	292	285
A.2 Tourism Connected products														
A.2.1 Retail trade margin on goods	904	37	1,071	44	-	-	-	-	221	9	8,325	340	791,549	32,281
A.2.2 Wearing apparel and leather products	-	-	0	0	-	-	4	1	-	-	33	5	12,262	1,745
A.2.3 Food products	-	-	3	0	-	-	-	-	-	-	256	12	419,617	19,381
A.2.4 Beverages	-	-	11	1	-	-	-	-	-	-	12	2	75,722	10,206
A.2.5 Other goods and services	4,428	51	1,496	17	30	0	69	1	24,817	288	50,112	581	2,919,515	33,860
B Nonspecific products^(***)														
B.1 Other margins	-	-	-	-	-	-	-	-	-	-	-	-	90,082	-
B.1.2 All other products	70,807	-	1,036	-	14,530	-	19,106	-	54,384	-	756,322	-	6,824,295	-
Total output (at basic prices)	120,099	18,154	1,26,210	65,812	33,097	10,892	113,720	14,943	106,140	25,010	2,144,425	838,609	11,226,688	103,688
Total intermediate consumption (at purchasers' prices)	75,765	11,453	81,964	42,750	11,077	3,645	60,724	7,979	36,599	8,624	1,182,481	552,126	6,394,879	59,062
Total gross value added	44,334	6,702	44,226	23,062	22,020	7,247	52,996	6,964	69,541	16,386	958,945	286,484	4,831,810	44,626

(*) The value of A. Consumption products, is net of the gross service charges paid to travel agencies, tour operators and other reservation services.

(**) Air passenger transport has been merged with water passenger transport due to confidentiality flags.

(***) Includes all other goods and services that circulate in the economy of reference.

Note: Totals may not add up due to rounding

Source: NSO (2016)

Table 1. TSA Table 6, symmetric approach (at purchasers' prices) :2010 (continuation)

Computational Code Products	Output of domestic producers (at basic prices)		Imports		Taxes less subsidies on products of domestic output and import		Trade and transport margins		Domestic supply (at purchasers' prices)	Internal tourism consumption	Tourism ratio on supply
	Output (5.15) = (5.13) + (5.14)	Tourism share (in value)	Output (6.1)	Tourism share (in value)	Output (6.2)	Tourism share (in value)	Output (6.3)	Tourism share (in value)			
A Consumption products (*)											
A.1 Tourism characteristic products	426,132	231,750	4,001	1,237	14,565	10,028	-	-	444,698	243,015	0.55
A.1.1 Accommodation services for visitors	238,961	223,969	1,195	1,120	10,520	9,860	-	-	250,676	234,950	0.94
A.1.1a (other than 1b)											
Accommodation services also called											
A.1.1b with all types of vacation home	187,171	7,781	2,806	117	4,045	168	-	-	194,022	8,065	0.04
ownership											
A.1.2 Food and beverage serving services	370,325	236,509	1,513	966	59,502	38,001	-	-	431,340	275,476	0.64
A.1.3 Railway/passenger transport services	49,217	23,606	1,661	796	4,000	1,919	-	-	54,878	26,321	0.00
A.1.4 Road passenger transport services	-	-	-	-	-	-	-	-	-	-	0.48
A.1.5 Air and water passenger transport services (**)	260,597	220,048	41,551	35,938	5,220	4,410	-	-	307,368	260,395	0.85
A.1.7 Transport equipment rental services	40,817	16,257	988	398	5,828	2,321	-	-	47,643	18,976	0.40
A.1.8 services	122,431	65,322	28,069	14,976	-	-	-	-	150,500	80,297	0.53
A.1.9 Cultural services	18,515	10,946	2,197	1,299	433	256	-	-	21,145	12,501	0.59
A.1.10 Sports and recreational services	109,300	17,281	1,644	260	34,570	5,466	-	-	145,513	23,006	0.16
A.1.11 Language school services	22,679	22,167	381	372	-	-	-	-	23,060	22,539	0.96
A.2 Tourism Connected products											
A.2.1 Retail trade margin on goods	799,874	32,620	-	-	-	-	799,874	32,620	-	-	0.14
A.2.2 Wearing apparel and leather products	12,295	1,750	120,495	17,147	33,253	4,732	83,284	11,852	249,326	35,481	0.05
A.2.3 Food products	419,873	19,393	402,862	18,607	-	180	174,696	8,069	993,534	45,889	0.13
A.2.4 Beverages	75,734	10,208	50,222	6,769	17,471	2,355	52,074	7,019	195,502	26,351	0.13
A.2.5 Other goods and services	2,969,627	34,441	3,024,885	35,082	351,908	4,081	489,818	5,681	6,836,238	79,285	0.01
B Non-specific products (***)											
B.1.1 Other margins	90,082	-	-	-	-	-	90,082	-	-	-	0.00
B.1.2 All other products	7,580,617	-	2,090,278	-	285,887	-	90,082	-	10,046,864	-	0.00
Total output (at basic prices)	13,368,114	942,297	5,770,757	133,847	808,739	73,389	1	0	19,947,608	1,149,533	0.058
Total intermediate consumption (at purchasers' prices)	7,577,359	611,188									
Total gross value added	5,790,754	331,109									

(*) The value of A, Consumption products, is net of the gross service charges paid to travel agencies, tour operators and other reservation services.

(**) Air passenger transport has been merged with water passenger transport due to confidentiality flags.

(***) Includes all other goods and services that circulate.

Note: Totals may not add up due to rounding.

Source: NSO (2016)

table is even more pronounced. TGVA is derived as a balancing item from the tourism share of output less than the tourism share of intermediate consumption.

As is evident in this core TSA table, tourism as an industry intertwines within a multitude of different auxiliary industries and its overall income effect extends over the tourism characteristic industries. When the focus is shifted towards the value added component of the tourism industries, i.e. the value added of all establishments for which the principal activity is related to supplying a tourism characteristic product, the GVATI reaches 958.9 million (16.6% of total economy GVA). This aggregate is often of little importance to the scope of this analysis as the tourism-related supply may be quite sizable to cater for non-tourism demand of residents during their regular course of life. This supply of such goods and services was not entirely consumed by tourists and thus, in order to accurately identify tourism related supply, it is necessary to derive estimates of the share of tourism consumption from the total supply of each product category. These are referred to as *tourism ratios* and are calculated by dividing total supply of each product category by the internal tourism consumption expenditure of each corresponding product.

Tourism characteristic products are typically expected to bear a higher tourism ratio to total supply; some of which may be close to 100% (such as accommodation, air passenger transport and travel agencies). This table is sustained by TSA Tables 4 and 5 and supplemented through the extensive detail provided from the SUT. TSA Table 6 shows the import content of domestic supply which by nature does not form part of domestic GDP. Since the economic importance of a production activity is typically measured by the share of value added in the reference country, the portion of GVA generated from visitors has to be derived. The visitor-induced production of tourism-related industries is derived through the respective tourism-characteristic products, in some cases for more than one product per industry, and the tourism direct GVA is calculated by deducting the intermediate consumption (which includes the secondary import content) for every industry.

The intermediate consumption ratios attributable to visitors are often the same proportions derived for total output (Eurostat, 2009). It is customary for TSA compilers, especially during early compilation attempts, to distribute the consumption of a particular product evenly across producing industries (using a pro-rata of their respective volume of production). In an optimal TSA scenario, different tourism shares for each particular product at each industry level would be available – i.e. a different tourism share for every cell; however, such detail is often too subtle to achieve.

The symmetric approach which was utilised to generate the TGVA and TGDP as presented in Table 1 applies a major assumption as product-specific internal tourism shares on supply are made equal across all industries producing a particular product. Despite this general practice, some countries opt to approach a number of products with more integrity by estimating specific tourism shares by product for each industry producing it (Eurostat, 2009). It should be noted that on the other hand, applying the net-ratio approach would not generate different values of output of domestic producers but may impact the TGVA and TGDP aggregates due to the varying levels of intermediate costs among different industries.

As depicted in TSA Table 6, the computations based on the symmetric approach show that during 2010 internal tourism consumption used up 5.8% of the economy's total supply of goods and services. The latter is obtained as the share of internal tourism consumption from total domestic supply at purchasers' prices. When equating the tourism ratio to supply for each of the tourism consumption products which visitors have consumed, this time focusing solely on the domestic producers, 7.5% of the domestic output was derived to match the demand of visitors (tourists and same day visitors). When compared to other European countries, Malta's proportion of internal tourism consumption to domestic supply is amongst the highest – i.e. visitors consume a considerable chunk of goods and services supplied by domestic producers (Eurostat, 2017b).

Source: NSO, Authors' own calculations.

Note: Tourism is being shown separately as it is not a conventional industry in terms of NACE categories. Moreover, parts of the top 15 industries may be included again in the tourism satellite industry. The most obvious example where this happens is the accommodation industry.

Figure 1. Comparison of GVA shares of different economic activities in Malta, 2010

When discounting the value of implied tourism output by the proportional amount of intermediate costs of the respective industry using the symmetric approach to TGVA, the total TGVA in 2010 amounted to 331.1 million euro, equivalent to 5.7% of the total GVA of Maltese industries. TGDP, which is achieved as a function of TGVA and the tourism share of 'taxes less subsidies' over the respective totals of the economy, amounted to 404.5 million euro, equivalent to 6.1% of the total GDP of Malta during 2010. When compared with other activities of the Maltese economy, such a result ranks the tourism satellite industry among the largest industries of Malta during 2010 as may be observed from Figure 1 above.

The main drawback of the symmetric approach to TGVA is that the summation of the tourism output values of all the products consumed by tourists from a particular industry are collectively applied an intermediate costs ratio of the overall industry. Consequently, different services supplied by the same industry are assumed to incur the same level of costs. However, the costs structure of each service offered may vary significantly and this

phenomenon may contribute to marginal errors which reflect directly in the TGVA. For instance, the value of costs incurred by hotels to serve a meal costing 100 euro may not be the same as supplying 100 euro worth of accommodation services or 100 euro of spa services (or any other service) within the hotel. This shortcoming occurs predominantly in situations where a sizable secondary activity is produced by a tourism-related industry. In such a case, the secondary activity produced by a particular industry has to be large enough to significantly affect the specialisation ratio of the respective industry. In the context of the TSA, the specialisation ratio is a measure of the extent to which observations contained within a category are representatives of the population of those observations as a whole. Therefore, the specialisation ratio of an industry is the output by that industry of goods and services characteristic to that industry in proportion to its total output (UN, 1990). As highlighted in the previous section, this particular deficiency related to the symmetric approach is significantly reduced when using the net ratio approach to TGVA.

Table 2. TSA Table 6 using the 'net ratio' approach

TSA Table 6 Total domestic supply and internal tourism consumption (at purchasers' prices) (€'000s) 2010									
Products	Output of domestic producers (at basic prices) (see Table 5)	Imports	Taxes less subsidies on products nationally produced and imported	Margins	Domestic Supply (at purchasers' prices)	Internal tourism consumption	Tourism ratios	Main industry's intermediate consumption to output ratio	Tourism Value added
A. Tourism Characteristic products									
Accommodation services for visitors	238,961	1,195	10,520	-	250,676	234,950	93.70%	55.20%	100,299
Accommodation associated with vacation home ownership	187,171	2,806	4,045	-	194,022	6,905	3.60%	24.70%	5,015
Food and beverage serving services	370,325	1,513	59,502	-	431,340	275,476	63.90%	68.10%	75,531
Railway passenger transport services	-	-	-	-	-	-	-	-	-
Road passenger transport services	49,217	1,661	4,000	-	54,878	26,321	48.00%	57.20%	10,107
Water passenger transport services	28,854	13,952	603	-	43,408	40,171	92.50%	74.77%	6,736
Air passenger transport services	231,744	27,599	4,617	-	263,959	220,224	83.40%	86.80%	25,551
Transport equipment rental services	40,817	998	5,828	-	47,643	18,976	39.80%	63.10%	6,001
Travel agencies & other reservation services	122,431	28,069	-	-	150,500	80,297	53.40%	65.00%	22,890
Cultural activities	18,515	2,197	433	-	21,145	12,501	59.10%	33.50%	7,282
Sport and recreation activities	109,300	1,644	34,570	-	145,513	23,006	15.80%	53.40%	8,053
English language schools	22,679	381	-	-	23,060	22,539	97.70%	34.50%	14,523
Connected products									
Retail trade margin on goods	-	-	-	-799,874	0	0	-	39.50%	19,720
Wearing apparel and leather products	12,295	120,495	33,253	83,284	249,326	35,481	14.20%	-	756
Food products	419,873	402,862	-3,899	174,696	993,533	45,889	4.60%	-	8,375
Beverages	75,734	50,222	17,471	52,074	195,502	26,351	13.50%	-	4,408
Other goods and services	2,969,627	3,024,885	351,908	489,818	6,836,238	79,285	1.20%	-	14,873
B. Non-specific products									
Other margins	90,082	-	-	-90,082	0	-	-	-	-
Other products	7,562,594	2,090,278	285,887	90,082	10,028,841	0	-	-	-
TOTAL OUTPUT	12,560,217	5,770,757	808,737	-1	19,929,584	1,148,372	5.80%		330,123

Notes:

Source: Authors' calculations

Data may not sum due to rounding

This variant of net ratio approach to TGVA, due to its technical structure, produces product-based TGVA values rather than industry-based TGVA values. When comparing the values of TGVA produced at product level with those produced at industry level by the symmetrical approach, it is clear that both methods point to approximately the same level of TGVA. The most glaring discrepancies between the symmetric and the net ratio methods illustrated in Table 1 and Table 2 respectively occur in the Accommodation and Food and beverage serving services.

The significantly large secondary activities (food and beverage serving services) produced by the accommodation industry renders its specialisation ratio to be less focused and specialised on providing accommodation services only, since over 18% of the output of the accommodation industry is in fact, services related to bars and restaurants. This feature is the primary cause for the disparity between the two approaches to TGVA. Although in the TSA for Malta, the main discrepancy between the two approaches was primarily triggered by the

Table 3. TSA Table 7: Employment in the tourism industries

Computational Code	Tourism industries	Tourism ratios by industry	Number of jobs by status in employment					
			Employees			Self-employed		
			Male	Female	Total	Male	Female	Total
A.1.1	Accommodation services for visitors		4 232	2 709	6 941	40	12	52
A.1.1a	Accommodation services for visitors (other than 1b)	0.76	4 231	2 707	6 938	39	12	51
A.1.1b	Accommodation services associated with all types of vacation home ownership	0.01	2	2	3	1		1
A.1.2	Food and beverage serving services	0.53	2 959	1 947	4 906	626	129	755
A.1.3	Railway passenger transport services	0.00						
A.1.4	Road passenger transport services	0.19	205	30	236	253	9	262
A.1.5	Air and water passenger transport services (**)	0.61	285	92	377	36	1	37
A.1.7	Transport equipment rental services	0.15	126	26	153	34	4	39
A.1.8	Travel agencies and other reservation services	0.52	332	330	662	97	132	229
A.1.9	Cultural services	0.33	161	116	276	82	47	129
A.1.10	Sports and recreational services	0.13	234	136	370	17	13	30
A.1.11	Language school services (**)	0.98	446	1 186	1 632			
Total			8 982	6 572	15 554	1 185	346	1 532
Computational Code	Tourism industries	Tourism ratios by industry	Number of full time equivalent jobs by status in employment					
			Employees			Self-employed		
			Male	Female	Total	Male	Female	Total
A.1.1	Accommodation services for visitors		3 391	2 022	5 413	35	10	45
A.1.1a	Accommodation services for visitors (other than 1b)	0.76	3 389	2 020	5 409	34	10	44
A.1.1b	Accommodation services associated with all types of vacation home ownership	0.01	2	1	3	1		1
A.1.2	Food and beverage serving services	0.53	2 030	1 165	3 195	528	103	631
A.1.3	Railway passenger transport services	0.00						
A.1.4	Road passenger transport services	0.19	192	25	217	243	8	251
A.1.5	Air and water passenger transport services (**)	0.61	282	90	372	19		19
A.1.7	Transport equipment rental services	0.15	113	23	136	27	3	30
A.1.8	Travel agencies and other reservation services	0.52	282	289	571	65	90	155
A.1.9	Cultural services	0.33	136	84	220	52	32	84
A.1.10	Sports and recreational services	0.13	156	86	241	13	10	23
A.1.11	Language school services (**)	0.98	268	698	966			
Total			6 849	4 483	11 332	983	256	1 239

(*) The apportioned employment values may not match with the industry-ratio due to merging of air and water transport industries.

(**) The product ratio was applied as it was possible to extract product-related employment.

Source: NSO (2016).

accommodation industry, such type of divergence may become more widespread in situations where there are complex output structures in other tourism-related industries which are less focused on producing their main related product.

In addition to the core table which illustrates a reconciliation of the supply and demand data to determine the value added in the economy from tourism activity, TSA Table 7 provides an outline of employment related to tourism activity. This TSA Table is calculated by having the industry ratios from TSA Table 6 applied to the total employment of the tourism-related industries. Employment numbers are typically not straightforward to segment between those involved in providing services to visitors and those which provide services to non-residents as employees engaged in tourism industries typically provide services to all types of customers. The design of this TSA table attempts to segment the number of employees actually involved in supporting the volume of tourism demand according to the total output consumed by tourists in the respective industry.

The main observations from TSA Table 7 are the numbers of employees in each industry directly related to tourism. During 2010, the amount of employees directly employed to cater specifically for tourism demand amounted to 17,083 or 8.0% of the total gainfully occupied.

TSA Table 7 demonstrates that during 2010, 12,571 full time equivalents were directly involved in providing their services to the 1.34 million tourists spending a total of 11.1 million nights in Malta⁴. When converting the number of tourist nights spent in Malta to *tourist population*, by dividing the number of nights by the number of days in a calendar year, the number of tourists present in Malta along the 12 months of 2010 averaged 30,542 individuals (Sacco, 2015). Consequently, this reveals that during 2010, on an annual average, around 41 employees were required to cater for the demand of every 100 tourists visiting Malta.

An analysis of the first set of TSA tables for Malta reveals that that during 2010:

- Internal tourism consumption amounted to €1,148 million. This value represents 5.8% of the supply of goods and services in the Maltese economy during 2010;
- Tourism generated around €331.1 million of added value (TGVA) or 5.7% of the total economy (excluding taxes);
- Taxes and subsidies from and for Tourism amounted to €73.4 million or 9.1% of total taxes less subsidies on products;
- The amount of TGVA plus net taxes from Tourism amounted to €404.5 million or 6.1% of the Maltese GDP during 2010;
- The direct import content of internal tourism consumption (mainly tourism services) amounted to around €133.8 million or 12.5%;
- The significance of Tourism vis-à-vis the exports of goods and services is highlighted by the magnitude of receipts from inbound tourism to total Exports. Exports generated through inbound tourism amounted to €1,033 million or 17.5% of total Exports.
- At the same time, imports of tourism (Maltese residents on outbound tourism trips) amounted to €190.0 million. Thus, the net exports of tourism from Malta amounted to €843 million during 2010.
- At €112.2 million, domestic spending for tourism represents just 9.8% of total tourism consumption. The majority (65.2%) of domestic tourism spending consisted of domestic tourism expenditure for outbound trips.
- Being a labour intensive sector, the number of employees directly related to cater specifically for tourism demand amounted to 17,083. This value amounts to 8.0% of the total gainfully occupied and is disproportionately higher when compared to the TGDP.

The results of the TSA for Malta in the context of the results of other EU countries reflect the notable characteristics of tourism in small states. The very low contribution of domestic tourism consumption to internal tourism consumption compared to the dominance of inbound tourism consumption (90.2% of internal tourism consumption) reflects a typical trait of small island states, followed by Cyprus, a similar small island state, with a share of 84% (UNWTO, 2010). Similarly, the very high proportion of total inbound tourism expenditure accounted for by overnight visitors (98.7%) in

Malta is among the highest of the reporting countries. (UNWTO, 2010)

Furthermore, an analysis of the full set of TSA tables highlights various issues relating to the level of economic efficiency attributable to the tourism sector. Generally, the economic impact of a sector depends on the ability of the domestic economy to assimilate its value added and avoid economic leaks (Singh & Wright, 2011). As a rule of thumb, tourism economic leakages decline by preventing imports from replacing domestic output of goods and services. Economic impacts other than those influenced directly by the final suppliers are normally enhanced by giving priority to this sector's income distribution structure and its value added in the economy by encouraging a more internal use of resources in an efficient and holistic manner and not least by addressing the seasonality issues.

Tourism is a service-oriented activity and while this fact substantially limits the probability of direct economic leakages given that most services are more likely to be provided during the trip in the target destination (except for services such as air and sea transport services as well as services provided by foreign travel agencies), the same cannot be said for the underlying indirect economic leakages exposed in the tourism supply-chain. The supply-chain of any industry is normally acknowledged by the value of intermediate consumption. This value represents the amount of goods and services required by the particular industry from other suppliers to produce its output. During 2010, the Maltese economy's intermediate costs to output ratio was around 56%, which means that when considering all industries in the Maltese economy, 56 euro were needed for every 100 euro of output produced. This image evolves quite differently when the focus is filtered for the cluster of tourism-related industries.

Assessing TSA Table 5 (Appendix Table 8) it may be inferred that the intermediate costs required by the tourism sector to produce the output needed to satisfy the internal tourism consumption aggregate is around 66 euro for every 100 euro worth of goods and services

produced. The latter differs from the average of the Maltese economy and thus, at prima facie, the tourism sector seems, on average, to be relatively inefficient. When analysed at the industry level, TSA Tables 5 and 6 reveal that the air and water transport industry is the main catalyst for such a high cost to output ratio. In light of this, however, industries having relatively high inputs to the respective output ratio do not automatically translate as being inefficient. This occurrence may also be the result of highly specialised operations by industries in developed economic structures.

Conclusion

The TSA has over the recent decades become a key statistical framework within the context of the economic measurement of tourism activities which ensures comparability with other economic industries and with the performance of tourism in other countries or regions. The benefits of the TSA have thus been long recognised and used for policy design in a number of countries over the past few years (Bederoff, 2005). This article presented an analysis of the first TSA compiled for the Maltese economy adhering to the ESA 2010 and based on the reference year of 2010.

The results of the TSA for Malta for 2010 provide the first estimates of the level of direct tourism employment, TGVA and TGDP strictly based on the production boundary of the Maltese national accounts. On the basis of the first TSA for the Maltese economy which was constructed for the reference year of 2010 tourism related activities account directly for 5.7 % of total TGVA, 6.1% of TGDP and 8.0% of the total gainfully occupied. It should further be noted that although the results obtained capture solely the direct effects on the economy generated from tourism related activities thus omitting indirect and induced effects, the estimates generated from the TSA are however not bound by the numerous robust assumptions employed by respective methodological frameworks applied to generate these indirect and induced effects. Nonetheless, it should be noted that based on Cassar *et al.* (2016), these direct and induced effects may indeed be substantial with tourism activities potentially contributing approximately 12% of total gross value added when taking

account of both direct and indirect effects and around 17% when induced effects are also accounted for.

A key contribution of this article pertains to the fact that the results obtained from both the symmetrical approach and the net ratio approach were indeed very similar in terms of the derived TGVA and TGDP, even though the compilation mechanisms adopt a separate set of implicit assumptions. This implies that the estimates produced by both methods resulted to approximately a consistent account of the economic contribution generated from tourism consumption activities. The main highlight drawn out from the comparison between the two methods is that these two approaches used to calculate TGVA tend to diverge essentially in cases where the main tourism-related industries generate substantial secondary activity output.

The TSA tables provide a suitable instrument to policy makers for identifying activities which add trivial value to the economy despite the large cash flows channelled from visitors through such industries. The cause for such occurrence may potentially be either due to GVA flowing to other domestic industries or leaking out of the domestic economy. The latter situation, occurring in a number of industries, has to be acknowledged by policy makers as economic areas which effectively shrink the economic significance of tourism away from the widely publicised tourism expenditure values. Despite being a valid tool for analysis and policy design, the TSA is often criticised for its most influential limitation – the lack of timeliness. For this reason, one has to be aware that the general public might not be very interested in the economic performance of tourism of several years before, or any technicalities but contemporary outline numbers. Moreover, the concept of economic efficiency in tourism-specific industries, i.e. derived from the country-specific SUTs and applied to the tourism-portion of output, is also highlighted as a TSA limitation and an area of attention for further refinement, multilaterally across countries producing TSAs. The OECD (2010) has recognised that TSA results are still largely underused and in order to overcome this issue, the TSA results could be used as a

further platform for economic forecasting of the tourism industry using additional models (Ahler, 2008, Blake, Durbarry, Sinclair, & Sugiyarto, 2001).

Nonetheless, it should be noted that the TSA can be used as an important tool by different stakeholders ranging from policy makers to research institutes to evaluate multiple aspects of tourism activity (Cooper, 2008). The results of this TSA for Malta provide a suitable platform for further analysis on the adequacy of the employment level in the tourism industry and the quality of service provided. One kind of focal point could be the diagnosis of the main reasons of tourism economic leaks from the economy and its effect of the economic efficiency of the industry. Other types of TSA use for policy design could be applied and extended through CGE modelling techniques which allows users to estimate the impact on the GDP and other main macroeconomic aggregates from, for instance, a specific increase in inbound tourism demand (WTO, 2014, Meng & Siriwardana, 2017, Dwyer, 2015).

Disclaimer: The views expressed in this paper are those of the authors and do not necessarily reflect those of the National Statistics Office of Malta.

Endnotes:

¹ Further details related to the construction of the first Tourism Satellite Account (TSA) for the Maltese islands are illustrated by Sacco (2015).

² The legal act Regulation (EC) No 1392/2007 of the European Parliament and of the Council of 13 November 2007 amending Council Regulation (EC) No 2223/96 with respect to the transmission of national accounts stipulates that Supply and Use Tables (SUT) of European Nations should be disseminated not later than 3 years after the reference period. The frequency of the SUT for the Maltese economy has not always been regular and by 2017, Maltese SUTs covered reference periods 2010 and 2011 in-line with ESA 2010 framework.

³ TSA Tables 1 to 5 are presented in Appendix A.

⁴ Figures include only data collected from Tourstat – thus excluding expenditure from cruise passengers and other transport means.

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Appendices

Appendix Table 1. TSA Table 1: Inbound Tourism expenditure by products and visitor classes

Computational Code	Products	Type of Visitor		Total Visitors (1.3) = (1.1) + (1.2)
		Tourists (overnight visitors) (1.1)	Excursionists (same-day visitors) (1.2)	
A	Consumption products (*)			
A.1	Tourism characteristic products	854 981	3 667	858 647
A.1.1	Accommodation services for visitors	231 599	X	231 599
A.1.1a	Accommodation services for visitors (other than 1b)	228 081	X	228 081
A.1.1b	Accommodation services associated with all types of vacation home ownership	3 518	X	3 518
A.1.2	Food and beverage serving services	257 455	887	258 341
A.1.3	Railway passenger transport services			
A.1.4	Road passenger transport services	23 844	707	24 551
A.1.5	Air and water passenger transport services (**)	229 955	1 028	230 982
A.1.7	Transport equipment rental services	18 972	3	18 976
A.1.8	Travel agencies and other reservation services	36 151		36 151
A.1.9	Cultural services	11 901	600	12 501
A.1.10	Sports and recreational services	22 564	442	23 006
A.1.11	Language school services	22 539		22 539
A.2	Tourism Connected products	165 729	8 459	174 187
A.2.1	Wearing apparel and leather products	32 841	1 777	34 618
A.2.2	Food products	41 360	2 238	43 598
A.2.3	Beverages	24 893	1 087	25 980
A.2.4	Other goods and services	66 634	3 356	69 991
Total expenditure by inbound visitors		1 020 709	12 125	1 032 835

X does not apply

(*) The value of **A. Consumption products**, is net of the gross service charges paid to travel agencies, tour operators and other reservation services.

(**) Air passenger transport services have been merged with water passenger transport services due to confidentiality flags.

Source: NSO (2016).

Appendix Table 2. TSA Table 2: Domestic tourism expenditure by products, classes of visitors and type of trips

Computational Code	Products	Domestic tourism expenditure (***)								
		Domestic trips			Outbound trips			All types of trips		
		Tourists (overnight visitors)	Excursionists (same-day visitors)	Visitors (2.3) = (2.1) + (2.2)	Tourists (overnight visitors)	Excursionists (same-day visitors)	Visitors on domestic trips (2.6) = (2.4) + (2.5)	Tourists (overnight visitors)	Excursionists (same-day visitors)	Visitors on domestic trips (2.7) = (2.1) + (2.8) = (2.2) + (2.9) = (2.3) + (2.4)
A	Consumption products (*)									
A.1	Tourism characteristic products	15 746	14 372	30 118	69 215		69 215	84 961	14 372	99 332
A.1.1	Accommodation services for visitors	5 621	X	5 621	1 247	X	1 247	6 869	X	6 869
A.1.1a	Accommodation services for visitors (other than 1b)	5 621	X	5 621	1 247	X	1 247	6 869	X	6 869
A.1.1b	Accommodation services associated with all types of vacation home ownership		X			X			X	
A.1.2	Food and beverage serving services	7 576	9 558	17 135				7 576	9 558	17 135
A.1.3	Railway passenger transport services									
A.1.4	Road passenger transport services	788	982	1 770				788	982	1 770
A.1.5	Air and water passenger transport services (**)	1 760	3 831	5 591	23 821		23 821	25 581	3 831	29 413
A.1.7	Transport equipment rental services									
A.1.8	Travel agencies and other reservation services				44 146		44 146	44 146		44 146
A.1.9	Cultural services									
A.1.10	Sports and recreational services									
A.2	Tourism Connected products	7 702	1 267	8 970	3 849		3 849	11 552	1 267	12 819
A.2.1	Wearing apparel and leather products	740	122	862				740	122	862
A.2.2	Food products	1 967	324	2 291				1 967	324	2 291
A.2.3	Beverages	319	52	371				319	52	371
A.2.4	Other goods and services	4 676	769	5 446	3 849		3 849	8 526	769	9 295
Total expenditure by domestic visitors		23 448	15 639	39 087	73 064		73 064	96 512	15 639	112 151

X does not apply

(*) The value of **A. Consumption products**, is net of the gross service charges paid to travel agencies, tour operators and other reservation services.

(**) Air passenger transport services have been merged with water passenger transport services due to confidentiality flags.

(***) Domestic tourism comprises the activities of a resident visitor within the country of reference either as part of a domestic trip or part of an outbound trip.

Source: NSO (2016).

Appendix Table 3. TSA Table 3: Outbound tourism expenditure by products and visitor classes

Computational Code	Products	Type of Visitor		Total Visitors (1.3) = (1.1) + (1.2)
		Tourists (overnight visitors) (1.1)	Excursionists (same-day visitors) (1.2)	
A	Consumption products (*)			
A.1	Tourism characteristic products	130 281		130 281
A.1.1	Accommodation services for visitors	49 860	X	49 860
A.1.1a	Accommodation services for visitors (other than 1b)	49 839	X	49 839
A.1.1b	Accommodation services associated with all types of vacation home ownership	22	X	22
A.1.2	Food and beverage serving services	50 307		50 307
A.1.3	Railway passenger transport services	12 460		12 460
A.1.4	Road passenger transport services	69		69
A.1.5	Air and water passenger transport services (**)	2 832		2 832
A.1.7	Transport equipment rental services	8 087		8 087
A.1.8	Travel agencies and other reservation services	141		141
A.1.9	Cultural services	373		373
A.1.10	Sports and recreational services	6 152		6 152
A.2	Tourism Connected products	59 755		59 755
A.2.1	Wearing apparel and leather products	1 845		1 845
A.2.2	Food products	8 962		8 962
A.2.3	Beverages	5 580		5 580
A.2.4	Other goods and services	43 369		43 369
Total expenditure by onbound visitors		190 037		190 037

X does not apply

(*) The value of **A. Consumption products**, is net of the gross service charges paid to travel agencies, tour operators and other reservation services.

(**) Air passenger transport services have been merged with water passenger transport services due to confidentiality flags.

Source: NSO (2016).

Appendix Table 4. TSA Table 4: Internal tourism consumption by products

Computational Code	Products	Visitors final consumption expenditure in cash			Other components of visitors' consumption	Internal tourism consumption
		Inbound tourism expenditure	Domestic tourism expenditure	Internal tourism consumption in cash		
		(1.3)	(2.9)	(1.3) + (2.9) = (4.1)	(4.2)	(4.3) = (4.1) + (4.2)
A	Consumption products (*)					
A.1	Tourism characteristic products	858,647.3	99,332.4	957,979.7	4,547.2	962,527.0
A.1.1	Accommodation services for visitors	231,599.2	6,868.7	238,467.9	4,547.2	243,015.1
A.1.1a	Accommodation services for visitors (other than 1b)	228,081.1	6,868.7	234,949.8		234,949.8
A.1.1b	Accommodation services associated with all types of vacation home ownership	3,518.1	-	3,518.1	4,547.2	8,065.3
A.1.2	Food and beverage serving services	258,341.5	17,134.8	275,476.2		275,476.2
A.1.3	Railway passenger transport services	-	-	-		0.0
A.1.4	Road passenger transport services	24,551.2	1,770.1	26,321.4		26,321.4
A.1.5	Air and water passenger transport services (**)	230,982.5	29,412.6	260,395.1		260,395.1
A.1.7	Transport equipment rental services	18,975.8	0.0	18,975.8		18,975.8
A.1.8	Travel agencies and other reservation services	36,151.1	44,146.3	80,297.4		80,297.4
A.1.9	Cultural services	12,500.5	0.0	12,500.5		12,500.5
A.1.10	Sports and recreational services	23,006.5	0.0	23,006.5		23,006.5
A.1.11	Language school services	22,539.0	X	22,539.0		22,539.0
A.2	Tourism Connected products	174,187.4	12,818.8	187,006.3		187,006.3
A.2.1	Wearing apparel and leather products	34,618.3	862.2	35,480.5		35,480.5
A.2.2	Food products	43,598.5	2,290.7	45,889.2		45,889.2
A.2.3	Beverages	25,980.1	371.1	26,351.2		26,351.2
A.2.4	Other goods and services	69,990.5	9,294.9	79,285.4		79,285.4
Total expenditure by domestic visitors		1,032,834.7	112,151.3	1,144,986.0	4,547.2	1,149,533.3

X does not apply

(*) The value of **A. Consumption products**, is net of the gross service charges paid to travel agencies, tour operators and other reservation services.

(**) Air passenger transport services have been merged with water passenger transport services due to confidentiality flags.

Source: NSO (2016).

Appendix Table 5. TSA Table 5: Production accounts of tourism industries and other industries.

Computational Code	Products	Industries						
		Accommodation for visitors	Accommodation for visitors (other than 1b)	Accommodation services associated with all types of vacation home ownership	Food and beverage serving	Railway passenger transport	Road passenger transport	Air and water passenger transport (**)
		(5.1)	(5.1a)	(5.1a)	(5.2)	(5.3)	(5.4)	(5.5)
A	Consumption products (*)							
A.1	Tourism characteristic products							
A.1.1	Accommodation services for visitors	329,592.6	245,418.1	84,174.5	2,242.3	0.0	175.1	600.0
A.1.1a	Accommodation services for visitors (other than 1b)	235,552.6	235,552.6	0.0	0.0	0.0	0.0	0.0
A.1.1b	Accommodation services associated with all types of vacation home ownership	94,039.9	9,865.4	84,174.5	2,242.3	0.0	175.1	600.0
A.1.2	Food and beverage serving services	78,632.2	78,632.2	0.0	289,605.2	0.0	0.0	184.8
A.1.3	Railway passenger transport services	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A.1.4	Road passenger transport services	26.6	26.6	0.0	0.0	0.0	45,482.2	0.0
A.1.5	Air and water passenger transport services (**)	0.0	0.0	0.0	0.0	0.0	0.0	258,715.5
A.1.7	Transport equipment rental services	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A.1.8	Travel agencies and other reservation services	1,223.5	1,223.5	0.0	0.0	0.0	0.0	0.0
A.1.9	Cultural services	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A.1.10	Sports and recreational services	13,292.9	13,292.9	0.0	0.0	0.0	0.0	0.0
A.1.11	Language school services	242.9	242.9	0.0	0.0	0.0	0.0	0.0
A.2	Tourism Connected products							
A.2.1	Retail trade margin on goods	6,126.4	6,126.4	0.0	1.0	0.0	0.0	2.3
A.2.2	Wearing apparel and leather products	27.4	25.6	1.7	0.0	0.0	0.4	0.8
A.2.3	Food products	0.0	0.0	0.0	252.6	0.0	0.1	0.0
A.2.4	Beverages	0.0	0.0	0.0	1.4	0.0	0.0	0.0
A.2.5	Other goods and services	3,763.4	3,545.9	217.5	13.3	0.0	2,710.0	12,783.9
B	Non-specific products (***)							
B.1.1	Other margins	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B.1.2	All other products	388,643.7	12,071.8	376,571.9	55,299.1	0.0	65,861.6	86,654.7
Total output (at basic prices)		821,571.6	360,606.0	460,965.6	347,415.0	0.0	114,229.4	358,942.0
Total intermediate consumption (at purchasers' prices)		313,009.2	199,117.4	113,891.8	236,464.9	0.0	65,320.1	301,537.7
Total gross value added		508,562.5	161,488.7	347,073.8	110,950.1	0.0	48,909.3	57,404.3

(*) The value of A. Consumption products, is net of the gross service charges paid to travel agencies, tour operators and other reservation services.

(**) Air passenger transport has been merged with water passenger transport due to confidentiality flags.

(***) Includes all other goods and services that circulate in the economy of reference.

Source: NSO (2016).

Appendix Table 5. TSA Table 5: Production accounts of tourism industries and other industries

Computational Code	Products	Transport and other equipment rental	Travel agencies and other reservation	Cultural	Sports and recreational	Education	Total	Other industries (***)	Output of domestic products (at basic prices) (5.15) = (5.13) + (5.14)
A	Consumption products (*)	(5.7)	(5.8)	(5.9)	(5.10)	(5.11)	(5.13)	(5.14)	(5.15) = (5.13) + (5.14)
A.1	Tourism characteristic products								
A.1.1	Accommodation services for visitors	230.1	304.8	123.0	48.1	4,658.0	337,974.1	88,157.8	426,131.8
A.1.1a	Accommodation services for visitors (other than 1b)	0.0	0.0	0.0	0.0	3,406.7	238,959.3	1.2	238,960.5
A.1.1b	Accommodation services associated with all types of vacation home ownership	230.1	304.8	123.0	48.1	1,251.4	99,014.7	88,156.6	187,171.3
A.1.2	Food and beverage serving services	0.0	547.9	5.1	0.0	0.0	368,975.3	1,350.0	370,325.3
A.1.3	Railway passenger transport services	0.0	0.0	0.0	0.0	0.0	-	-	-
A.1.4	Road passenger transport services	2,059.0	0.0	0.0	0.0	90.8	47,658.6	1,558.1	49,216.7
A.1.5	Air and water passenger transport services (**)	894.0	987.6	0.0	0.0	0.0	260,597.1	-	260,597.1
A.1.7	Transport equipment rental services	40,777.3	0.0	0.0	0.0	0.0	40,777.3	39.4	40,816.7
A.1.8	Travel agencies and other reservation services	0.0	120,488.6	0.0	0.0	108.7	121,800.8	630.5	122,431.3
A.1.9	Cultural services	0.0	0.0	18,409.5	0.0	0.0	18,409.5	105.3	18,514.8
A.1.10	Sports and recreational services	0.0	0.0	0.0	94,492.6	0.0	107,785.4	1,514.2	109,299.7
A.1.11	Language school services	0.0	283.4	0.0	0.0	0.0	22,386.9	291.8	22,678.7
A.2	Tourism Connected products								
A.2.1	Retail trade margin on goods	903.8	1,070.6	0.0	0.0	220.8	8,324.9	791,548.9	799,873.8
A.2.2	Wearing apparel and leather products	0.0	0.4	0.0	3.9	0.0	32.8	12,261.8	12,294.6
A.2.3	Food products	0.0	3.5	0.0	0.0	0.0	256.2	419,616.8	419,873.0
A.2.4	Beverages	0.0	11.0	0.0	0.0	0.0	12.4	75,722.0	75,734.4
A.2.5	Other goods and services	4,428.1	1,496.5	29.8	69.2	24,817.4	50,111.7	2,919,515.5	2,969,627.2
B	Non-specific products (***)								
B.1.1	Other margins	0.0	0.0	0.0	0.0	0.0	-	90,081.8	90,081.8
B.1.2	All other products	70,807.0	1,036.1	14,530.0	19,106.2	54,383.8	756,322.1	6,824,294.5	7,580,616.7
Total output (at basic prices)		120,099.4	126,210.4	33,097.4	113,720.0	106,140.3	2,141,425.3	11,226,688.5	13,368,113.8
Total intermediate consumption (at purchasers' prices)		75,764.9	81,983.9	11,077.1	60,723.5	36,599.3	1,182,480.6	6,394,878.8	7,577,359.4
Total gross value added		44,334.5	44,226.5	22,020.3	52,996.4	69,540.9	958,944.7	4,831,809.6	5,790,754.4

(*) The value of A. Consumption products, is net of the gross service charges paid to travel agencies, tour operators and other reservation services.

(**) Air passenger transport has been merged with water passenger transport due to confidentiality flags.

(***) Includes all other goods and services that circulate in the economy of reference.

Source: NSO (2016).