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A photograph of the interior of the Central Bank of Malta's vaults. The space is filled with rows of metal safes, illuminated by warm, golden light. A large, arched stone doorway is visible in the background. The ceiling is high and features a dramatic, colorful sky with orange and red hues, suggesting a sunset or sunrise. The overall atmosphere is one of security and historical significance.

# CENTRAL BANK OF MALTA POLICY NOTE



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## THE ECONOMIC EFFECTS OF THE COVID-19 TOURISM DOWNTURN

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Policy Note

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## Abstract

The COVID-19 pandemic has led to an unprecedented downturn in the global tourism industry. The Maltese tourism sector has also been severely hit by the crisis with total tourist expenditure in 2020 falling by 80% when compared to 2019. Given the unprecedented scale of the crisis and the considerable intersectoral linkages that characterise the industry, the downturn in the tourism industry is likely to have had far reaching effects in all sectors of the Maltese economy. The study uses a Leontief demand-driven model to estimate the overall effect that the COVID-19 related drop in tourism has had on Maltese economic activity. Results show that the tourism drop has contributed to a 7.8% fall in overall GVA, with economic activity in sectors covering accommodation, food services activities, transportation services, agriculture, forestry and fishing and wholesale and retail trade being affected the most. The tourism industry has contributed to falls in private consumption and total exports of 6.4% and 6.2% respectively.

**JEL classification:** Z31, C67, R15

**Keywords:** COVID-19, tourism, Input-Output, modelling

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## Executive Summary

The restrictive measures put forward by national authorities worldwide to control the spread of the COVID-19 pandemic, have had severe economic repercussions. These have varied widely across sectors with contact-intensive industries being hit the worst both through the implementation of social distancing measures as well as a decline in confidence and ability of individuals to consume. The tourism industry has been one of the worse-hit sectors both globally and in Malta. Estimates indicate that global tourism arrivals have dropped by 70% contributing to a fall of around 2% in global economic output. Malta's tourism sector has also suffered greatly driven by Covid-related restrictions, a general lack of confidence in international travelling and also by a reduction in flight connections.

This study uncovers that the contraction in the tourism industry has significantly affected sectors that are exceptionally directly exposed to tourism, such as the Accommodation and food services activities and the Transportation and storage activities sectors. However, given the substantial cross-sector interlinkages, other sectors such as the Agriculture, forestry and fishing, the Manufacturing and the Electricity, gas and steam sectors have also suffered considerable GVA losses from so called *indirect* effects. To quantify the latter effects, this study makes use of the Leontief demand-driven module of the Bank's sectoral extension to STREAM (Rapa, 2020). Estimates uncover considerable heterogeneity in the results which is dependent on the type of tourism expenditure under consideration. The fall in inbound tourism is estimated to have affected the Accommodation and food services activities the most, while the fall in outbound tourism has mainly impacted the Travel agency and tour operator services sector. On the other hand, the COVID-19 pandemic has exerted upward pressure on economic activity on the back of an increase in domestic tourism, which has increased demand of accommodation and food services and manufacture of food products and beverages.

On aggregate, taking in consideration both direct and indirect effects, the fall in the tourism industry has reduced overall GVA by 7.8%, most of which due to a contraction in inbound tourist arrivals. Excluding the effects of government intervention meant to reduce the impact of the Covid-19 pandemic on the labour market, this fall in GVA is likely to have reduced labour income by almost 8% and overall employment by -9.5%. Looking at results for final demand components, the contraction in the tourism industry has been reflected in drops in private consumption and exports. In total, the reduction in tourist expenditure is estimated to have reduced private consumption by 6% (mainly driven by drops in outbound tourism). On the other hand, inbound tourism is estimated to have contributed to a fall in total exports of more than 6%.

## 1. Which were the worse-hit sectors during the COVID-19 emergency?

Since the first cluster of cases of pneumonia was recorded in China at the end of 2019, the outbreak of the subsequently-named *COVID-19* coronavirus evolved rapidly. Following the World Health Organisation's (WHO) confirmation of evidence of human-to-human transmission of the disease and further concerns about its spread and severity, COVID-19 was classified as a pandemic on 11 March 2020 (World Health Organisation, 2020). The resulting health concerns led to the introduction of various mitigation measures by numerous countries around the world, including Malta. In fact, following the setting up of a coronavirus national response team in January 2020, inbound passenger screening commenced in late February 2020. The first case of COVID-19 in Malta was detected on 7 March 2020, and in the days and weeks that followed, further containment measures were implemented rapidly (Sant, 2021). Among others, these included restrictions on gatherings and public events, school closures, closure of non-essential retail shops and services, and the suspension of all inbound passenger flights, with some exceptions for repatriation flights.<sup>3</sup>

As a result of these developments, the outbreak of the pandemic and the subsequent measures that were put in place to mitigate its spread, led to a major hit on economies around the world, including Malta. In fact, following years of strong economic activity, Malta's real gross domestic product (GDP) in 2020 declined by 7.8%, relative to 2019 (Table 1). On the other hand, annual government expenditure increased by around 15% in 2020, largely reflecting the fiscal support measures implemented by the Maltese government to aid individuals, businesses and sectors impacted by the economic implications of the pandemic. Moreover, data suggests that the economic impact of the COVID-19 pandemic has been considerably diverse across different sectors, with contact-intensive industries being the worse hit. For instance, consumption expenditure data by COICOP shows noticeable year-on-year drops in spending at restaurant and hotels (-61.6%), recreation and culture (-31.5%), and transport (-24.6%). As argued in Rapa (2021), during the peak of the COVID-19 pandemic, these sectors were disproportionately hit by the necessary containment measures put in place as recommended by health authorities and also by the lack of confidence of individuals to interact with others in this environment. Conversely, as people were encouraged to limit their interaction with others and work from home as much as possible, expenditure on housing, water, electricity, gas and other fuels (5.0%) and communication (1.1%) rose above 2019 levels.

These patterns in household consumption expenditure and the nature of the pandemic itself suggest that while the COVID-19 pandemic had an overall adverse macroeconomic effect, the sectoral impact was likely to be rather heterogenous. Arguably the tourism industry, is considered to be one of the worse hit industries worldwide. Estimates indicate that in 2020 global tourism arrivals dropped by more than 70%, reducing global GDP by around 2% and putting more than 100 million employees at risk (UNWTO, 2021).

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<sup>3</sup> For a full timeline of the introduction of COVID-19 mitigation measures, see Sant (2021).

**Table 1: CHANGE IN THE GDP COMPONENTS BETWEEN 2019 AND 2020 - EXPENDITURE SIDE**

*Annual percentage change*

<b>Gross Domestic Product</b>	<b>-7.8</b>
<b>Total final consumption expenditure of households</b>	<b>-8.3</b>
Food and non-alcoholic beverages	-6
Alcoholic beverages, tobacco	-10.9
Clothing and footwear	-13.3
Housing, water, electricity, gas and other fuels	5
Furnishings, household equipment and routine household maintenance	-1
Health	-4.8
Transport	-24.6
Communication	1.1
Recreation and culture	-31.5
Education	-16.8
Restaurant and hotels	-61.6
Miscellaneous goods and services	-0.9
<b>Total final consumption expenditure of general government</b>	<b>15.2</b>
<b>Total gross fixed capital formation</b>	<b>-7.1</b>
<b>Exports of goods and services</b>	<b>-7</b>
<b>Imports of goods and services</b>	<b>-3.3</b>

Source: NSO.

Note: These calculations are based on changes in the GDP components between 2019 and 2020 (from the expenditure side) in chain-linked volumes.

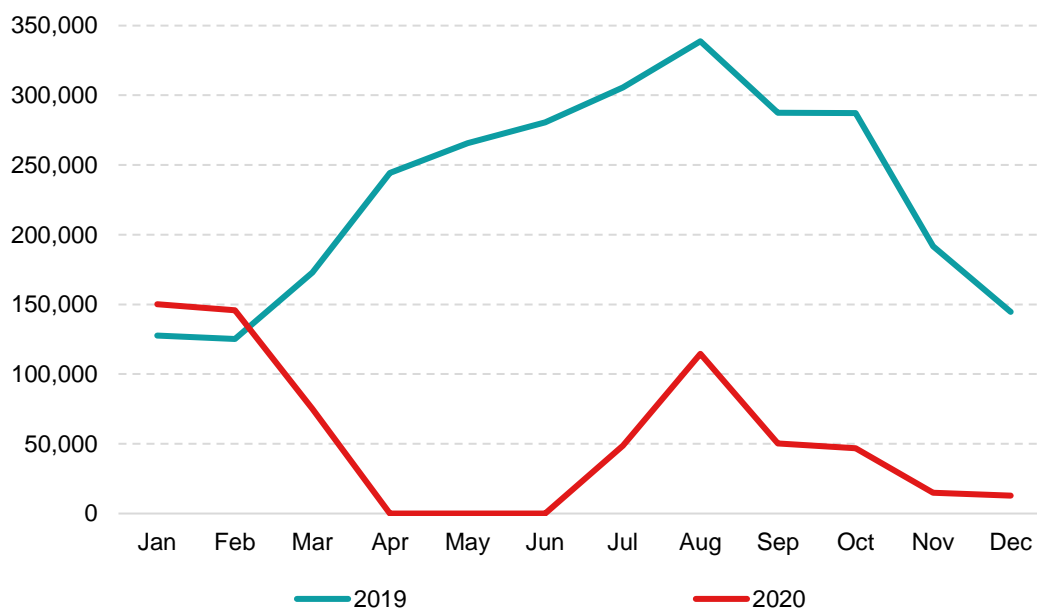
The Maltese tourism industry was the most heavily hit sector by the pandemic, and given its relative size and deep interindustry linkages, is likely to have led to important effects on the local economy (see chart 1). Following double-digit annual growth in monthly tourist numbers in the first two months of the year, inbound passenger numbers in March 2020 were down 57%, relative to the same month in 2019. Brought about by the suspension of inbound passenger flights, a total shutdown in tourism followed between April and June. Despite the reopening of flights in July and in the following months, inbound tourism numbers remained significantly below those observed in 2019, mainly due to a significant drop in the number of air connections with other hubs around the world (Sant, 2020) and the emergence of new COVID-19 waves in Malta's main tourism markets. Indeed, in annual terms, tourist arrivals in Malta declined by 76% from 2.8 million in 2019 to around 660,000 in 2020, while total tourist expenditure fell by almost 80% from €2.2 billion in 2019 to €455 million in 2020.

On the other hand, domestic tourism (defined as Maltese residents that travel to Gozo and Comino region for leisure purposes) increased by almost 40% helping to marginally compensate for the effects of the fall in inbound tourism. The increase in domestic tourism happened on the back of an 85% drop in outbound tourist departures, suggesting that during 2020, driven by a general lack of confidence in international travelling and by the mitigation measures put forward by local and international authorities, Maltese holidaymakers have generally preferred to travel to domestic destinations in lieu of foreign ones.

The economic effects of the downturn in the Maltese tourism industry are likely to have been significant, with the sectors that are directly reliant on inbound tourism likely to have been affected the most. However, given the unprecedented scale of the crisis that has hit the global tourism market as well as the considerable intersectoral linkages that characterise the industry, it is likely that the downturn in the tourism industry had far reaching effects in other sectors of the economy. Given the considerable contribution played by this industry in the Maltese economy – for instance, Cassar et al. (2017) estimate that this industry contributes directly and indirectly to around 17% of Malta’s total Gross Value Added – the contraction in the tourism market due to the COVID-19 emergency is also likely to have had considerable effects on the macroeconomy.

**Chart 1: OUTBOUND TOURIST ARRIVALS**

*Number of tourists*



*Source: Authors' calculations*

This study aims to quantify the sectoral and macroeconomic effects that this unprecedented fall in tourism had on the Maltese economy during 2020. As already evident from the above discussion, the effects of the fall in tourism expenditure are likely to have been very sector-dependent while at the same time giving rise to significant indirect effects in view of the considerable interlinkages this industry has with the rest of the economy. In this light, this study makes use of a Leontief demand module found within the Input-Output based framework put forward in Rapa (2020), which was updated with the latest symmetric input-output table (SIOT) available for the year 2015. This simulation framework is exceptionally well-suited to capture the sector-dependent direct and indirect economic effects of the contraction in the tourism industry following the COVID-19 crisis.



## 2. How does the sectoral composition of tourism look like?

The calibration of this scenario analysis requires the estimation of the direct exposures each sector has to the tourism industry. Table 2 shows the proportion of sectoral output that is directly supplied to fulfil tourism related expenditure, sourced from the Tourism satellite Accounts (TSA) of 2010. These figures show that the direct sectoral exposure to tourism expenditure is quite heterogeneous across local sectors. As expected, the three sectors with the highest direct exposure to tourism expenditure are the Travel agencies and other reservation activities, Transport and Accommodation and food services sectors. Important exposures can also be found in the Education sector (most likely driven by the contribution of language schools).

**Table 2: PROPORTION OF SECTORAL OUTPUT DIRECTLY ABSORBED BY THE TOURISM INDUSTRY**

*Percent of sectoral output*

	Inbound tourism	Domestic tourism (Domestic trips) <sup>1</sup>	Domestic tourism (Outbound trips) <sup>2</sup>	Total Tourism
Travel agencies and other reservation activities	24.0	0.0	28.1	52.1
Land transport and transport via pipelines,...	45.3	1.3	4.2	50.8
Accommodation and food services activities	42.7	1.9	0.1	45.2
Creative, arts and entertainment activities	32.9	0.0	0.0	32.9
Education	23.4	0.1	0.1	23.6
Rental and leasing activities	15.0	0.1	0.1	15.1
Sports activities and amusement and recreation activities	13.1	0.0	0.0	13.1
Other	0.9	0.0	0.0	0.9

*Source: Authors' calculations based on Tourism Satellite Accounts for 2010*

<sup>1</sup> Captures expenditure of Maltese residents travelling to Gozo/Comino for leisure

<sup>2</sup> Expenditure in Malta done for the purpose of undertaking an outbound trip

Further heterogeneity is evident when decomposing tourism demand into inbound tourism, domestic tourism for the purposes of domestic trips<sup>4</sup> and domestic tourism for the purposes of outbound trips.<sup>5</sup> Since tourism expenditure in Malta is predominantly spent by overnight inbound tourists, the vast majority of the direct exposure for most sectors is driven by final demand spent by inbound tourism. This is not the case for the exposure of the Travel agencies and other reservation activities sector which is more exposed to outbound tourism expenditure. Indeed, in this case, more than half of the sector's output is directly demanded by the tourism industry. Of this, slightly less than half (24 percentage points) is exposed to the inbound tourism industry and the rest (28 percentage points) is exposed to outbound

<sup>4</sup> 'Domestic tourism for the purposes of domestic trips' refers to instances when residents of Malta travel to Gozo for leisure. In the rest of this report, this type of tourism will be referred to as "domestic tourism".

<sup>5</sup> 'Domestic tourism for the purposes of outbound trips' refers to expenditure in Malta that is solely due, or for the purposes of, undertaking an outbound trip. In the rest of this report, this type of tourism will be referred to as "outbound tourism".

tourism. Considerable exposures to domestic (both domestic trips and outbound trips) are also registered by the Transport sector.

Against this backdrop, the calibration of the shocks needs to reflect the heterogeneity in the cross-sectoral exposures to the three different types of tourism expenditure which have been impacted to varying degrees by the pandemic emergency. The calibration of the tourism shocks is further complicated by the fact that the latest TSA for the Maltese economy have been published in 2010. TSAs are particularly useful as they provide information on the sectoral allocation of tourism output while also disaggregating across the three different types of tourism expenditure that are being taken in consideration in this study. However, the lack of more up-to-date TSA requires us to devise a calibration process that is less sensitive to compositional effects brought about by any large changes in the sectors' relative sizes.

This problem is most evident when looking at the proportion of total supply of the Cultural activities sector (comprising the Creative, arts and entertainment activities – NACE 90, Libraries, archives, museums and other cultural activities – NACE 91 and the Gambling and betting activities – NACE 92) that is directly exposed to tourism expenditure. Since these figures are based on TSA published in 2010, they do not take into account the considerable expansion of the Gaming and betting industry (NACE 92) in Malta. In this respect, the current exposure to tourism expenditure of Cultural activities sector is expected to be considerably lower than the one shown in the TSA for 2010. This is due to the considerable expansion of the Gambling and betting activities sector in Malta which is not expected to be directly exposed to tourism expenditure.

Thus, while still using TSA 2010 data, the calibration of the simulation analysis needs to take in consideration the profound structural changes that have significantly changed the relative size of some sectors within the Maltese economy. To this end the calibration process used in this study proceeds in three steps. First, we estimate the percentage change in inbound, outbound and domestic tourism expenditure that is attributable to the Covid-19 emergency. This is estimated as the percentage difference between the actual tourist expenditure in 2020 and the tourist expenditure in a counterfactual forecast estimated by extrapolating the pre-COVID trends in tourism expenditure in Malta. Based on this definition, and using relevant official statistics published by the NSO, the shock to inbound tourism expenditure in 2020 is estimated at -80.6%. On the other hand, the shock to the expenditure of domestic tourists for the purposes of domestic trips is calculated at +43.9%, largely reflecting the substantial increase in the number of Maltese residents visiting Gozo for leisure purposes in 2020. As less Maltese residents travelled abroad during the year, the expenditure of domestic tourists for the purposes of outbound trips in 2020 registered a significant hit of -78.6%, relative to the expenditure that would have likely been recorded had previous trends been maintained in 2020.

Second, we find the level of final demand changes to all three types of tourism normalised to 2015 € million levels, a step necessary to make use of the simulation framework which is based on a set of IO tables covering 2015. This is done in two stages. First, we use the proportion of output in the Maltese economy that is directly used by the overall tourism industry as per TSA 2010 and apply this proportion

to the total final demand in the Input Output database for 2015. Second, we find the aggregate final demand shock for each tourism type by using information contained within the Tourism Satellite Accounts (TSA) 2010 tables. In particular, we use information on the proportion of total tourism output supplied for the purposes of inbound tourism, domestic trips and domestic expenditure for outbound trips, to disaggregate the shock to total tourism final demand to different tourism types.<sup>6</sup>

**Table 3: SHARE OF INTERNAL TOURISM OUTPUT USED IN EACH SECTOR**

*Percent of tourism output*

	Inbound tourism	Domestic tourism (Domestic trips) <sup>1</sup>	Domestic tourism (Outbound trips) <sup>2</sup>	Total Tourism
Accommodation and food services activities	52.3	64.4	2.5	49.6
Land transport and transport via pipelines,...	25.4	20.1	32.8	25.6
Travel agencies and other reservation activities	3.6	0.1	58.4	7.0
Retail trade, except of motor vehicles and motorcycles	3.8	4.4	3.7	3.8
Manufacture of food products, beverages and tobacco products	3.9	4.7	0.4	3.7
Education	3.0	0.3	0.1	2.7
Rental and leasing activities	2.1	0.3	0.1	1.9
Sports activities and amusement and recreation activities	1.8	0.0	0.0	1.6
Wholesale trade, except of motor vehicles and motor cycles	1.5	3.1	1.1	1.5
Creative, arts and entertainment activities	1.3	0.0	0.0	1.2
Publishing activities, motion picture, video...	0.4	0.8	0.3	0.4
Manufacture of textiles, wearing apparel and leather products	0.2	0.2	0.0	0.2
Real estate activities	0.2	0.4	0.1	0.2
Other professional, scientific and technical activities...	0.2	0.4	0.1	0.2
Crop and animal production, hunting and related service...	0.1	0.2	0.1	0.1
Manufacture of paper and paper products, printing...	0.1	0.2	0.1	0.1
Other personal service activities	0.1	0.1	0.0	0.1
Manufacture of computer, electronic and optical products...	0.1	0.1	0.0	0.1
Legal and accounting activities; activities of head offices...	0.0	0.1	0.0	0.0
Activities auxiliary to financial services and insurance activities	0.0	0.1	0.0	0.0
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

*Source: Authors' calculations based on Tourism Satellite Accounts for 2010*

<sup>1</sup> Captures expenditure of Maltese residents travelling to Gozo/Comino for leisure

<sup>2</sup> Expenditure in Malta done for the purpose of undertaking an outbound trip

Finally, the shocks to each sector are estimated by decomposing the overall change in aggregate final demand (estimated in 2015 prices) for each tourism type into different sectors in line with the sectoral tourism output decomposition, derived from data contained within the TSA tables. These are illustrated in Table 3 and show the proportion of tourism output by type that is supplied by each sector. It is important to note that these proportions capture a completely different sectoral concept than the ones shown in Table 2. The proportions of table 2 are useful in identifying which sectors had the highest

<sup>6</sup> The Appendix provides a detailed exposition of the estimations required for this step in the calibration process.

direct exposure to the tourism industry. On the other hand, the estimates of table 3 show the extent to which the tourism industry relies on different sectors in order to produce its output.<sup>7</sup>

Focusing on overall tourism expenditure in Malta, this data show that the tourism industry is particularly dependent on a number of sectors, mainly Accommodation and food services activities; Land Transport and transport via pipelines, etc.; Travel agencies and other reservation activities; Retail trade, except of motor vehicles and motorcycles and Manufacture of food products, beverages and tobacco products – which by 2010 directly supplied around 90% of tourism-related output. The rest of direct tourism output is supplied by other industries in the form of tourism related products and services and other non-tourism related products.<sup>8</sup>

Looking more closely at the sectoral output decomposition by type of tourism expenditure, we note that there is an element of heterogeneity in the role played by a number of sectors in the supply of direct output to the tourism industry. For instance, more than half of the goods and services used for both inbound tourism and domestic trips are supplied by the Accommodation and food services activities sector. As expected, this proportion is significantly lower, reaching just under 3% for domestic expenditure done for the purpose of undertaking outbound trips. On the other hand, the latter type of tourism is very reliant on output of the Travel agencies and other reservation activities sector, which provides around 60% of the domestic expenditure component of this type of tourism. Land transport and transport via pipelines has more even contributions across the three types of tourism expenditure, ranging between 20% for domestic trips and 33% of the domestic expenditure component of outbound trips.

In general, domestic tourism expenditure is relatively more concentrated across two specific sectors, Accommodation and food services activities and Land transport and transport via pipelines. Together these two sectors contribute to almost 90% of the domestic tourism expenditure targeted at domestic trips. On the other hand, inbound tourism expenditure exhibits the largest direct cross-sectoral linkages out of the three tourism types considered.

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<sup>7</sup> This methodology is relatively robust to compositional effects brought about by large changes in the relative size of sectors and subsectors due to factors other than tourism. This is because the sectoral shock decomposition does not rely on the proportion of each sector's output which is directly demanded by tourism expenditure. Rather, the decomposition is derived by the proportion of tourism output that is supplied by different sectors. The latter method has the advantage of being robust to changes in sectoral size which are driven by industries other than tourism. However, it relies on three assumptions. First, that there is a proportional relationship between sectoral final demand and output (an assumption which characterizes the Leontief model at the heart of the Input-Output framework). Second, that the technology with which the Maltese tourism product is produced has remained constant between 2010 and 2015 (an assumption which is nonetheless at the heart of the IO framework). Finally, this process assumes that the size of the tourism industry relative to that of the overall economy has remained constant between 2010 and 2015, an assumption which is corroborated by the data (tourism expenditure as percent of GDP has remained fairly constant between 2010 and 2015 at around 17%).

<sup>8</sup> For the purpose of our calibration process, the former type of output, which amount to around 7% of total tourism output, was assumed to take place in the sector closest to the respective consumption purpose. In the absence of explicit information about the suppliers of non-tourism related products, this expenditure is proportionately apportioned among sectors that rank in the top 20 industries for tourism expenditure, excluding those explicitly listed in the TSAs tables.

### 3. How have the changes in tourism patterns affected the Maltese economy and its sectors?

In view of the important contribution of the tourism sector to the Maltese economy, the changes in tourism patterns observed following the outbreak of the COVID-19 pandemic in 2020 were bound to have substantial economic implications. In this light, this section studies the effects of the shock experienced by the tourism sector on aggregate final demand components and GVA. Moreover, as certain sectors are disproportionately dependent on the tourism sector, the sectoral economic implications of the changes in tourism patterns are also explored and quantified.

Simulations are performed within an IO framework utilising a Leontief demand-driven module. Thus, simulations are capable of capturing both direct and indirect effects of tourism shocks. This implies that when the shock (in the form of a fall in tourism expenditure or final demand) hits the sectors directly supplying output to the tourism industry, the fall in sector-specific output and GVA will not be limited to the initial or direct falls but would also extend to drops in the production of output (and thus value added) of other sectors which supply intermediate inputs.<sup>9</sup>

Results in table 4 show the sectoral effects of the drops in tourism expenditure in terms of Gross Value Added. Results show that the contraction in the tourism industry has led to substantial declines in the GVA of Accommodation and food service activities (-48.4%), Transportation and storage (-25.7%), Administrative and support services activities (-12.8%), Agriculture, forestry and fishing (-12.5%) and Wholesale and retail trade sectors (-8.7%). Moreover, the GVA of sectors covering manufacturing activities as well as the production of electricity and water treatment and supply has also been substantially impacted by the drop in tourism expenditure. As expected, the overall results show the strongest losses in GVA for sectors which have been identified as being exceptionally exposed to the tourism industry. More precisely, the sectors worse hit by the tourism shocks due to COVID-19 are those with the highest exposures to the worse hit tourism types, that is inbound and outbound tourism. These include sectors such as the Accommodation and food services activities and the Transport and storage sectors, which have a significant part of their final demand which is absorbed by inbound or outbound tourism expenditure (see table 2 above). On the other hand, exposures to the domestic tourism industry have served as a mitigating factor that has somehow reduced the sectoral falls following the collapse of the international tourism market.

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<sup>9</sup> The model also allows to estimate induced effects which are defined as the income effects pertaining to the falls in labour income driven by a reduction in labour input demand which follows the direct and indirect falls in sectoral output. For the purpose of this study, results are based on direct and indirect effects only and exclude induced effects. The IO model used in this study is a static framework and is therefore unable to provide information about the timing of the effects predicted. Since the majority of the effects of the tourism shock are expected to be temporary and especially since the timeframes analysed are rather short (we are limiting our analysis to a one year period only), it is rather improbable that induced effects would have started to affect results in a meaningful way.

**Table 4: SECTORAL RESULTS FOLLOWING COVID-19 TOURISM SHOCK***Percentage deviation from sectoral GVA baseline forecasts*

	Inbound tourism	Domestic tourism (domestic trips) <sup>1</sup>	Domestic tourism (Outbound trips) <sup>2</sup>	Total tourism
Agriculture, forestry and fishing	-12.5	0.3	-0.3	-12.5
Mining, quarrying and construction	-3.8	0.1	-0.2	-3.9
Manufacturing	-7.1	0.2	-0.2	-7.1
Electricity, gas, steam ...	-7.0	0.2	-0.3	-7.2
Wholesale and retail trade ...	-8.5	0.2	-0.4	-8.7
Transportation and storage	-23.8	0.4	-2.3	-25.7
Accommodation, food services activities and travel ...	-48.6	1.2	-1.0	-48.4
Information and communication	-1.6	0.0	-0.1	-1.6
Financial and insurance activities	-0.9	0.0	-0.1	-1.0
Real estate activities	-3.8	0.1	-0.1	-3.9
Professional, scientific and technical activities	-3.6	0.1	-0.2	-3.7
Administrative and support services activities	-9.3	0.1	-3.5	-12.8
Public administration and defence ...	-0.6	0.0	0.0	-0.6
Education	-5.4	0.0	-0.1	-5.4
Human health and social work activities	0.0	0.0	0.0	0.0
Arts, entertainment and recreation	-1.5	0.0	0.0	-1.5
Other service activities	-5.3	0.1	-0.2	-5.5
Households as employers ...	0.0	0.0	0.0	0.0

*Source: Authors' calculations*<sup>1</sup> Captures expenditure of Maltese residents travelling to Gozo/Comino for leisure<sup>2</sup> Expenditure in Malta done for the purpose of undertaking an outbound trip

As shown by Chart 2, which decomposes results for total tourism into direct and indirect effects, the sectors affected by a contraction in tourism expenditure are not limited to those which are directly exposed to the industry. This is most evident for the Agriculture, forestry and fishing sector whose GVA is estimated to have fallen by almost 13% when compared to the baseline projections for 2021, almost entirely on the basis of indirect effects. This is especially due to the fact that 40% of the interindustry supply of this sector is demanded by the Accommodation and food services activities, which on the other hand is the sector which is most directly exposed to the tourism industry. Similar arguments apply for the Electricity, gas, steam and air conditioning supply and waste collection services, the Administrative and support services activities and the Manufacturing sectors, all of which are indirectly exposed to the tourism industry, mainly through the supply of intermediate production to the Transport and storage and Accommodation and food services activities sectors.

**Chart 2: Decomposition of sectoral effects**

Percentage deviation from sectoral GVA



In order to better interpret the results of our simulations we disaggregate the results further into 40 NACE categories. These results are summarized in Table 5, which illustrates the 20 sectors (consistent with this disaggregation) which were worse affected by the tourism shocks that have taken place during 2020. Under this disaggregation, Travel agencies, tour operators and other reservation activities emerge as the sector which has suffered the most during the pandemic, mainly due to its high exposure to inbound and outbound tourism markets. This (together with substantial falls in the GVA of the Rental and leasing activities) is behind substantial falls in the GVA of the Administrative and support services activities reported in table 4. This is followed by Accommodation and food services activities and Sports activities and amusement and recreational activities with GVA drops of almost 50% and 30% respectively, with both results driven by the direct exposure of these sectors to the outbound tourism market. The considerably strong effects estimated on the Manufacturing sector (see table 4) are mainly driven by the sub-sector covering the manufacture of food products and beverages whose GVA is estimated to have fallen by 26% when compared to the projected baseline.

### Aggregate results

Table 6 shows the annual economy-wide percentage drops in baseline GVA, employment and labour income together with the respective percentage drops in aggregate final demand components.

**Table 5: Top 20 affected sectors following tourism shock***Percentage deviation from baseline forecasts*

	Inbound tourism	Domestic tourism (Domestic trips) <sup>1</sup>	Domestic tourism (Outbound trips) <sup>2</sup>	Total tourism
Travel agency, tour operator ...	-39.4	0.0	-44.1	-83.5
Accommodation and food service activities	-48.6	1.2	-1.0	-48.4
Sports activities and amusement ...	-28.8	0.0	-0.2	-28.9
Manufacture of food products, beverages ...	-26.0	0.6	-0.4	-25.8
Land transport and transport via pipelines, ...	-23.8	0.4	-2.3	-25.7
Crop and animal production, hunting ...	-17.2	0.4	-0.4	-17.1
Rental and leasing activities	-11.5	0.1	-0.3	-11.8
Wholesale trade, except of motor vehicles ...	-11.7	0.3	-0.4	-11.8
Electricity, gas, steam and air conditioning ...	-7.0	0.2	-0.3	-7.2
Other personal service activities	-6.7	0.2	-0.2	-6.8
Employment activities	-6.5	0.1	-0.2	-6.6
Retail trade, except of motor vehicles ...	-6.2	0.1	-0.4	-6.5
Manufacture of textiles, wearing apparel ...	-6.3	0.1	-0.1	-6.3
Repair and installation of machinery ...	-5.7	0.1	-0.4	-6.1
Repair of computers and personal ...	-5.7	0.1	-0.4	-6.0
Education	-5.4	0.0	-0.1	-5.4
Manufacture of fabricated metal products, ...	-5.0	0.1	-0.3	-5.2
Manufacture of wood and of products ...	-4.7	0.1	-0.2	-4.9
Architectural and engineering activities; ...	-4.4	0.1	-0.3	-4.6
Legal and accounting activities; ...	-4.2	0.1	-0.2	-4.3

*Source: Authors' calculations*<sup>1</sup> Captures expenditure of Maltese residents travelling to Gozo/Comino for leisure<sup>2</sup> Expenditure in Malta done for the purpose of undertaking an outbound trip

The contraction of the tourism industry caused by the Covid-19 pandemic has led to a drop in aggregate GVA of almost 7.8%, mostly driven by a contraction in inbound tourism expenditure. In view of the small contribution that domestic expenditure for the purposes of outbound trips has on the domestic economy, the fall in the outbound tourism industry has led to subdued negative effects on the overall economy estimated at 0.5% of baseline GVA. On the other hand, the rise in expenditure incurred on domestic trips is estimated to have led to a marginal rise in the aggregate economic activity in Malta of around 0.2%. Thus, on aggregate, the negative effects attributable to the drop in outbound tourism expenditure have only been partially outweighed by an increase in domestic tourism expenditure, implying that the combined effects of the Covid emergency on the domestic tourism market – defined as the sum of outbound and domestic trips – on the local economy is estimated to have been slightly negative. The main contributors to these aggregate results are shown in Table 7. As expected, given the size of the sectors and the extent of the fall in their GVA, the Accommodation and food services activities, the Land transport and transport via pipelines and the Wholesale trade, except of motor vehicles are main



contributors behind the aggregate falls in GVA. Indeed, together these three sectors contribute to more than half of the overall drop in aggregate GVA.

**Table 6: Aggregate results**

*Percentage deviation from baseline forecasts*

	Inbound tourism	Domestic tourism (Domestic trips) <sup>1</sup>	Domestic tourism (Outbound trips) <sup>2</sup>	Total tourism
Total GVA	-7.5	0.1	-0.5	-7.8
Total labour income	-7.4	0.1	-0.5	-7.8
Total employment	-9.1	0.2	-0.6	-9.5
<b>Aggregate Final Demand</b>				
Private Consumption	-2.9	0.4	-3.9	-6.4
Government Cons.	-0.6	0.0	0.0	-0.6
Private Investment	-2.9	0.1	-0.1	-3.0
Exports	-6.1	0.0	-0.1	-6.2
Imports	-2.9	0.1	-1.1	-4.0

*Source: Authors' calculations*

<sup>1</sup> Captures expenditure of Maltese residents travelling to Gozo/Comino for leisure

<sup>2</sup> Expenditure in Malta done for the purpose of undertaking an outbound trip

The contraction in labour income (defined as the aggregate compensation of employees in the Maltese economy) due to the negative tourism shocks hitting the economy during 2020, is estimated around 7.8%. The percentage of total employment estimated to have been affected by the contraction in the tourism market stands at around 9.5%. The potential impact on the labour market is considerably stronger than that on GVA and labour income, mainly due to the fact that the main sectors hit by the tourism shock in 2020 are considerably labour intensive, implying that for a given drop in their output, the fall in labour inputs required is higher than that of the average economy. Moreover, it is important to note that these figures do not show the proportion of employees that have been made redundant during the COVID crisis because of the tourism slowdown, but rather illustrate the total amount of employees that would have potentially faced either redundancy or a reduction in working hours with lack of any government support aimed at dampening the effect that the COVID crisis would have had on the labour market. A similar argument applies for the losses in labour income discussed above; with figures showing the potential falls in employment income excluding the effects of government measures such as the COVID wage subsidy which has undoubtedly reduced these impacts.

**Table 7: Top 10 contributing sectors to aggregate GVA fall by tourism type***Percentage point contributions*

	<b>Inbound tourism</b>	<b>Domestic tourism (domestic trips)<sup>1</sup></b>	<b>Domestic tourism (Outbound trips)<sup>2</sup></b>	<b>Total tourism</b>
Accommodation and food service activities	-2.45	0.06	-0.05	-2.44
Land transport and transport via pipelines, ...	-1.35	0.02	-0.13	-1.46
Wholesale trade, except of motor vehicles ...	-0.61	0.02	-0.02	-0.62
Manufacture of food products, beverages ...	-0.45	0.01	-0.01	-0.44
Travel agency, tour operator ...	-0.16	0.00	-0.18	-0.34
Retail trade, except of motor vehicles ...	-0.31	0.01	-0.02	-0.32
Education	-0.30	0.00	0.00	-0.30
Real estate activities	-0.22	0.01	-0.01	-0.22
Rental and leasing activities	-0.19	0.00	-0.01	-0.20
Legal and accounting activities; ...	-0.18	0.00	-0.01	-0.19

*Percentage deviation from baseline forecasts*<sup>1</sup> Captures expenditure of Maltese residents travelling to Gozo/Comino for leisure<sup>2</sup> Expenditure in Malta done for the purpose of undertaking an outbound trip

With regards to the results pertaining to the aggregate final demand categories, these were estimated using a modified version of the final demand module found in Rapa (2020). In view of the type of shocks performed in this study, the modifications ensure an adequate treatment of inbound, domestic and outbound tourism expenditure by explicitly taking in consideration the National Accounts definition of private consumption and its relation with the domestic concept of private consumption in the spirit of Ellul (2021).<sup>10</sup> Moreover, in view of the considerable heterogeneity present in sectoral results, the response of aggregate imports are estimated using sector-specific import intensities which also depend on the tourism type. This differs from the methods described in Rapa (2020) which utilise final-demand specific import intensities.

Looking at results for final demand expenditure components, the contraction in the tourism industry has largely been reflected in drops in private consumption and exports, which in turn have been partially outweighed by a fall in imports. The drop in overall tourism expenditure is estimated to have dragged down private consumption expenditure by more than 6%, mainly driven by drops in outbound tourism, that is, by expenditure done in relation to Maltese residents' holidays abroad. This however, had limited effects on Malta's GDP since most of the drop in tourism expenditure relates to expenditure which would have been undertaken by Maltese residents abroad, and that therefore would have been completely outweighed by drops in imports. Indeed, the effects on GDP of outbound tourism expenditure are limited

<sup>10</sup> The treatment of tourism expenditure and private consumption follows the analysis of Ellul (2021). Thus, tourism expenditure of non-residents (defined in this study as inbound tourism) is only allowed to directly affect exports of goods and services. On the other hand, outbound tourism is allowed to directly affect private consumption as long as it is fully accounted for in total imports.

to the expenditure done in Malta for the purposes of undertaking an outbound trip. The contraction in expenditure done in conjunction with domestic trips have, on the other hand, exerted some upward pressure on private consumption. This, together with a low-degree of import intensity inherent in this type of expenditure, has translated to some upward pressure on Malta's GDP. Finally, the contraction in the inbound tourism market had the largest effects on Malta's exports, contributing to a drop of almost 6% when compared to the pre-COVID trend. Despite not being affected directly by the fall in inbound tourism, private consumption (defined as per National accounts) has seen some downward indirect pressures, mainly driven by the extensive interindustry linkages of the inbound tourism market.

#### *Limitations of the study*

These results should be interpreted within the context of an ever-transforming tourism industry and a lack of more updated Tourism Satellite Accounts. In the last decade, the Maltese tourism industry has undergone significant transformations characterised by a steep increase in the demand for private accommodation and a considerable rise in the proportion of tourists that choose low-cost airlines to travel to the islands. As outlined above, the calibration process was designed to limit as much as possible the effects structural shifts in the Maltese economy might have on the validity of the calibrations of the scenario analysis undertaken in this study. Nonetheless, the calibration of shocks is still sensitive to changes in the sectoral composition of the tourism industry. More precisely, the calibration process rests on the assumption that the proportion of total tourism output supplied by each sector of the Maltese economy has remained constant in the last decade. In this light, changes in the sectoral composition of tourism expenditure brought about by the recent structural shifts within the tourism industry would have important implications on the results of this study.

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## Appendix 1

**Table A.1: Calibration of shocks**

*deviations in percentages unless otherwise indicated*

	Code	Inbound tourism	Domestic tourism (domestic trips) <sup>1</sup>	Domestic tourism (Outbound trips) <sup>2</sup>	Total tourism
<b>Shock in % terms</b> <sup>1</sup>	<b>2.1</b>	-80.6	43.9	-78.6	
<b>Size of final demand shock</b>	<b>2.2</b>				
Share of output related to tourism <sup>2</sup>	2.2.1				7.1
Final demand in 2015 (€ mill.) <sup>3</sup>	2.2.2				€20,137
<b>Final demand exposed to tourism shock (€ mill. of 2015)</b>	<b>2.2 = (2.2.1*2.2.2)</b>				<b>€1,419</b>
<b>Disaggregation of final demand shock</b>	<b>2.3</b>				
Share of tourism-related supply consumed by type of tourist	2.3.1	89.8	3.3	6.5	100
Final demand exposed to tourism shock (€ mill. of 2015)	2.2	€1,419	€1,419	€1,419	€1,419
<b>Share of tourism-related final demand consumed by type of tourist (€ mill. of 2015)</b>	<b>2.3 = (2.3.1*2.2)</b>	<b>€1,274</b>	<b>€47</b>	<b>€92</b>	<b>€1,419</b>
<b>Total Tourism shock (€ mill. of 2015)</b>	<b>2.4 = (2.1*2.3)</b>	<b>#####</b>	<b>€2,051</b>	<b>-€7,220</b>	

<sup>1</sup> Source: Official statistics about inbound tourism, outbound tourism and regional tourism expenditure published by the NSO.

<sup>2</sup> Source: Tourism Satellite Accounts for 2010.

<sup>3</sup> Source: Symmetric Input-Output Tables for 2015.