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Estimating the global economic impacts of international tourism

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This paper provides insights on the economic impacts of international tourism by using measures of expenditure by non-residents estimated within the framework of OECD's Inter-Country Input-Output (ICIO) tables. Expenditure by non-residents represent a significant revenue source for tourism-related industries in many countries, with spillover effects into other industries through inter-sectoral linkages. The ICIO framework captures the direct and indirect value added generated from international tourism that are not directly measurable in national statistics. This analysis reveals that while most of the value added is generated by domestic industries directly serving tourists (such as hotels and restaurants), roughly 28% of value added from tourism activities is generated indirectly (upstream) in the domestic economy and around 17% is generated abroad. This analysis demonstrates the importance of domestic and global value chains in the production of goods and services consumed by non-residents.

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Executive summary

Today, products produced in one country can easily be exported to other countries where they are consumed by households (residents and/or non-residents) or firms as intermediate inputs or investment. Products can also be exported without crossing borders, this occurs when the transaction takes place between resident and non-resident entities within a single country. When products are sold by residents to non-residents within the seller's domestic territory, these transactions are primarily associated with international tourism.

Expenditure by non-residents represents an important source of revenue for many countries. In addition to the direct value-added generated by non-resident expenditure, there are also spillover effects to other industries within and across countries through inter-sectoral linkages. While expenditures by inbound tourists are commonly concentrated among hospitality, recreation and transport industries, these tourism services rely on inputs from other upstream industries, such as agriculture, to generate their output. As such, the economic impact of inbound tourism extends beyond the tourism sector. Furthermore, understanding the indirect effects of expenditure by non-resident households requires an exploration of all the upstream interlinkages each sector has with both domestic and foreign industries. Therefore, estimating the economic impact of international tourism on global supply chains requires a model that captures not only the domestic inter-sectoral linkages, but also cross-border intermediate transactions across countries and industries.

This paper updates previous work, see OECD (2019[1]) and Alsamawi, Fritz and Yamano (2020[2]), that develops methodologies to estimate the origin of value added embodied in household final expenditure by non-residents that is not directly measurable in conventional statistics produced by national agencies. It extends the scope by incorporating additional countries and a longer time series, and introduces a comprehensive set of new indicators. These estimations are based on the information contained in OECD's Inter-Country Input-Output (ICIO) tables coupled with information on consumption by non-resident households by sector and country where consumption takes place, which are combined to measure domestic and foreign value added for 76 economies and for a time series spanning from 1995 to 2020. In addition to the direct economic impact generated from the purchases of non-residents, the model also identifies the indirect impact of those purchases on other industries that are not typically associated with tourism. Direct purchases by non-residents is essentially a proxy measure for international tourism expenditure as it also includes spending by foreign students as defined in National Accounts and Balance of Payments. However, the majority of direct purchases by non-residents estimates are related to international tourism for most countries.

Indirect contributions of tourism are non-negligible

On average, around **28% of the value added from international tourism activities were generated indirectly in upstream domestic sectors** across OECD countries in 2019. Moreover, while domestic value added increased in absolute terms in most of the targeted countries over the observed period, foreign value added embodied in products consumed by non-residents (i.e. imported intermediate inputs required to support tourism 'export' activity) has also increased. In the latest year, the foreign value added content of non-resident expenditure averaged 17% across OECD countries. This implies that over 80% of expenditure by non-residents is contributing to domestic value added. The ratio is significantly higher when compared to exports of manufactured products, notably in smaller economies (e.g. Luxembourg) where most parts, components and intermediate business services are imported.

The findings in this study provide a better understanding of the wider effects generated by non-resident expenditure and exemplify the importance of upstream domestic and foreign industries in facilitating international tourism. These insights can support tourism policy development and facilitate the debate around sustainably managing tourism in the long-term. To enhance analyses of international tourism and global value chains, countries should continue to improve the quality and timeliness of their non-resident expenditure statistics and link them with national Input-Output tables.

1 Introduction

International tourism has been rapidly growing in the last two decades. The number of international tourists has increased significantly where the figure reached more than 1.2 billion in 2016 and 1.5 billion in 2019, according to the UN Tourism World Tourism Barometer (UN Tourism, 2017[3]; UN Tourism, 2020[4]). Tourism is an important contributor to economic activity across many economies. Prior to the COVID-19 pandemic, the tourism sector directly contributed to, on average, approximately 4.4% of OECD's GDPs, while in countries such as Greece, Iceland, Mexico and Portugal, it accounted for over 7% of GDP (OECD, 2024[5]). Moreover, tourism has an important role in job creation given it is a highly labour-intensive sector which, pre-pandemic, accounted for 6.9% of employment in OECD countries (OECD, 2020[6]).

Tourism can play an important role in increasing country revenues, creating jobs and contributing to the overall growth of an economy. For some countries, particularly Least-Developed Countries (LDCs), tourism represents the main source of income, foreign exchange currency and a key tool for poverty alleviation (Honeck, 2008[7]). Moreover, tourism revenues can act as a pivotal source of diversified income for many countries. Even among economies that are highly reliant on natural resources, diversifying income streams through tourism can counteract the impact of fluctuations in the prices of commodities (Honeck, 2008[7]). According to the United Nations Conference on Trade and Development (UNCTAD), tourism is one of the top five export-orientated industries in more than 150 countries and occupied the first in around 60 countries worldwide (UNCTAD, 2010[8]).

Tourism industries are among the sectors that have been heavily impacted by the COVID-19 pandemic, where international tourism declined by approximately 72% in 2020 (OECD, 2024[5]). The effects were also evident in 2021, where international tourism was roughly 69% below 2019 figures. As a consequence of such a decline in international tourists, export revenues from international tourism dropped 59% in 2021, when compared with 2019. By 2022, the direct contribution of the tourism sector to GDP had returned to 3.9% on average across OECD countries (OECD, 2024[5]). However, employment in tourism industries has struggled to recover post-pandemic, where employment in the accommodation and food services remained down 5.3% in 2022 across OECD countries (OECD, 2024[5]). Despite these challenges, international tourism has rebounded following the COVID-19 pandemic, reaching 97% of 2019 levels in the first quarter of 2024 (UN Tourism, 2024[9]). In addition, tourism export revenues, including receipts and passenger transport, reached USD 1.8 trillion in 2023, roughly 99% of pre-pandemic levels (UN Tourism, 2024[9]).

While the contribution of tourism to economic activity is well recognised, understanding the wider impacts of tourism has received more attention in recent years as policymakers are faced with navigating the challenges of sustainably managing tourism over the long-term. Indeed, tourism is a key feature of the United Nations (UN) Sustainable Development Goals (SDGs), where several targets (8.9,12.b and 14.7) in the SDGs are directly linked to tourism (United Nations, 2015[10]).

Box 1. Tourism-related industries

The importance of tourism lies in the fact that it is prevalent in almost all industries. In reality there is no tourism industry or product, but, according to Tourism Satellite Account (TSA), there are *Tourism characteristic products*, which include products sold within industries most closely related to tourism such as hotels and restaurants, transportation, sports and recreational activities and *Tourism connected products*, which are not always primarily consumed by domestic and international tourists such as manufactured food products, financial and educational services, etc., see (UN, 2010[11]).

Table 1 presents the industry classification in the Tourism Satellite Account, mapped to related economic activities (ISIC Rev.4) in the ICIO tables. In absence of detailed product-level estimates of expenditure by non-residents, industry aggregates are instead used in this analysis to examine the sectors that experience the largest benefit from tourism activities. Henceforth, the industries most closely related to tourism will be referred to as *Tourism-related industries.*

Table 1. Industry classification in the Tourism Satellite Account and corresponding ICIO economic activity.

Activities (tourism industries)	ICIO economic activity (ISIC Rev.4 Divisions)	Tourism-related industries
Accommodation for visitors	Accommodation and food service activities (55 to 56)	X
Food- and beverage-serving activities		
Railway passenger transport	Transportation and storage (49 to 53)	X
Road passenger transport		
Water passenger transport		
Air passenger transport		
Transport equipment rental	Administrative and support services (77 to 82)	
Travel agencies and other reservation services activities		
Cultural activities	Arts, entertainment and recreation (90 to 93)	X
Sports and recreational activities		
Retail trade of country-specific tourism characteristic goods	Wholesale and retail trade (45 to 47)	
Other country-specific tourism characteristic activities	Other service activities (94 to 96)	

Source: UNWTO-OECD-Eurostat, TSA-RMF 2008. OECD ICIO (2023).

In this paper, all industries, including those unrelated to tourism, are analysed to provide a comprehensive view about the direct and indirect impacts of international tourism on a whole country's economy (see Table A B.1 in Annex B for more information about industries).

Tourism, like other industries, has spillover effects into other domestic and foreign industries through upstream inter-sectoral linkages. Understanding the spillover effects of the tourism sector would require fully exploring all the interlinkages the sector has with other industries. Moreover, the fragmentation of

production processes across borders poses additional challenges to the measuring the impact of tourism, as data on the foreign contribution to domestic production is required to understand the full extent of these linkages. Therefore, identifying the economic impacts of tourism in the context of global supply chains needs a model that covers value chain linkages within and between countries and industries.

This paper examines the economic impact of direct purchases by non-residents[1] to measure the direct and indirect value added that the tourism sector generates using a comprehensive Inter-Country Input-Output (ICIO) table that contains the monetary flows of intermediate and final goods and services for 76 economies (current basic prices). This paper builds upon previous work that utilise the OECD ICIO to examine the economic impact of direct purchases by non-residents, see OECD (2019[1]) and Alsamawi, Fritz and Yamano (2020[2]).

The first edition of OECD ICIO was developed in 2011 (OECD, 2011[12]) and it has been regularly updated, see https://oe.cd/icio. While expenditure, value added, employment and other variables are well defined in the National Accounts and TSA frameworks, they only account for the direct effect. For instance, the value added generated from agricultural and food products, served in hotels and restaurants, that are supplied by domestic and international agricultural sectors cannot be viewed as separate components in the TSA framework. Non-resident expenditures in hotels and restaurants will therefore represent both the direct and indirect (upstream) value added. However, in an Input-Output (IO) framework, the indirect effect of non-residents' expenditures can be separately captured using a Leontief multiplier.

Existing research has attempted to split tourism activities/direct purchases from exports, see OECD (2019[1]) and Alsamawi, Fritz and Yamano (2020[2]), or have undertaken a national analysis by linking tourism data for all tourism industries with the IO framework (Fletcher, 1989[13]; Tsuchiya, 2014[14]; Bullon et al., 2015[15]; Kronenberg, Fuchs and Lexhagen, 2018[16]). Others (Freeman and Felsenstein, 2007[17]; Teigeiro and Díaz, 2014[18]; Kim and Kim, 2015[19]) have conducted economic impact analyses using an IO framework, but only for specific tourism industries such as accommodation. Therefore, although numerous studies have estimated the indirect and induced economic impacts of tourism over time for many countries, the methods used are not standardised.

While national IO methods can provide insights on the domestic sources of value added and can reveal the import content of non-resident expenditures, they cannot, outside of the domestic economy, jointly identify the origin country and sector of value added generated by tourism and the ultimate destination of exports (i.e. where inbound tourists originate from). This highlights the need for an inter-regional inter-industry system (Leontief, 1936[20]; Chenery, 1953[21]; Moses, 1955[22]) to establish the wider impacts of tourism globally. In addition, while the first mentions of inter-regional work were in the last century, global IOs only became more widely available in the past few years. Examples of currently available inter-country IO databases include IDE-JETRO (1970-2005), EORA (1990-2022), EXIOBASE (1995-2022), OECD ICIO (1995-2020), WIOD (1995-2014), ADB MRIO (1995-2023) and GTAP MRIO (2004-2017).[2]

The OECD ICIO tables and one key application, Trade in Value Added (TiVA) indicators (http://oe.cd/tiva), were built to expand knowledge on the interconnectedness of global production networks and meet demand for stronger measures to analyse GVCs. The TiVA database covers 76 economies (plus "Rest of the world"), a common classification of 45 economic activities (see Annex A and Annex B) and a time series spanning from 1995 to 2020 (2023 version). TiVA indicators are derived from the ICIO tables, where National Accounts, trade statistics, Supply and Use tables, and Input-Output tables are harmonised to create a global Input-Output tables.

The focus on the tourism sector in this study can be considered as an extended use of the ICIO framework. The value added generated from international direct purchases have been examined for all the 76 economies and rest of the world for the total time series spanning from 1995 to 2020. While there are numerous studies investigating tourism activities using Input-Output techniques (Los and Steenge, 2010[23]), this paper provides the latest findings using OECD ICIO tables to measure the value added of direct purchases by non-residents in a global context. The distinction between cross-border exports and

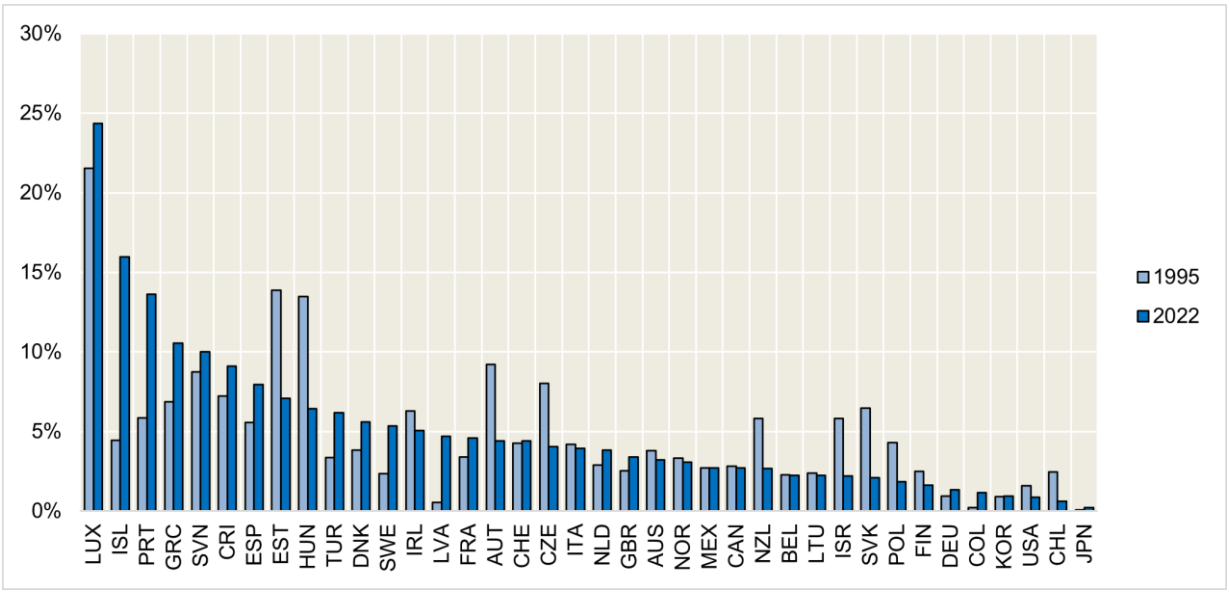
direct purchases by non-residents is a unique feature of OECD ICIO tables. At the time of writing, we are not aware of this distinction in other multi-country Input-Output models. Various kinds of applications have recently been linked to the ICIO framework. These applications include the development of environmental (Wiebe and Yamano, 2016[24]), social (Alsamawi, Murray and Lenzen, 2017[25]), and economic (Haberl et al., 2007[26]; Alsamawi, Murray and Lenzen, 2014[27]) indicators.

Trends of non-resident expenditure in the domestic territory and consumption abroad by residents, as a percentage of total household final consumption expenditure, appear to be stable over the past two decades for most OECD countries (Figure 1 and Figure 2). However, geopolitical conflicts including the war in Ukraine and conflicts in the Middle East have impacted inbound tourism in many neighbouring countries. For example, among several Eastern European countries (i.e. Estonia, Hungary, Czechia, the Slovak Republic and Poland) non-resident expenditure as a share of total household expenditure in the territory dramatically fell between 1995 and 2022, where resident household expenditure within the domestic economy increased at a higher rate than non-resident spending.

In general, to satisfy non-residents' demand goods and services are required from the hosting country and from abroad, therefore, a foreign value added component is likely to be embodied in tourism expenditure. The aim of this work is to increase our understanding of the contribution of tourism activities to the economy by providing insights into the value added generated in each country by non-resident expenditure on goods and services worldwide.

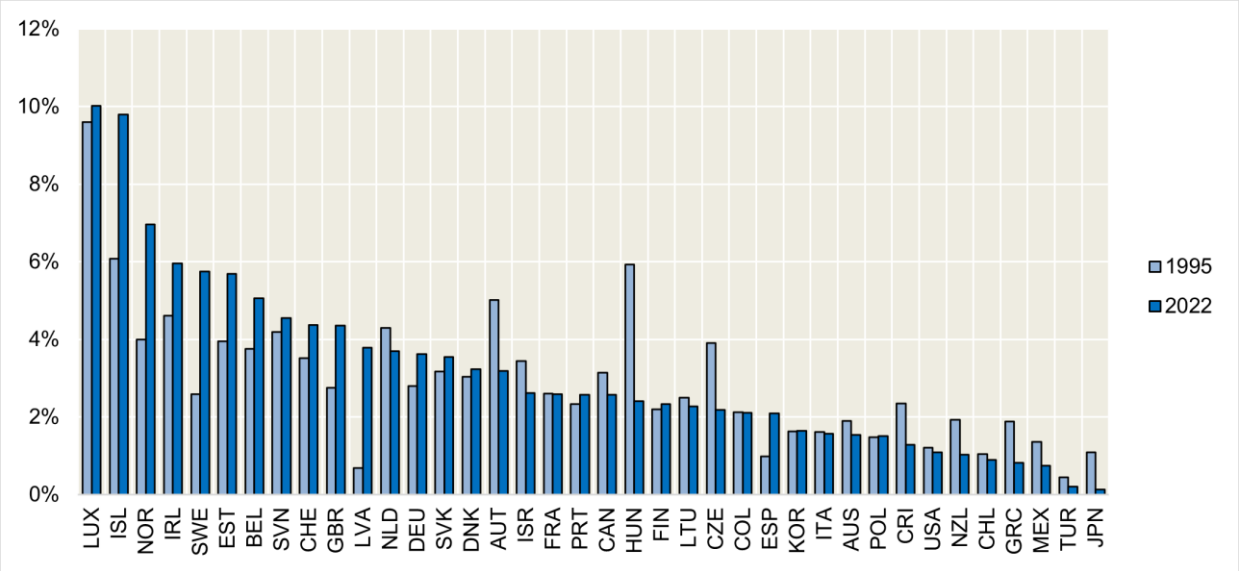
The paper is structured as follows. Section 2 explains the methodology and data sources. Section 3 describes the main results and findings of this work and Section 4 presents the conclusions.

Figure 1. Percentage of direct purchases by non-resident households to total household final consumption expenditure in the territory.



Source: Authors' estimates from National Accounts (UN, OECD, National sources)

Figure 2. Percentage of direct purchases abroad to total household final consumption expenditure by residents.



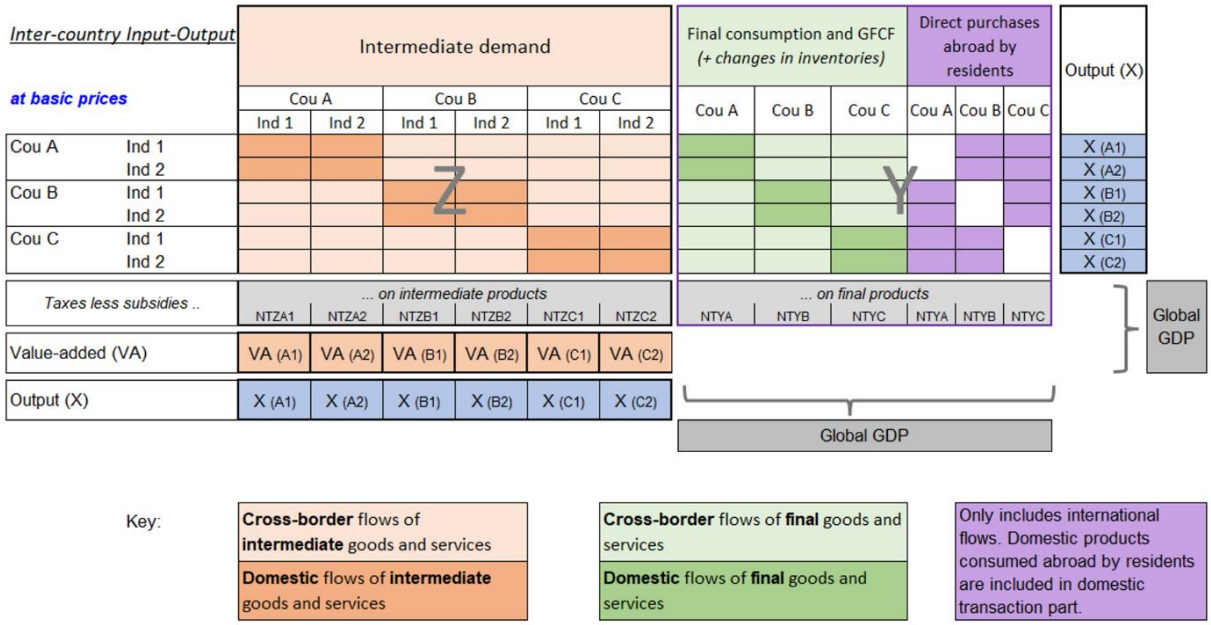
Source: Authors' estimates from National Accounts (UN, OECD, National sources)

2 Methodology and data sources

Data sources

In general, the preliminary work required significant underlying data (in particular, Input-Output tables (IOTs), Supply and Use tables (SUTs) and National Accounts) to be gathered, reconciled, and harmonised before being used in the ICIO system, where data by harmonised product and industry classifications are sparse. In this study, the infrastructure of the OECDs Inter-Country Input-Output database (ICIO) has been used to measure the value added generated by non-resident expenditure for 76 economies and for a time series spanning from 1995 to 2020. In the OECD ICIO framework, direct purchases abroad by residents are treated separately from cross-border final consumption, as illustrated in Figure 3.

Figure 3. Inter-Country Input-Output (ICIO) framework.



Source: OECD Inter-country Input-Output Database (http://oe.cd/icio)

The complex nature of tourism often poses challenges to measuring tourism. The Tourism Satellite Account (TSA), introduced in 2008, provides a standardised international methodology for measuring the economic impact of the tourism sector and is now widely implemented in OECD countries and gaining momentum globally. The TSA enables the estimation of the economic impacts of tourism as it provides information on both the demand (visitor consumption) and supply (production in tourism industries) sides of tourism. While there are international efforts to develop a standard survey on how to compile TSAs by the UNSD, Eurostat, OECD and World Tourism Organization (UNSD et al., 2008[28]), like most parts of the broader statistical information system, including indeed IOTs and SUTs, each country produces the TSA

according to their domestic circumstances and their capabilities to develop such an account. In countries where the tourism sector is a important contributor to the economy, and owing to data availability at various levels of disaggregation, more granular statistics are likely to be available. For example, the TSA for the USA includes more than 30 categories, while for the Slovak Republic it includes only 13 categories.

National Supply and Use tables contain key information on expenditure by non-residents, typically sourced from the same data sources used to develop TSAs, and serve as inputs to the OECD ICIO infrastructure. Where breakdowns of non-resident expenditure by product are not available in SUTs/IOTs, information from the TSA is used to fill gaps and to disaggregate total value of non-resident expenditure. The current survey on how to compile Supply and Use tables developed by the OECD suggests splitting the exports column in the Use table into cross-border exports and direct purchases by non-resident households, disaggregated at the product-level. However, only a few countries incorporate these detailed statistics in their Use tables, including Canada, the United Kingdom, Israel and Japan (in some benchmark tables). In addition, sources of data used for the Balance of Payments statistics are also important sources of tourism data used for producing the ICIO tables, e.g. statistics on personal and business travel under the travel category. Personal travel includes some significant components of non-resident expenditure such as educational and health related services.

Methodology

To measure the total economic impact of consumption by non-residents in a country, the existing infrastructure of OECD ICIO has been used. The OECD ICIO 2023 version covers 76 economies and 45 industries that represent around 95% of the world GDP, spanning from 1995 to 2020. The OECD ICIO tables have been chosen as it distinguishes between cross-border exports and direct purchases by non-residents. The framework in the ICIO is similar to the national IO tables, where it consists of three main parts: Intermediate (Z) and Final demand (F), and Primary input (V) parts, which includes information on value added and total output.

The $\boldsymbol{Z}$ matrix or intermediate demand matrix ($NK\ x\ NK$ dimensions, K is the number of industries and N is the number of countries) hold the monetary flows of intermediate goods and services with an element $Z_{ir,js}$ from supplying sector i, $i = 1, \dots, K$, in country r, $r = 1, \dots, N$ into a using sector j, $j = 1, \dots, K$, in country s, $s = 1, \dots, N$. The $\boldsymbol{F}$ matrix ($NK\ x\ NM$ dimensions, where M is the number of final demand categories) holds the final demand data where the element $F_{ir,ks}$ represents final demand, by category of final demand k, $(k = 1, \dots, M)$ of country s for goods and services produced by industry i in country r (where $r \neq s$). Final demand is separated into Household Final Consumption, General Government Final Consumption, Non-Profit Institutions Serving Households, Gross Fixed Capital Formation (GFCF), Valuables, Changes in Inventories and Exports. The unique feature of the OECDs ICIO is that it distinguishes between cross-border exports and direct purchases by non-residents within the final demand cube, which allows us to estimate impact of international tourism expenditures within the context of global value chains (GVCs). Finally, $\boldsymbol{V}$ is a vector of value added $(NKx1)$ and $\boldsymbol{X}$ is a vector of total output $(NKx1)$ with elements V_{js} and X_{js} respectively.

Industries that are directly supporting tourism activities in the ICIO framework are hotels and restaurants, transportation, and cultural and sports activities. Other sectors, such as food and beverages, apparel and footwear, fuel, and utility are also important as their products are indirectly consumed by non-residents (i.e. the value created at the supplier level to fulfil non-resident demand, and subsequent value generated from their suppliers or firms that exist in the second tier of the supply chain of a product).

The ICIO framework has been used to inform various policy areas, and to develop indicators concerning international technology diffusion, trade in embodied CO_2, Trade in Value Added (TiVA), the impact of GVCs on jobs and skills, and identify potential vulnerabilities in production networks, to name a few. This project uses this framework to analyse international tourism.

To calculate the direct and indirect impact of an indicator using the ICIO, a global Leontief inverse $\mathbf{B}$ needs to be calculated as $\mathbf{B} = (\mathbf{I} - \mathbf{A})^{-1}$, where $\mathbf{I}$ is an identity matrix $(NKxNK)$, $\mathbf{A}$ is a coefficient matrix with an element $a_{ir,js} = {Z_{ir,js}}/{X_{js}}$ and where the element $b_{ir,js}$ shows the direct and indirect requirements of inputs from industry i in country r for the production of one unit of output for demand by industry j in country s. In this regard, the value added multiplier matrix can be written as:

$$\mathbf{VB} = \boldsymbol{diag}(\boldsymbol{VX^{-1}})\,\mathbf{B}$$

Equation 1

Where $\boldsymbol{V}$ is a value added vector with elements V_{js} and $\boldsymbol{X}$ is output vector with element X_{js}.

In this paper, a new list of indicators is introduced, building upon those described in earlier work (OECD, 2019[1]), that are dedicated particularly for non-resident household expenditure and for all targeted countries. These indicators include:

***Direct purchases by non-resident households (NRDP)*;** is the amount of direct purchases by non-resident households by each industry, in country c.

$$\mathbf{NRDP}_{c,i} = \sum_p \mathbf{NRDP}_{c,i,p}$$

Equation 2

Where $\mathbf{NRDP}_{c,i,p}$ represents the direct purchases of final products produced by industry i in country c by visiting households from country p. The data presented here are based on balanced trade i.e. total direct purchases by non-resident households are equal to total purchases of resident households abroad.

Domestic value added content of direct purchases by non-resident households (NRDP_DVA); is the domestic value added generated from non-resident household expenditure within each industry. This indicator represents the value added generated anywhere in the domestic economy (i.e. not only in the industry with non-resident purchases). This can be further decomposed into *direct domestic value added* and *indirect domestic value added*.

$$\mathbf{NRDP\_DVA}_{c,i,p} = \mathbf{V}_c\mathbf{B}_{c,c}\mathbf{NRDP}_{c,i,p}$$

Equation 3

Direct domestic value added content of direct purchases by non-resident households (NRDP_DDC); is the direct domestic value added content of non-resident household expenditure within each industry. $\mathbf{NRDP\_DDC}_{c,i}$ measures the direct value added contribution made by industry i in country c to the production of goods and services in industry i that are consumed by non-residents in the domestic economy. This covers only the direct contribution from selling industries in the domestic economy.

$$\mathbf{NRDP\_DDC}_c = \widehat{\mathbf{V}}_c\mathbf{diagB}_c\mathbf{NRDP}_c$$

Equation 4

Where $\mathbf{NRDP\_DDC}_c$ is a $Kx1$ vector representing the industry dimension and A_c is a local IO coefficient matrix from country c single Input-Output table and $\mathrm{B}_c = (\mathrm{I} - \mathrm{A}_c)^{-1}$ is the local Leontief inverse. Matrix diagB_c consists of the diagonal elements of the local Leontief inverse, i.e. those entries of the matrix displaying the direct requirements.

Indirect domestic value added content of direct purchases by non-resident households (NRDP_IDC); is the indirect domestic value added content of non-resident household expenditure within each industry. $\mathbf{NRDP\_IDC}_{c,i}$ corresponds to the value added originating from other, upstream, domestic

industries (other than industry i) in country c that are embodied in the purchases by non-residents in industry i. This covers the indirect contributions from other upstream suppling industries that satisfy the demand of the selling industries in the domestic economy.

$$\mathbf{NRDP\_IDC_c} = \widehat{\mathbf{V}}_c \mathbf{offdiagB}_c \mathbf{NRDP}_c \quad \text{Equation 5}$$

Where $\mathbf{NRDP\_IDC_c}$ is a $Kx1$ vector representing the industry dimension and A_c is a local IO coefficient matrix from country c single Input-Output table and $\mathrm{B}_c = (\mathrm{I} - \mathrm{A}_c)^{-1}$ is the local Leontief inverse. Matrix $\mathrm{offdiagB}_c$ is the local Leontief inverse with all diagonal elements set to zero, thus displaying only the indirect requirements.

Foreign value added content of direct purchases by non-resident households (NRDP_FVA); is the foreign value added content of non-resident household expenditure by each industry in each country hosting non-residents. This captures the value of imported intermediate goods and services that are embodied in non-resident expenditure in the domestic economy.

$$\mathbf{NRDP\_FVA_{c,i}} = \widehat{\mathbf{V}}_c \mathbf{B_{ci}} \mathbf{NRDP_{c,i}} \quad \text{Equation 6}$$

$\mathbf{B_{ci}}$ is the column of $\mathbf{B}$ corresponding to inputs used by industry i in country c, where the rows corresponding to inputs from origin industries in country c are set to zero.

Direct purchases by non-resident households as a share of gross exports (NRDP_EXGR) is the ratio of direct purchases by non-residents $\mathbf{NRDP_{c,i,p}}$ to gross exports $\mathbf{EXGR_{c,i,p}}$ by each industry and country, where partner p equals world. It represents the intensity measure of direct purchases by non-residents per unit of gross exports.

$$\mathbf{NRDP\_EXGR_{c,i}} = \frac{\sum_p \mathbf{NRDP_{c,i,p}}}{\sum_p \mathbf{EXGR_{c,i,p}}} \times \mathbf{100} \quad \text{Equation 7}$$

Share of value added embodied in direct purchases by non-resident households (NRDP_VALU) is the ratio of direct purchases by non-residents $\mathbf{NRDP_{c,i,p}}$ to value added $\mathbf{VALU_{c,i}}$ by each industry and country. Like $\mathbf{NRDP\_EXGR_{c,i}}$, this indicator represents the intensity measure of direct purchases by non-residents per unit of value added.

$$\mathbf{NRDP\_VALU_{c,i}} = \frac{\sum_p \mathbf{NRDP_{c,i,p}}}{\mathbf{VALU_{c,i}}} \times \mathbf{100} \quad \text{Equation 8}$$

Domestic value added share of direct purchases by non-resident households (NRDP_DVASH). This indicator provides an insight into the domestic value added content of non-resident expenditure $\mathbf{NRDP\_DVA_{c,i,p}}$ as a share of total direct purchases by non-residents $\mathbf{NRDP_{c,i,p}}$, by industry and partner p world.

$$\mathbf{NRDP\_DVASH_{c,i}} = \frac{\sum_p \mathbf{NRDP\_DVA_{c,i,p}}}{\sum_p \mathbf{NRDP_{c,i,p}}} \times \mathbf{100} \quad \text{Equation 9}$$

Foreign value added share of direct purchases by non-resident households (NRDP_FVASH) is the foreign value added embodied in the purchases of non-resident households $\mathbf{NRDP\_FVA_{c,i,p}}$ as a share of total direct purchases by non-residents $\mathbf{NRDP_{c,i,p}}$, for partner p world. It can also be referred to as the import content in the expenditures of non-resident households.

$$\mathbf{NRDP\_FVASH}_{c,i} = \frac{\sum_p \mathbf{NRDP\_FVA}_{c,i,p}}{\sum_p \mathbf{NRDP}_{c,i,p}} \times \mathbf{100} \qquad \text{Equation 10}$$

Industry domestic value added contribution to direct purchases by non-resident households (NRDP_TDVAIND). In percentage terms, this indicator shows the contribution of an industry domestic value added to the direct purchases by non-resident households in a country. While $\mathbf{NRDP\_DVASH}_{c,i}$ measures the intensity of domestic value added in non-resident expenditure in an industry, $\mathbf{NRDP\_TDVAIND}_{c,i}$ captures the magnitude compared to other industries.

$$\mathbf{NRDP\_TDVAIND}_{c,i} = \frac{\sum_p \mathbf{NRDP\_DVA}_{c,i,p}}{\sum_{p,i} \mathbf{NRDP}_{c,i,p}} \times \mathbf{100} \qquad \text{Equation 11}$$

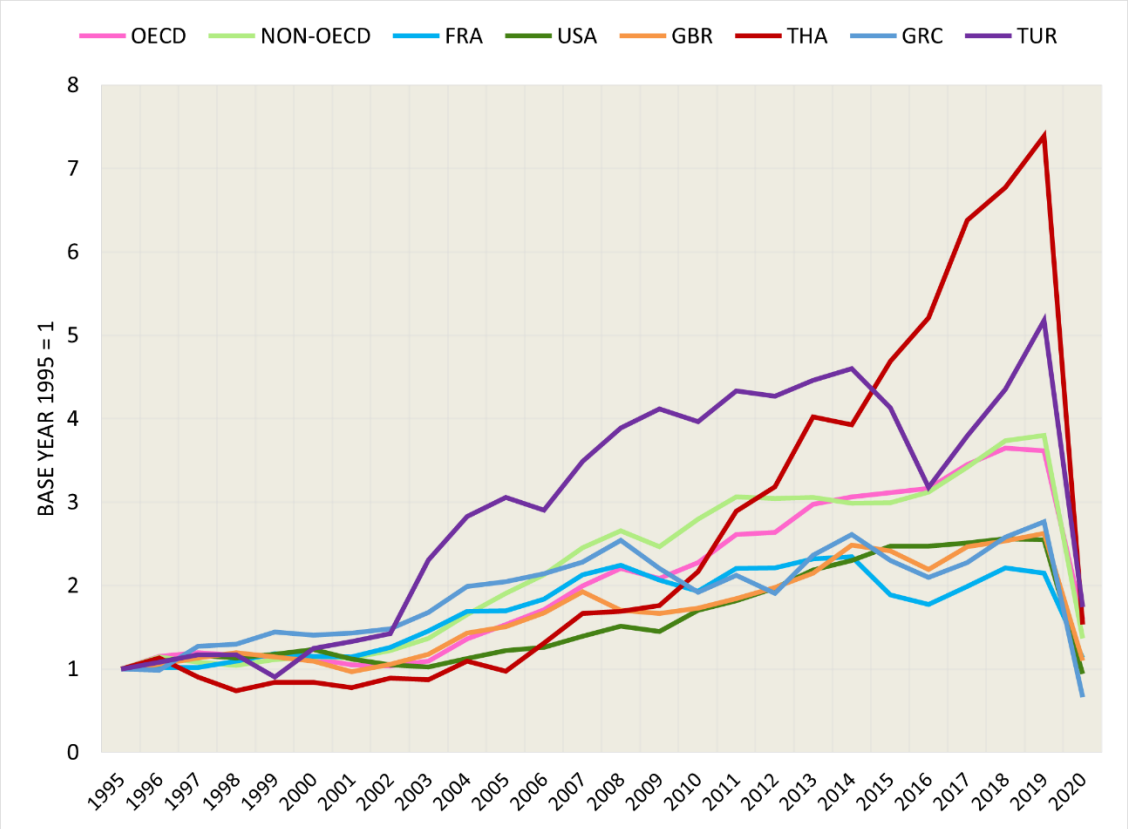
Industry foreign value added contribution to direct purchases by non-resident households (NRDP_TFVAIND). Similar to $\mathbf{NRDP\_TDVAIND}_{c,i}$, this indicator presents the industry foreign value added as a share of total direct purchases by non-residents in a country. While $\mathbf{NRDP\_FVASH}_{c,i}$ measures the intensity of foreign value added in non-resident expenditures in an industry, $\mathbf{NRDP\_TFVAIND}_{c,i}$ captures the magnitude compared to other industries.

$$\mathbf{NRDP\_TFVAIND}_{c,i} = \frac{\sum_p \mathbf{NRDP\_FVA}_{c,i,p}}{\sum_{p,i} \mathbf{NRDP}_{c,i,p}} \times \mathbf{100} \qquad \text{Equation 12}$$

3 Results

The world has witnessed a substantial global increase in domestic value added from tourism over the past two decades (see Figure 4). While this growth generally persisted during the global financial crisis in 2008, it experienced a significant decline during the COVID-19 pandemic period. In some countries, the domestic value added from tourism even dropped below the levels of the base year for this analysis, which is 1995. Notably, Thailand's domestic value added from international tourism declined by approximately five times in 2020 when compared to 2019, while OECD countries on average experienced a more than twofold decrease during the same period.

Figure 4. Domestic value added created from direct purchases by non-residents, 1995-2020.

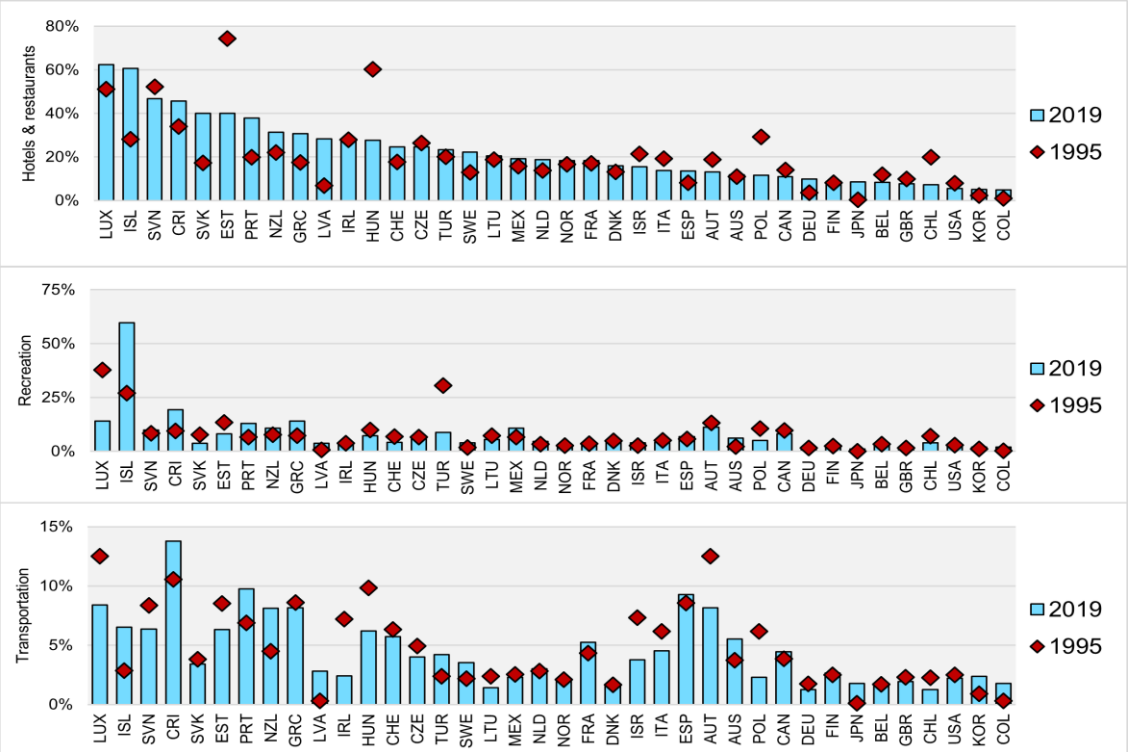


Note: See Table A A.1 and Table A A.2 in Annex A for more information about countries and regions.
Source: Authors' calculations using OECD ICIO (2023).

Figure 5 shows that the share of domestic value added (as a percentage of total value added) generated by direct purchases by non-residents in tourism-related industries, i.e. Hotels and restaurants, Transportation and Recreation, differ substantially among countries. Generally, the shares seem stable between 1995 to 2019[3] among OECD countries, with a few exceptions. The differences may be attributed

to changes in per capita incomes and population, which can influence domestic demand for goods and services, as well as fluctuations in the volume of inbound tourists. In particular, Iceland experienced a substantial increase in the proportion of value added generated from non-resident expenditures in two of the main tourism-related industries (Hotels and restaurants and Recreation) over the period 1995 to 2019. This reflects the high increase in the number of tourists visiting Iceland which stems from expanded travel routes between the US and Europe that encourage stop overs in Iceland, and the increase in awareness of Iceland as a desirable vacation destination. In addition, 62% (2019) of total value added generated in hotels and restaurant industries in Luxembourg were linked directly and indirectly to direct purchases by non-residents (both tourists and cross-border commuters), this share increased from around 51% in 1995. In contrast, the proportion of value added associated with direct purchases by non-residents in the hotels and restaurant industry is less than 10% in 9 OECD countries (including Germany, Japan, Belgium and the United Kingdom) as of 2019.

Figure 5. Industry domestic value added generated by direct purchases by non-residents as a share of total value added of those industries, 1995 and 2019.

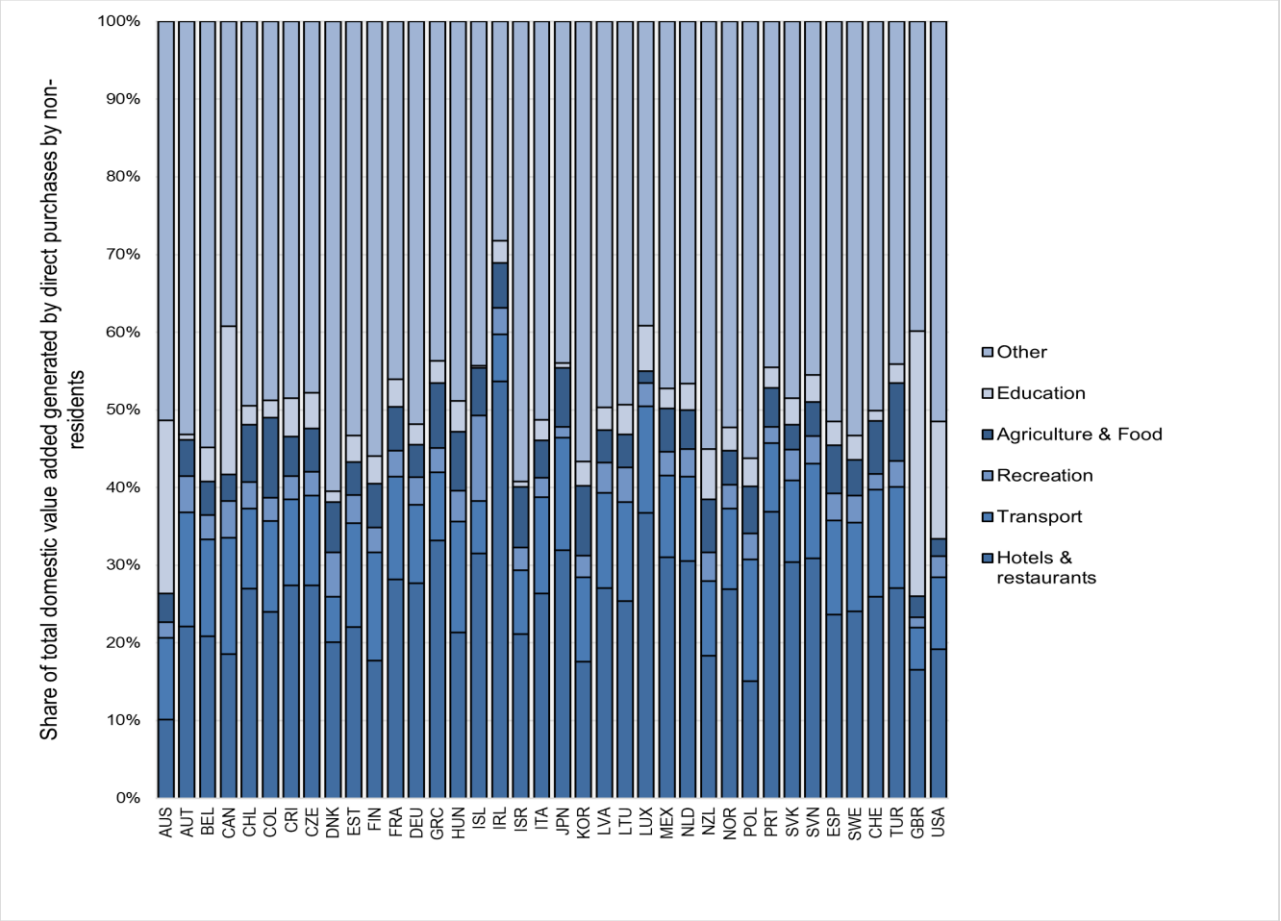


Source: Authors' calculations using OECD ICIO (2023).

On average, value added (direct and indirect) in tourism-related industries occupied more than 40% of the total domestic value added generated by direct purchases by non-resident visitors for most economies in 2019 (Figure 6). Trends in domestic value added shares of tourism-related industries in the past two decades display fluctuations around the same level. However, countries such as the United Kingdom and Australia exhibit lower value added shares in tourism-related industries, primarily due to the significant revenue gained in the education sector from international students. In general, while domestic value added increased in absolute terms in the past two decades for all countries (once excluding 2020), a reduction in the share to the total direct purchases can be seen for many countries, including Germany, France and Luxembourg. This means that there is an increase in the foreign value added both in absolute terms and in terms of the shares of total non-resident expenditures.

A deeper investigation with respect to sectors, in particular Hotels and restaurants, reveals that the domestic value added increased in most of the economies examined in this study in past decades. Hotels and restaurants thus play an important role in shaping the value added generated by tourism activities. Similarly, the increase in the value added generated in tourism industries were attuned with an increase in the indirect value added generated from non-residents spending (see Figure 7 for more information on OECD countries). This results from the growing fragmentation of production processes, where tourism related industries require more inputs from other industries upstream in the supply chain to produce output.

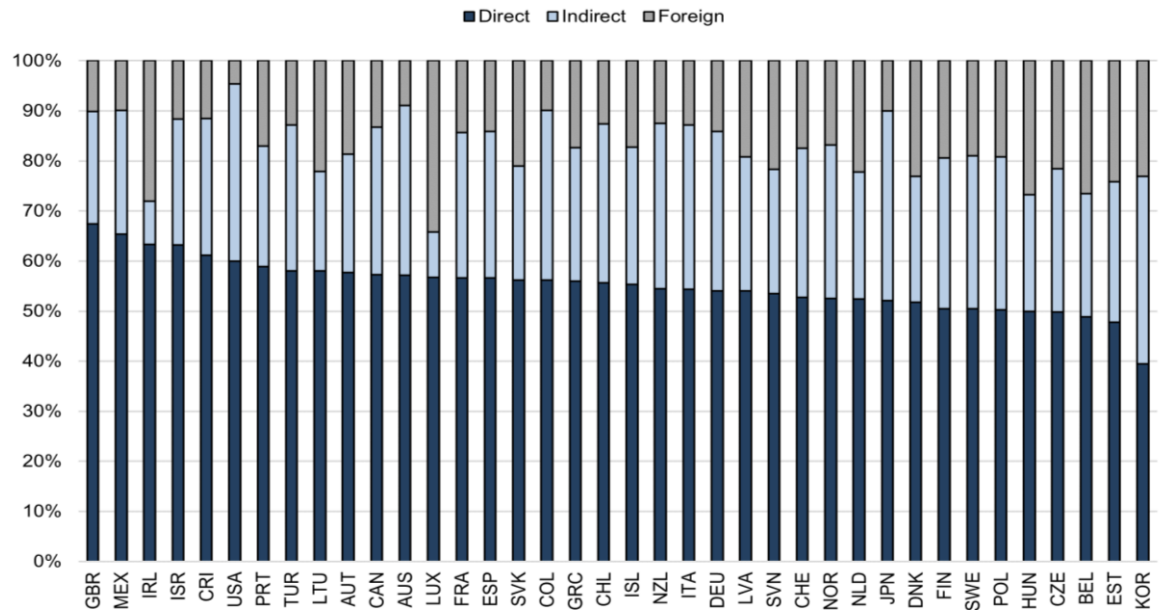
Figure 6. Domestic value added generated by direct purchases by non-residents by industry, 2019.



Note: Other is all other industries.
Source: Authors' calculations using OECD ICIO (2023).

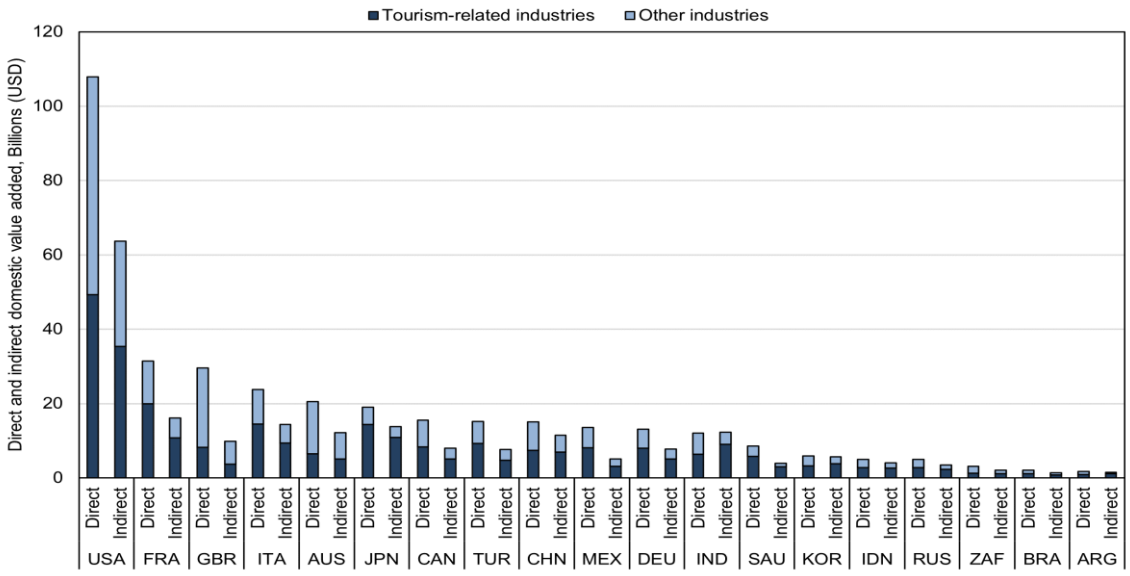
The indirect contribution from other industries is substantial (Figure 7). Indirect value added represent, for instance, agricultural and food products supplied by domestic and international farmers that are served in hotels and restaurants. On average, around 28% of total value added is generated indirectly by domestic sectors in OECD countries in 2019. Moreover, foreign value added content of direct purchases by non-residents averaged nearly 17% in the same year among OECD countries. Deeper investigation on the source of value added show that the proportions of indirect domestic value added generated in tourism-related industries are higher than those from other industries in countries such as the United States, see Figure 8.

Figure 7. Direct, indirect and foreign value added shares of total direct purchases by non-residents. 2019.



Source: Authors' calculations using OECD ICIO (2023).

Figure 8. Direct and indirect effects of direct purchases by non-residents, 2019.

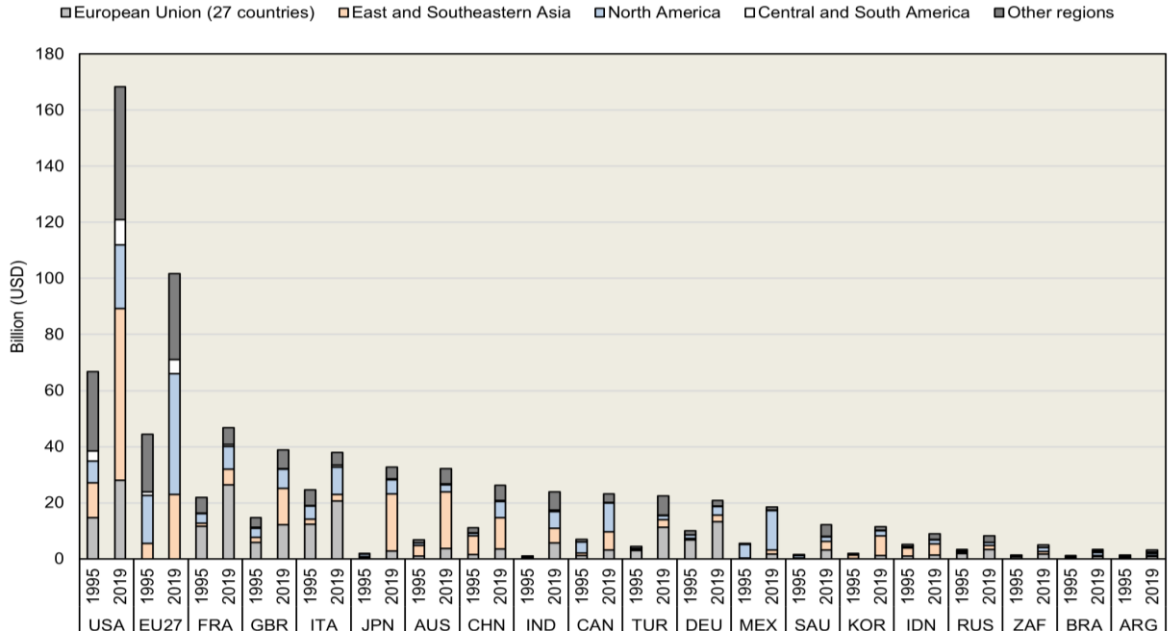


Note: See Table A A.1 in Annex A for country codes.
Source: Authors' calculations using OECD ICIO (2023).

Extending the analyses in terms of value added by regions shows that in the past two decades there is a twofold increase among OECD countries (Figure 9 & Figure 10). In addition, from a regional perspective, EU27 has the highest shares of value added resulting from North American tourists (outside of North America). Tourism expenditure from other zones have also increased in the past decades – this growth

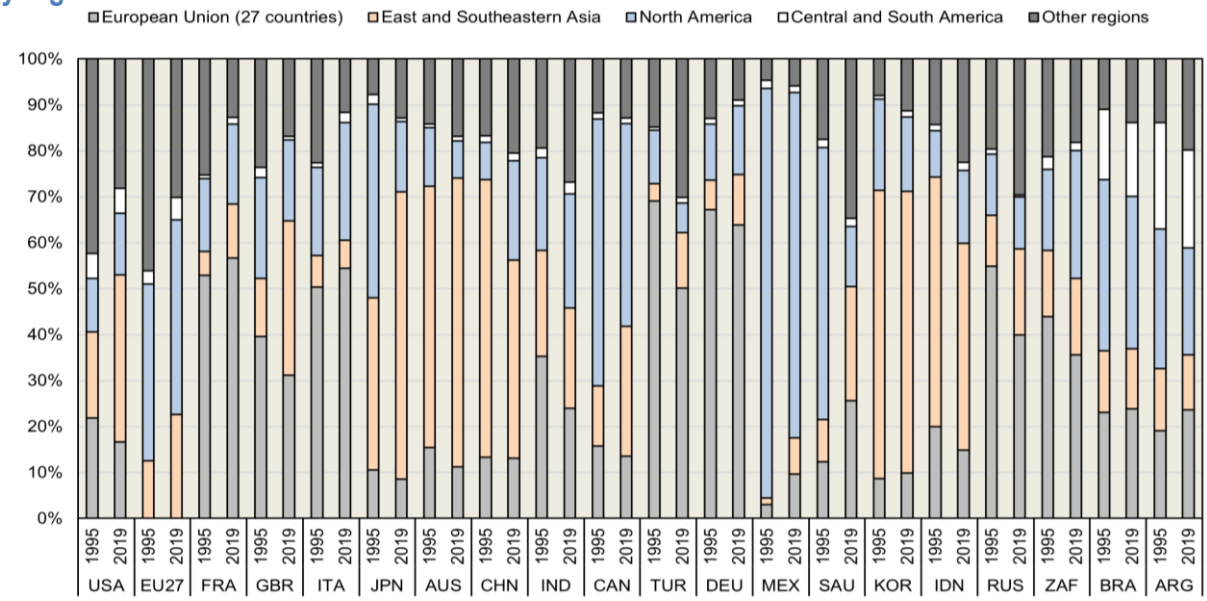
can be attributed to globalisation, marketing and promotional campaigns for tourism and ease of accessibility provided by hosting countries.

Figure 9. Value added generated by direct purchases by non-residents in G20 countries, by region.



Note: Countries on the x-axis are those who are hosting the tourists and values on the y-axis represent the expenditure by tourists from each region. See Table A A.1 and Table A A.2 in Annex A for more information about countries and regions. Intra-regional flows between regions are excluded from the results in this chart e.g. Consumption by tourists from European Union countries is zero for EU27.
Source: Authors' calculations using OECD ICIO (2023).

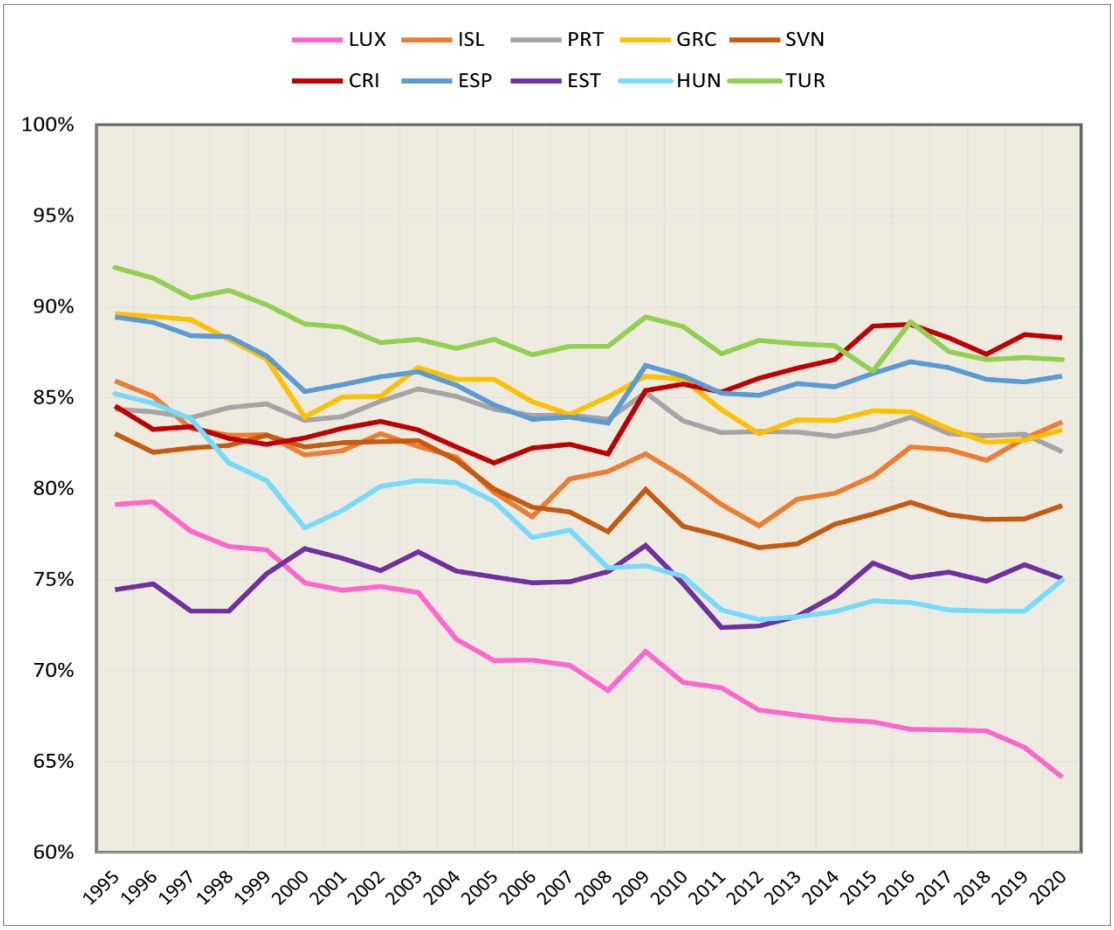
Figure 10. Share of value added generated by direct purchases by non-residents in G20 countries, by region.



Note: Countries on the x-axis are those who are hosting the tourists and values on the y-axis represent the expenditure by tourists from each region. See Table A A.1 and Table A A.2 in Annex A for more information about countries and regions. Intra-regional flows between regions are excluded from the results in this chart e.g. Consumption by tourists from European Union countries is zero for EU27.
Source: Authors' calculations using OECD ICIO (2023).

Figure 11 shows the contribution of domestic value added to the direct purchases by non-resident households for the ten OECD countries with the highest share of direct purchases by non-residents to total household final consumption expenditure in 2022 (see Figure 1). Luxembourg has displayed the most dramatic decline in the share of domestic value added generated from direct purchases by non-residents between 1995 and 2020, where in the latest year the foreign value added content of non-resident expenditure reached over 35%. This chart signifies the growing importance of global value chains in facilitating the activities of non-residents among economies where non-resident expenditure is a significant component of total household final consumption.

Figure 11. Domestic value added contribution to direct purchases by non-residents.

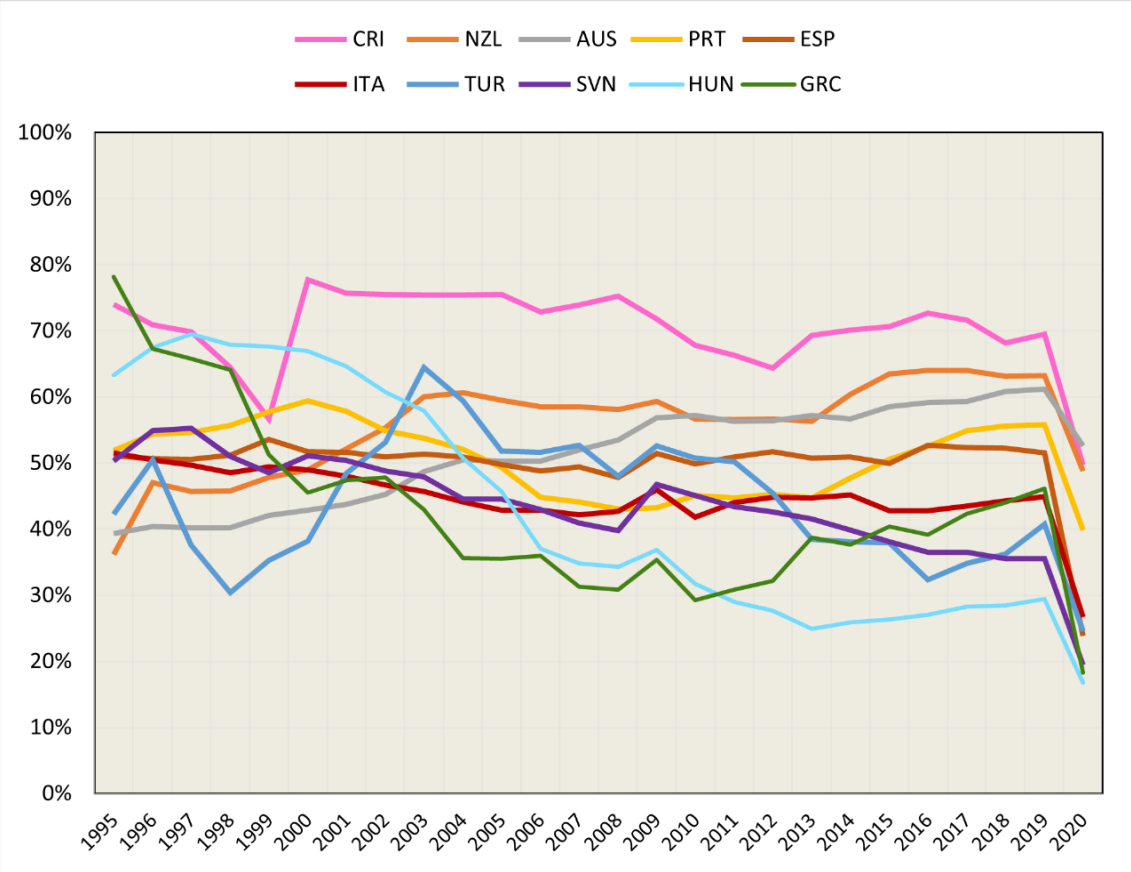


Note: See Table A A.1 in Annex A for country codes.
Source: Authors' calculations using OECD ICIO (2023).

Expenditure by non-residents can act as the main source of export revenues in sectors within economies that experience less cross-border trade, notably in tourism-related industries. Domestic value added generated by direct purchases by non-residents as a share of domestic value added generated by total exports, in tourism-related industries. Figure 12 displays the domestic value added resulting from non-resident expenditure as a share of domestic value added generated from total exports specifically in tourism-related industries, among countries with the highest reliance on tourism for exporting. On average, domestic value added (direct and indirect) from non-resident expenditure in tourism-related industries represents 32% of total domestic value added generated from exports in the same sectors (as of 2019). In Costa Rica, New Zealand, Australia, Portugal and Spain, more than half of domestic value added

embodied in exports in tourism sectors comes from expenditure by non-residents.[4] While the trends over time vary across countries, the levels of non-resident expenditures and cross-border exports in each year, as well as their respective foreign content, will determine the contribution domestic value added from tourism makes to total domestic value added embodied in gross exports.

Figure 12. Domestic value added generated by direct purchases by non-residents as a share of domestic value added generated by total exports, in tourism-related industries.



Source: Authors' calculations using OECD ICIO (2023).

The analysis presented here demonstrates the important contribution tourism makes to exports within sectors traditionally serving tourists, while showcasing that there are other industries indirectly supporting and benefitting from tourism through supply chain linkages. Indeed, countries trying to diversify national income streams can generate new income from tourism, while simultaneously improving their export revenues. Moreover, while some countries have maintained the domestic value added content of tourism exports over the last two decades, many countries are experiencing a growth in the foreign value added content of tourism exports. This highlights the importance of global value chains in facilitating international tourism, which countries with ambitions to enhance tourism export revenues should consider as a policy lever. Further investment into supporting tourism, such as increasing the use of digitalisation to facilitate travel and accommodation services, infrastructure development, promoting sustainable tourism initiatives, among others, can help to maximise the revenue generated from these activities.

4 Conclusions

This study examines the economic impacts of direct expenditure by non-resident households for 76 economies and a time series spanning from 1995 to 2020, using a comprehensive Inter-Country Input-Output (ICIO) database generated by the OECD. This database incorporates information on tourism activities from various statistical sources, including data on direct purchases from National Accounts and national SUT and IO tables, Balance of Payments data as well as information from existing Tourism Satellite Accounts covering expenditure by commodities. The OECD ICIO has the unique feature that separates cross-border exports and direct purchases by non-residents, this enables us to estimate the direct and indirect economic impacts of tourism activities.

The results confirm that tourism activities play an important role as drivers of economic growth in many countries. The economic impacts are not only limited to industries directly serving inbound tourists i.e. Hotels and restaurants, Transportation and Recreation, but also extend to other industries via indirect spillover effects, which turn out to be quite significant.

On average, around 28% of the value added from tourism activities were generated indirectly in upstream domestic sectors across OECD countries in 2019. For many economies, the indirect economic impacts are as large as the initial impacts of expenditures in tourism industries. Among OECD countries, the foreign value added content (i.e. imported intermediate inputs required to support tourism 'export' activity) of consumption by non-residents accounts for approximately 17% of total non-resident expenditure. This implies that over 80% of expenditure by non-residents is contributing to domestic value added. The ratio is significantly higher compared to exports of manufacturing products, notably in smaller economies (e.g. Luxembourg) where most parts, components and intermediate business services are imported.

To enhance the quality of estimating the tourism-induced contribution to overall economic activities and growth, many data challenges remain. These include:

- Supply and Use tables (SUTs) and Tourism Satellite Accounts (TSAs) are available on an annual basis for only a few non-OECD countries for which tourism plays an important role. More regularly published data for a wider set of countries will enhance the quality of estimates of the impact of tourism.
- For key variables like output, value added and employment detailed sectoral information is often lacking. In many countries, tourism industries such as hotels and restaurants and transportation industries are merged with other sectors in Input-Output/make-use tables.
- Across different countries, international tourism expenditures, i.e. direct purchases by non-residents, are not equally measured. For instance, spending by non-residents related to education is included in some, but not all TSAs.
- Finally, non-resident expenditures may be underestimated particularly in those countries where inbound tourism for business purposes is quite important as such activities are not explicitly accounted for in conventional national and global Input-Output analytical frameworks.

In summary, the findings presented in this paper provide additional insights into the contribution of tourism activities to value added in domestic tourism orientated industries, as well as upstream domestic and foreign industries embedded in global production networks. It showcases the advantage of using an ICIO model that differentiates between cross-border exports and direct purchases by non-residents to

understand the full scope of international tourism in a world characterised by global value chains. These insights can support tourism policy development and facilitate the debate around sustainably managing tourism in the long-term.

Beyond analysing the value added impacts of international tourism activities, this ICIO framework can be extended to provide new insights on:

- *The environmental impact of tourism*. In many countries, concerns surrounding the pressures of unbalanced tourism on local infrastructure, the environment and host community is at the height of the policy debate (OECD, 2024[5]). Once incorporating data on greenhouse gas (GHG) emissions and employing similar methods used to develop OECD GHG footprint indicators (Yamano, Lioussis and Cimper, 2024[29]), emissions associated with non-resident household consumption can be estimated to ascertain the direct and indirect environmental consequences of tourism on regions, which can help guide policymakers on how best to sustainably manage tourism.
- *Employment sustained by tourism exports.* The important role tourism plays in fostering employment is widely acknowledged, particularly in countries heavily reliant on tourism related sectors. As demonstrated in the OECD Trade in Employment (TiM) and Trade in Employment by workforce characteristics (TiMBC) (Pechansky and Lioussis, 2024[30]) databases, leveraging data on employment (number of employees and labour compensation) within an ICIO framework can yield additional insights on the labour force in domestic and foreign countries in supplying and upstream sectors that experience the largest gains from tourism.
- *Domestic and international tourism.* In some economies, tourism markets substantially benefit from domestic tourists, especially during periods where inbound tourism is weak. A model that differentiates between household consumption by resident and non-resident tourists will provide new insights on tourism on GVCs, with scope to assess the value added, employment and environmental impacts of tourism.

Finally, regular updates of these estimates would provide additional insights on the tourism sector, especially during the COVID-19 pandemic and recovery.

Endnotes

[1] The definition of direct purchases by non-residents in this paper includes spending by foreign students as defined in National Accounts and Balance of Payments. However, the majority of direct purchases by non-residents estimates are related to international tourism for most countries. In addition, expenditure related to business travel is generally excluded from these estimates, as this is captured in intermediate consumption expenditure, except in circumstances where employees, rather than their employers, purchase goods and services themselves during business trips and are reimbursed later. Finally, direct purchases by non-residents cover only international non-residents, domestic tourists have not been included.

[2] Available years of each database are as of September 2024.

[3] While the ICIO tables span the period 1995 to 2020, 2019 is used as the latest year for analysis as tourism activities were heavily curtailed in the advent of the COVID-19 pandemic.

[4] Average value for the period 1995 to 2019.

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Annex A. Geographical coverage

Table A A.1. ICIO/TiVA geographical coverage

N.	Code	Name	N.	Code	Name
1	AUS	Australia	39	ARG	Argentina
2	AUT	Austria	40	BGD	Bangladesh
3	BEL	Belgium	41	BLR	Belarus
4	CAN	Canada	42	BRA	Brazil
5	CHL	Chile	43	BRN	Brunei Darussalam
6	COL	Colombia	44	BGR	Bulgaria
7	CRI	Costa Rica	45	KHM	Cambodia
8	CZE	Czechia	46	CMR	Cameroon
9	DNK	Denmark	47	CHN	China (People's Republic of)
10	EST	Estonia	48	CIV	Côte d'Ivoire
11	FIN	Finland	49	HRV	Croatia
12	FRA	France	50	CYP	Cyprus
13	DEU	Germany	51	EGY	Egypt
14	GRC	Greece	52	IND	India
15	HUN	Hungary	53	IDN	Indonesia
16	ISL	Iceland	54	JOR	Jordan
17	IRL	Ireland	55	HKG	Hong Kong, China
18	ISR	Israel	56	KAZ	Kazakhstan
19	ITA	Italy	57	LAO	Lao People's Dem. Rep.
20	JPN	Japan	58	MYS	Malaysia
21	KOR	Korea	59	MLT	Malta
22	LVA	Latvia	60	MAR	Morocco
23	LTU	Lithuania	61	MMR	Myanmar
24	LUX	Luxembourg	62	NGA	Nigeria
25	MEX	Mexico	63	PAK	Pakistan
26	NLD	Netherlands	64	PER	Peru
27	NZL	New Zealand	65	PHL	Philippines
28	NOR	Norway	66	ROU	Romania
29	POL	Poland	67	RUS	Russian Federation
30	PRT	Portugal	68	SAU	Saudi Arabia
31	SVK	Slovakia	69	SEN	Senegal
32	SVN	Slovenia	70	SGP	Singapore
33	ESP	Spain	71	ZAF	South Africa
34	SWE	Sweden	72	TWN	Chinese Taipei
35	CHE	Switzerland	73	THA	Thailand
36	TUR	Türkiye	74	TUN	Tunisia
37	GBR	United Kingdom	75	UKR	Ukraine
38	USA	United States	76	VNM	Viet Nam
			77	WXD	Rest of the World

Note: Blue numbers, from 1 to 38, refer to OECD member countries.

Table A A.2. Geographical coverage – aggregate regions

N.	Code	Name	Coverage
1	OECD	OECD member countries	Countries 01 to 38
2	WXOECD	Non-OECD economies	Economies 39 to 77
3	APEC	Asia-Pacific Economic Cooperation	AUS, CAN, CHL, JPN, KOR, MEX, NZL, USA, BRN, CHN, HKG, IDN, MYS, PER, PHL, RUS, SGP, THA, TWN, VNM
4	ASEAN	Association of South-East Asian Nations	BRN, IDN, KHM, LAO, MYS, MMR, PHL, SGP, THA, VNM
5	S2	Eastern Asia	JPN, KOR, CHN, HKG, TWN
6	EU27_2020	European Union (27 countries)[1]	AUT, BEL, CZE, DNK, EST, FIN, FRA, DEU, GRC, HUN, IRL, ITA, LVA, LTU, LUX, NLD, POL, PRT, SVK, SVN, ESP, SWE, BGR, CYP*, HRV, MLT, ROU
6	EU28	European Union (28 countries)[1]	AUT, BEL, CZE, DNK, EST, FIN, FRA, DEU, GRC, HUN, IRL, ITA, LVA, LTU, LUX, NLD, POL, PRT, SVK, SVN, ESP, SWE, GBR, BGR, CYP*, HRV, MLT, ROU
7	EU15	European Union (15 countries)[1]	AUT, BEL, DNK, FIN, FRA, DEU, GRC, IRL, ITA, LUX, NLD, PRT, ESP, SWE, GBR
8	EU28XEU15	EU28 excluding EU15[1]	CZE, EST, HUN, LVA, LTU, POL, SVK, SVN, BGR, CYP*, HRV, MLT, ROU
9	EA19	Euro area (19 countries)	AUT, BEL, EST, FIN, FRA, DEU, GRC, IRL, ITA, LVA, LTU, LUX, NLD, PRT, SVK, SVN, ESP, CYP*, MLT
10	G20	Group of Twenty	AUS, CAN, DEU, FRA, GBR, ITA, JPN, KOR, MEX, TUR, USA, ARG, BRA, CHN, IND, IDN, RUS, SAU, ZAF, EU27_2020
World divided into regions			
N.	**Code**	**Name**	**Coverage**
11	F	Africa	CIV, CMR, EGY, MAR, NGA, SEN, TUN, ZAF
12	S2_S8	Eastern and South-eastern Asia	JPN, KOR, BRN, CHN, HKG, IDN, KHM, LAO, MMR, MYS, PHL, SGP, THA, TWN, VNM
13	E	Europe	AUT, BEL, CZE, DNK, EST, FIN, FRA, DEU, GRC, HUN, ISL, IRL, ITA, LVA, LTU, LUX, NLD, NOR, POL, PRT, SVK, SVN, ESP, SWE, CHE, GBR, BGR, BLR, CYP*, HRV, MLT, ROU, RUS, UKR
14	NAFTA	North American Free Trade Association	CAN, MEX, USA
15	A5_A7	Central and Southern America	CHL, COL, CRI, ARG, BRA, PER
16	W_O	Other regions	AUS, ISR, NZL, TUR, BGD, IND, JOR, KAZ, PAK, SAU, WXD
17	WLD	World	
18	DXD	Domestic	Dummy partner used in the diagonal for some indicators.

Note: OECD member countries are in blue.

1. From 1 February 2020, after the departure of the United Kingdom, the European Union consists of 27 countries. The aggregates EU28 and EU15, which include the United Kingdom, are retained for analysis. Changes in membership of the European Union over time are summarised at: https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:EU_enlargements .

Annex B. Industry coverage

Table A B.1. TiVA industry coverage

N.	Code	Economic activity	ISIC Rev.4 Divisions
1	A01_02	Agriculture, hunting, forestry	01, 02
2	A03	Fishing and aquaculture	03
3	B05_06	Mining and quarrying, energy producing products	05, 06
4	B07_08	Mining and quarrying, non-energy producing products	07, 08
5	B09	Mining support service activities	09
6	C10T12	Food products, beverages and tobacco	10, 11, 12
7	C13T15	Textiles, textile products, leather and footwear	13, 14, 15
8	C16	Wood and products of wood and cork	16
9	C17_18	Paper products and printing	17, 18
10	C19	Coke and refined petroleum products	19
11	C20	Chemical and chemical products	20
12	C21	Pharmaceuticals, medicinal chemical and botanical products	21
13	C22	Rubber and plastics products	22
14	C23	Other non-metallic mineral products	23
15	C24	Basic metals	24
16	C25	Fabricated metal products	25
17	C26	Computer, electronic and optical equipment	26
18	C27	Electrical equipment	27
19	C28	Machinery and equipment, not elsewhere classified	28
20	C29	Motor vehicles, trailers and semi-trailers	29
21	C30	Other transport equipment	30
22	C31T33	Other manufacturing; repair and installation of machinery and equipment	31, 32, 33
23	D	Electricity, gas, steam and air conditioning supply	35
24	E	Water supply; sewerage, waste management and remediation activities	36, 37, 38, 39
25	F	Construction	41, 42, 43
26	G	Wholesale and retail trade; repair of motor vehicles	45, 46, 47
27	H49	Land transport and transport via pipelines	49
28	H50	Water transport	50
29	H51	Air transport	51
30	H52	Warehousing and support activities for transportation	52
31	H53	Postal and courier activities	53
32	I	Accommodation and food service activities	55, 56
33	J58T60	Publishing, audiovisual and broadcasting activities	58, 59, 60
34	J61	Telecommunications	61
35	J62_63	IT and other information services	62, 63
36	K	Financial and insurance activities	64, 65, 66
37	L	Real estate activities	68
38	M	Professional, scientific and technical activities	69 to 75
39	N	Administrative and support services	77 to 82
40	O	Public administration and defence; compulsory social security	84
41	P	Education	85
42	Q	Human health and social work activities	86, 87, 88

43	R	Arts, entertainment and recreation	90, 91, 92, 93
44	S	Other service activities	94,95, 96
45	T	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	97, 98