International Conference on Business and Economics - Hellenic Open University

Vol 5, No 1 (2025)

Proceedings of the ICBE-HOU 2025

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To cite this article:

Diakomichalis, N.-M., & Diakomihalis, M. (2026). International Cruise Activities: The distribution of GDP and National Income. *International Conference on Business and Economics - Hellenic Open University*, *5*(1). Retrieved from https://eproceedings.epublishing.ekt.gr/index.php/ICBE-HOU/article/view/9759

International Cruise Activities: The distribution of GDP and National Income

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Abstract

This study examines the economic impact of international cruises and the distribution of the Gross Domestic Product (GDP) and National Income (NI) among the countries which are included in the itineraries. Difficulties arise especially when part of the activity is carried out in international waters or Exclusive Economic Zone (EEZ) areas.

Research that has been conducted calculates the economic benefits of consumption in cruise ports, without estimating the overall and final contribution to GDP and National Income.

The aim of this paper is to separately assess the value-added generated and the final impact on the GDP and National Income of the economies of all countries, both those that participate in international cruise programs and those that do not participate but receive part of the income generated.

A practical example of application is provided, showing the alternative options for the distribution of GDP and the corresponding distribution of National Income, considering various criteria such as the headquarters of the shipping company, the ports of call, the distribution of the voyage according to territorial waters, etc.

The article emphasizes the necessity of developing a specific methodological framework for the proper distribution and recording of the socio-economic impact of international cruises at the national and transnational level, contributing to the reliable formulation of sustainable and fair tourism policies.

The contribution of this paper compared to prior research in the field is the ability to assess the GDP and the NI produced by the cruise activity in each country involved in the cruise industry.

JEL Classifications: C670, E010, L830

Keywords: Cruise, GDP, GNI, Economic impact, System of National Accounts.

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1 Introduction

The cruise sector is a dynamic and rapidly growing market, with significant investments in both port facilities and the construction of luxury ships (CLIA, 2023). It is a distinct form of maritime tourism, combining multiple activities, such as transportation, accommodation, entertainment, educational and sports programs, making the cruise a unique tourism product that also functions as a destination in its own (Kulkov et al., 2023). The impact of cruise activity on the economy varies and affects GDP, employment, local purchasing power and local development (Vayá et al., 2017).

The economic contribution of the cruise is measured through economic impacts, employment and income, which according to 2023 data indicate a total output value of over 168 billion dollars and 1.59 million seats. In 2023, total cruise-linked spending reached $78.8 billion, up from $64 billion in 2022 and $35.4 billion in 2021. The largest item was cruise purchases, followed by passenger and crew spending, and shipbuilding. The latter dropped from 2022, impacting Europe where shipbuilding activity is concentrated (CLIA, 2023). However, the distribution of this economic output across participating countries and the impact on gross domestic product (GDP) is a complex issue (Diakomihalis & Diakomichalis, 2023) and not properly assessed for each country participating in international cruises. Research on the economic impacts of cruises focuses on ports of call and includes “the direct consumption of passengers at the ports and the indirect costs of the supply and maintenance of the cruise ships at the ports” (Chou et al., 2024)

In contrast to most researches that estimate economic impacts mainly taking into account consumption figures, this research seeks to introduce a proposal for estimating both the impact on GDP and National Income, which is a clear indicator for the participation of each country in the production of the international cruise product, and subsequently to estimate the final economic impact both on the economies of the countries participating in the generated GDP and on those participating through the generation of income, such as the countries of origin of the ship crews. The assessment of the economic benefits of international cruises is currently carried out at a global or regional level, but the distribution of this impact by country, especially in cases of international cruises that also sail through international waters and Exclusive Economic Zone (EEZ) areas, remains problematic (OECD, 2019). The main research question of this work is how the economic effects of cruises can be measured and shared in the GDP and GNI of each participating country, considering the principles of the System of National Accounts (UNSD, 2008).

The purpose of this study is therefore to present a clear and documented methodology for the distribution of GDP resulting from international cruises, analyzing the challenges and

possible solutions, through the analysis of a practical application example. Therefore, not only economic benefits from the cruise activity will be assessed but also the real economic impact on GDP and NI for each country participating in the international cruises.

The structure of the article after the introduction includes the theoretical framework and research background. The methodology is then developed and followed by a case study for a practical approach to international cruises, with a presentation and explanation of the economic effects. Finally, the conclusions and bibliography are listed.

2 Theoretical framework and research background

The existing research focusing on the assessment of the economic impact of cruises is to a great extend descriptive (Chang, 2016). However, most of the existing studies attempt to evaluate the economic benefits of the cruise sector by the calculation of expenses at port of call and at ports of the itineraries of the cruise vessels (Dwyer & Forsyth, 1998; Braun et al., 2002; Chase, 2002). Henthorne (2000) analyzes the spending habits of cruise ship passengers in Jamaica, aiming to assess the economic impact of tourism the Caribbean cruise market through the identification of consumer behavior. Dwyer and Forsyth, 1998 distinguish the difference between impacts and net benefits, explaining that impacts depend on the overall level of expenditures while benefits are much smaller. They proposed a framework for assessing the economic impact of cruise tourism, applying a case study for Australia. Brida and Zapata, 2010 aimed to solve the problem of lack of objective information regarding the economic data on the cruise tourism in Costa Rica, given that no published accounts exist of the activity.

The assessment of the economic impact of cruises on the economy is mainly based on two approaches: the Income approach and the Expenditure approach (CLIA,2024). The Income approach measures the income generated by the activities, such as wages, profits and taxes that are attributed to the economies of the participating countries (OECD, 2018). In contrast, the Expenditure approach focuses on the total expenditure of visitors and businesses, i.e. the purchases of goods and services (Diakomihalis & Papadopoulou, 2018). However, when the activity passes through the national waters of different states or takes place in international waters, both income and expenditure are not limited within the economic territory of a country and therefore their assessment as impacts on the economies of the different countries participating in the cruise requires a different approach (OECD, 2018).

The limited ability of National Accounts to record cruises as a stand-alone activity or

product is due to the way these activities are mainly integrated into broader activities such as tourism and maritime transport, which often leads to an underestimation of the real economic impact (Diakomihalis & Diakomichalis, 2022). For this reason, the adoption of the Tourism Satellite Account is an essential tool that allows for a specific and more accurate assessment of the effects of cruises, attributing more faithfully the economic size and contribution of this specific product to the national economy (UNWTO, 2021).

Existing research relies on estimating consumption in ports by tourists on board, ship personnel, and ship expenses. This does not account for the value-added generated that affects the GDP of these countries, nor does it estimate the share of consumption that concerns imported goods and services. Therefore, as the literature shows, accurately capturing the contribution of the activity requires the implementation of a proper methodology for the assessment of the economic benefits among the countries involved in international cruises. The definition of Gross Domestic Product (GDP) refers to the total Value Added of goods and services produced within the borders of a country in a specific period (Eurostat, 2025). However, when we refer to activities that transcend national borders, such as cruising, the distribution of the value produced becomes complicated.

The main research question of this study is to introduce the economic impact on the economy based on the GDP produced and thereafter the National Income as it should be distributed, mainly of the cruise itself as a unique product and secondly of the proper distribution of passengers and ship spending at ports. The research is grounded on the hypothesis that most of the cruise itineraries include the participation of several countries, while the cruise ship is also sailing in international waters.

Furthermore, the main research question is based on the necessity to estimate the participation in GDP according to each country's share in the cruise produced and then to attribute the economic benefits according to the produced National Income, to all countries that participate in the income, regardless of their participation or not in the production of the cruise.

3 Methodology

The methodology followed in this research is the one applied to the National Accounts system. The national accounts follow the ESA 2010, which is based on international standards (SNA 2008) (Eurostat, 2025), and record the flows and stocks of the economy, taking into account the permanent residence of the institutional units and the place where they carry out

activities, and in this case for shipping activities the flag of the ship, and the ports of destination are taken into account. A resident unit is an institutional unit having its permanent residence in a country where the center of its dominant economic interest is in the economic territory of that country. The above approach is also applied in the case of shipping. The transactions concerning the ownership of a ship and the use of the ship are classified in the economy of the country of which the institutional unit that owns the ship is a permanent resident. The international transport of a sea shipping company is a product and contributes to the GDP of the country where the company is based, since the transport work involves traveling between different countries.

A cruise is not a transportation service from one country to another. It is a unique tourism product produced and offered by a shipping company, while the cruise itself is characterized as a "destination". The breakdown of GDP by countries participating in international cruises is vital because it highlights each country's percentage of participation in the production process of the tourism product and cruise activities. This approach allows a more direct and fair capture of the economic contribution of each participating country and the benefits derived from this sector. In contrast, the Gross National Income (GNI) based approach overlooks the critical element of each country's participation in the cruise production process. This approach focuses mainly on employee income, operating surplus and taxes, and does not directly reflect the level of participation of each country in the creation of the total value of the international tourism product.

To effectively allocate the Gross Domestic Product (GDP) generated by international cruises is necessary because the industry's economic impact is often overstated or misunderstood, potentially leading to misplaced investments. Therefore, a methodology needs to be developed that considers the different areas of production and the legal aspects of ownership. Such a methodology should move beyond simply reporting gross passenger numbers, focusing instead on the actual economic benefits to local communities and distinguishing them from the global economic footprint of the major cruise conglomerates (Papathanasis, 2019). A key issue concerns how to distribute the economic activity that takes place in areas of international waters, as well as in maritime areas under each state's EEZ.

The assumptions taken into account in the methodological approach are based on the fact that the cruise market is a globalized activity, with many different elements involved in the assessment of its economic impact, such as the nationality of the ship, the nationality of the crew members, the share of the cruise produced per port/country of call, the consumption of visitors and crew in the ports, the costs of catering and maintenance of the ship in ports of

different countries. From the above, it is concluded that the assessment of only part of these economic impacts mentioned and the failure to segment and register them in the economy of each corresponding country, entails the risk of incorrect assessment of the total economic impact attributed to cruises.

The proposed approach includes the following factors:

1. Determination of the place of production: The estimation of the production should be based on the country to which the port facility from which the ship starts and where it returns (home port) belongs. This designation covers all activities during the ship's stay in port.

2. Distribution along the length of the route: For the entire time of the cruise conducted in international waters, production to be distributed according to the International Law of the Sea. For example, if a ship spends 60% of the time in the territorial waters of a certain country, then the corresponding part of the GDP should be attributed to it.

3. Application to ports of destination and approach: The economic activity resulting from visits to ports (shopping, services, catering activities) to be attributed to each country where these costs are incurred.

4. According to the flag of the ship (Flag State): In case the ship belongs to a company of a state different from that of the port or the area of operation, the part of the GDP that concerns the operation surplus of the company should be recorded in the country of the headquarters where the ship is registered.

Considering the above approaches, whenever each of them applies, each country will show a percentage of the total GDP produced, depending on its degree of participation in different phases of the cruise: from the arrival and stay at the destination port, the route to and from it, and the stay in international waters. It is obvious that GDP is generated throughout the cruise and in the areas where a ship approaches (UNCTAD, 2020). The logic that production should be counted in the country whose territorial waters or EEZ is used by the ship is because GDP expresses domestic product. As an internationally recognized and comparable measure, GDP directly measures the Value Added of economic activity, providing a more complete picture of the real productive contribution of cruising in each country. It forms the basis for political and strategic decisions, because it shows the real economic contribution and empowers the analysis of the development, strengthening and sustainability of the sector. There is concern about how the activity is handled when the ship is sailing in international waters. The GDP generated by international cruises affects the final GDP of all countries participating in the cruise generated and therefore must be shared among these countries in some way and according to the share of the activity. Most cruise impact calculations have

traditionally relied on collecting data on employee incomes, operating surpluses and taxes derived from the activity (Diakomihalis, 2012). This approach, while providing useful information on income distribution and taxation, has significant limitations:

• Does not reflect true productive value: Focusing on income and taxes 'singles out' the direct output and contribution arising from the activity itself, ignoring the overall size and value of the productive process. For example, an activity with high capital investment but low direct labor income may be undervalued.

• Ignores cross-border aspects: Activities that take place in international waters or in ports of other countries, are often presented with limited economic impact, and therefore the producer-entity is not fully reflected in the national economic record.

The Income and Taxes method is limited to revenue from operations, taxes and operating surplus, ignoring the GDP that affects each country. This can lead to an underestimation of the overall impact, particularly in cases where cruise is important as a productive product but does not directly generate high income in the country of production.

In contrast, the use of GDP as the main measurable quantity, even though it is more complex to estimate, allows a more faithful capture of output and the contribution of activity to the national economy. This is particularly important in cases of activities that take place in multiple countries, such as cruising, and where cross-border benefit sharing is a vital element in political decision-making and resource allocation. Ultimately, it is important to know in which countries the GDP is generated by international cruises, and which countries benefit through income, profits and taxes, whether they participate in the product produced or not.

4. Practical approach Distribution of GDP and National Income in international cruises

Application example: Cruise in the Aegean with a ship flying the flag of Panama and owned by a company that manages the ship and is based in Panama where the company's profits are declared. The duration of the cruise is 6 days. The ship approaches 3 Greek and 3 Turkish ports, with a total of 1000 passengers and a revenue of 1.5 million euros.

• Financial data:

1. Compensation of Greek workers: €200,000
2. Compensation of foreign workers (Philippines): €150,000
3. Taxes paid in Greece: €100,000
4. Taxes paid in Turkey: €50,000

5. Activity costs (consumables, fuel): €400,000

Scenarios A, B, C, D, E

Assumptions and hypotheses for all scenarios:

• Total revenue of the ship: €1,500,000

• Intermediate Inputs (cost of supplies/fuel etc.): €400,000

• Salaries: Greeks €200,000, Philippines €150,000 (total salaries = €350,000)

• Taxes/fees: Greece €100,000, Turkey €50,000 (total taxes = €150,000)

• Operating surplus = 1,500,000 − 400,000 − 350,000 − 150,000 = €600,000, which is attributed to the managing company, i.e. Panama.

• Total added value of the cruise is = €1,100,000 (salaries 350,000 + taxes 150,000 + operating surplus 600,000).

Scenario A — Production in territorial waters of Greece and Turkey

The total added value from the cruise (€1,100,000) is "shared" 50/50 between Greece and Turkey, considering that the production of the cruise takes place half-way in Greek and Turkish territorial waters.

• Distribution of intermediate costs: €200,000 Greece and €200,000 Turkey, can equally affect the GDP of each country, since these are Intermediate Inputs of €200,000 that are the product of other sectors, only in the case and proportionally if these inputs concern domestic production of other sectors of the two countries, and are not imported from other countries. In this scenario we consider that supplies are made by domestic companies and participate in the GDP of the two countries.

1. Valuation of GDP:

• Greece: (1,100,000/2) = €550,000 + (suppliers)200,000 = €750,000

Under the assumption that the share of production related to the Greek ports of call amounts to 50% of the total itinerary and activities of the cruise.

• Turkey: (1,100,000/2) = €550,000 + (suppliers) 200,000 = €750,000, which follows from the logic that the share of production related to the Turkish ports of call is 50% of the total production.

• Philippines: €0 (since the activity concerns Greece and Turkey)

• Panama: In this case the GDP for Panama is zero, as the activity does not directly produce product or value in Panama, even though the company is based in the country and the ship flies its flag, but only in Greece and Turkey.

Remarks: The same amount is attributed to both countries, since the product is produced in both regions, with activities in ports and international waters divided accordingly. [=

(600,000 / 2) + (350,000 / 2) + (150,000 / 2) = 300,000 + 175,000 + 75,000 = 550,000].

Table 1.A: GDP, (ports of call). Amount and % on total 1.500.000 €

	Country	Amount	Share %
	Greece (Direct impact)	550.000 €	36,7%
	Greece (Indirect impact) *	200.000 €	13,3%
	Turkey (Direct impact)	550.000 €	36,7%
	Turkey (Indirect impact) *	200.000 €	13,3%
	Philippines	0,0 €	0,0%
	Panama	0,0 €	0,0%
	* Intermediate consumption 200.000 Greece/ 200.000 Turkey		

2. Impact on National Income:

- Greece: To estimate the effect of the cruise on the National Income of Greece, we have the following calculations = 750,000 – [Operating Surplus /2] -300,000 + 25,000 [employee compensation difference] + 25,000 [tax difference] = + €500,000
- Turkey: Similarly, to estimate the effect of the cruise on Turkey's National Income, we have = 750,000 - [Operating Surplus /2] -300,000 - [Employee Compensation 350,000/2] 175,000 – 25,000)] 150,000 – Taxes [75,000 – 25,000] -50,000 = + €250,000

The corresponding amounts, with a proportional distribution of employees, taxes and operating surplus, will give Turkey an increase in the National Income of €250,000.

- Panama: According to the economic theory and practices of National Accounting, the Operating Surplus, €600,000, of the company that has its headquarters in Panama, and the ship carries the flag of Panama, is not counted directly in the National Income of Panama. This will be after taxing the company's profits in Panama and after paying taxes. The net profit and related taxes will form part of the National Income of Panama. For the sake of simplifying the process, since the issues of taxation and distribution of profits are not known, the total of €600,000 will be considered, an amount that is counted in the National Income of Panama.
- Philippines: Correspondingly, Filipino workers receive from the income distribution €150,000.

Table 2.A: GNI, (territorial- residence). Amount / % on total 1.500.000 €

	Country	Amount	Share %
	Greece	500.000 €	33,3%
	Turkey	250.000 €	16,7%
	Philippines	150.000 €	10,0%
	Panama	600.000 €	40,0%

Scenario B — Production in international waters (e.g. main activity on board / international waters)

• Distribution of intermediate costs: €400,000 in third countries. They do not affect the GDP of both Greece and Turkey at all.

• GDP (residence): Workers' compensation is paid by the company, which is based in Panama.

1. Valuation of GDP:

- Greece: taxes paid in Greece = €100,000
- Turkey: taxes paid in Turkey = €50,000
- Philippines: €0 (no local production)
- Panama: (Operating Surplus = 600,000 + employee salaries = 350,000) €950,000 (territorial — the operator's production is considered a residence of Panama).

Table 1.B: GDP, (ports of call). Amount and % on total 1.500.000 €

	Country	Amount	Share %
	Greece (Direct impact)	100.000 €	6,7%
	Greece (Indirect impact) *	0,0 €	0,0%
	Turkey (Direct impact)	50.000 €	3,3%
	Turkey (Indirect impact) *	0,0 €	0,0%
	Philippines	0,0 €	0,0%
	Panama	950.000 €	63,3%
	* Intermediate consumption of 400,000 by other countries		

2. Impact on National Income:

- Greece (GNI) = GDP of Greece (from Cruise) 300,000 + salaries of Greeks 200,000 (income inflow from resident Panama) = €500,000
- Turkey (GNI) = GDP of Turkey from Cruise €50,000
- Philippines (GNI) = €150,000 (salaries of Filipinos)
- Panama (GNI) = €600,000 (operating surplus/operator profit.

Table 2.B: GNI, (territorial- residence). Amount / % on total 1.500.000 €

	Country	Amount	Share %
	Greece	300.000 €	20,0%
	Turkey	50.000 €	3,3%
	Philippines	150.000 €	10,0%
	Panama	600.000 €	40,0%

Scenario C — Production in Greece and Turkey (we consider the work/production to be in

Greece)

• Distribution of intermediate costs: €200,000 in Greece and €200,000 in Turkey, with a proportional effect on the GDP of Greece and Turkey.

1. Valuation of GDP:

- Greece: 100,000 (taxes) + 200,000 (salaries of Greeks considered as production within Greece) + 200,000 € (suppliers) = 500,000 €
- Turkey: (taxes) €50,000 + €200,000 (suppliers) = €250,000
- Philippines: €0
- Panama: €750,000 (territorial) (Operating Surplus + Philippine Salaries)

Table 1.C: GDP, (ports of call). Amount and % on total 1.500.000 €

	Country	Amount	Share %
	Greece (Direct impact)	300.000 €	20,0%
	Greece (Indirect impact) *	200.000 €	13,3%
	Turkey (Direct impact)	50.000 €	3,33%
	Turkey (Indirect impact) *	200.000 €	13,3%
	Philippines	0,0 €	0,0%
	Panama	750.000 €	50,0%
	* Intermediate consumption 200.000 Greece/ 200.000 Turkey		

2. Impact on National Income:

- Greece (GNI) ≈ €300,000 (if wages are considered part of GDP and wages are paid to residents) + €200,000 (suppliers) = €500,000.
- Turkey: €50,000 + €200,000 (suppliers) = €250,000
- Philippines: €150,000
- Panama: €600,000

Table 2.C: GNI, (territorial- residence). Amount / % on total 1.500.000 €

	Country	Amount	Share %
	Greece	500.000 €	33,3%
	Turkey	250.000 €	16,7%
	Philippines	150.000 €	10,0%
	Panama	600.000 €	40,0%

Scenario D — All intermediate costs (€400,000) in Greece

• Distribution of intermediate costs: €400,000 Greece / €0 Turkey

1. Valuation of GDP:

- Greece: 400,000 (suppliers) + 100,000 (taxes) + 200,000 (Greek wages considered as production within Greece) + €400,000 (suppliers) = €700,000
- Turkey: 0 (suppliers) + 50,000 (taxes) = €50,000
- Philippines: €0
- Panama: €750,000 (territorial) (Operating Surplus + Philippine Salaries).

Table 1.D: GDP, (ports of call). Amount and % on total 1.500.000 €

	Country	Amount	Share %
	Greece (Direct impact)	100.000 €	6,7%
	Greece (Indirect impact) *	400,000 €	26,7%
	Turkey (Direct impact)	50.000 €	3,3%
	Turkey (Indirect impact) *	0,0 €	0,0%
	Philippines	0,0 €	0,0%
	Panama	950.000 €	63,3%
	* Intermediate consumption 400.000 Greece		

2. Impact on National Income:

- Greece (GNI) = GDP (from Cruise) 100,000 + 200,000 (salaries of Greeks, if paid by Panama but resident income) + €400,000 (suppliers) = €700,000
- Turkey: €50,000
- Philippines: €150,000
- Panama: €600,000

Table 2.D: GNI, (territorial- residence). Amount / % on total 1.500.000 €

	Country	Amount	Share %
	Greece	700.000 €	46,7%
	Turkey	50.000 €	3,3%
	Philippines	150.000 €	10,0%
	Panama	600.000 €	40,0%

Scenario E — All intermediate costs (€400,000) outside Greece (e.g. all in Turkey)

• Distribution of intermediate costs: €0 Greece / €400,000 Turkey

1. Valuation of GDP:

- Greece: 0 (suppliers) + 100,000 (taxes) = €100,000
- Turkey: 400,000 (suppliers) + 50,000 (taxes) = €450,000
- Philippines: €0
- Panama: €950,000 (territorial) (Operating Surplus + Filipino salaries + Greek salaries)

Table 1.E: GDP, (ports of call). Amount and % on total 1.500.000 €

	Country	Amount	Share %
	Greece (Direct impact)	100.000 €	20,0%
	Greece (Indirect impact) *	0,0 €	0,0%
	Turkey (Direct impact)	50.000 €	3,33%
	Turkey (Indirect impact) *	400,000 €	26,7%
	Philippines	0,0 €	0,0%
	Panama	750.000 €	50,0%
	* Intermediate consumption 400.000 Turkey		

2. Impact on National Income:

• Greece (GNI) = GDP 100,000 + 200,000 (salaries of Greeks) = €300,000

• Turkey (GDP from Cruise): €450,000

• Philippines: €150,000

• Panama: €600,000

Table 2.E: GNI, (territorial- residence). Amount / % on total 1.500.000 €

	Country	Amount	Share %
	Greece	300.000 €	20,0%
	Turkey	450.000 €	30,0%
	Philippines	150.000 €	10,0%
	Panama	600.000 €	40,0%

Summary observations:

• The operating surplus of €600,000 is recorded as income of the company headquarters (Panama) in the scenarios mentioned. If the registered office and legal status change, then the calculation of the Operating Surplus will be affected accordingly.

• The wages of Greeks (200,000) increase the Greek GNI regardless of whether they are considered GDP or income from abroad, but they are included in GDP only if the work is considered a benefit within Greek territory.

• The results are sensitive to the breakdown of the 400,000 intermediate costs and the interpretation of the place of employment (ship/international waters / in one country / in both countries / in third countries).

Short interpretation:

The tables show that GDP (territorial) and GNI (residence-based) give a different picture:

Panama shows a large share of the GNI due to the operating surplus of €600,000, while the GDP shows only the local productions/fees where actual expenditures were made.

Table 3.1: Summary GDP distribution table with all scenarios

Country	Greece	Turkey	Philippines	Panama	Total
GDP_A (€)	750.000 €	750.000 €	0 €	0 €	1.500.000 €
GDP_B (€)	100.000 €	50.000 €	0 €	950.000 €	1.100.000 €
GDP_C (€)	500.000 €	250.000 €	0 €	750.000 €	1.500.000 €
GDP_D (€)	500.000 €	50.000 €	0 €	950.000 €	1.500.000 €
GDP_E (€)	100.000 €	450.000 €	0 €	750.000 €	1.500.000 €

Table 3.2: Summary GNI distribution table with all scenarios

Country	Greece	Turkey	Philippines	Panama	Total
GNI _A (€)	500.000 €	250.000 €	150.000 €	600.000 €	1.500.000 €
GNI _B (€)	300.000 €	50.000 €	150.000 €	600.000 €	1.100.000 €
GNI _C (€)	500.000 €	250.000 €	150.000 €	600.000 €	1.500.000 €
GNI _D (€)	700.000 €	50.000 €	150.000 €	600.000 €	1.500.000 €
GNI _E (€)	300.000 €	450.000 €	150.000 €	600.000 €	1.500.000 €

Commenting on the results from the Examples

The above practical approach example shows how the calculation of GDP with different scenarios also affects its distribution since it is proportional to the degree of participation of each country in the activity. The GDP-based approach offers a direct estimate of economic participation, from the production side, in contrast to the purely National Income-based approach, which may overlook direct productive activities and focus only on income and taxes flowing to countries that may not be involved in the cruise production itself.

The appropriate approach to capturing the economic effects of international cruises should consider both the contribution of each country to the GDP produced, as well as the effect of the incomes distributed to those who participate in the activity, while not participating in the GDP produced. In this way it is possible to assess the real picture of the production but also the final picture of the benefits, which correspond to all those involved, countries, workers, suppliers, etc.

From the different scenarios mentioned, it turns out that the difference in how we measure influence — through GDP (output) or through National Income changes the result. Therefore, the choice of measurement (GDP vs. National Income) is critical and highlights the real economic impact of international activity.

6 Conclusions

The efficient and fair allocation of GDP from international cruise activities must be based on an integrated framework that considers:

• The geographical limits according to the ownership of the territorial waters of each country, as well as those of the EEZ of each country.

• The duration of the activity along the sea route and the time spent in each area.

• The rules of registration in the national statistical systems.

Adopting a unified approach in a scientifically based way will allow the reliable measurement and contribution of each country's economic participation in the cruise sector, supporting the formulation of sustainable development policies and understanding of the activity.

Differences between statistical databases and the difficulty in recording activities in international waters accurately or in companies operating in more than one country are significant obstacles to accurately capturing economic impacts (Brida and Zapata, 2010). Ownership, taxation, ship flag, and company headquarters, nationality and permanent residence of workers, are critical elements that will determine where and how production is recorded, with due accuracy and due consideration of legal property rights and ensuring that calculations reflect the true size of economic activity.

According to the five scenarios for an international cruise program presented, significant differences are observed in the proportion of the economic impact on each participating country, either in the added value that affects GDP or in the income that is counted in the produced National Income of each country.

The approach explained in this research offers a more realistic and fair distribution of GDP, allowing countries to assess their economic contribution from the international cruise sector.

The adoption of the proposed framework might contribute to improving the transparency and accuracy of the economic figures reported in international statistics. In addition, it will allow government and supervisory authorities to take more effective decisions on the development and formulation of policies for the management of tourism and economic activity at sea, but also the empathy of countries in matters of environmental protection.

The implementation of the Tourism Satellite Account (TSA), as the proper methodological tool to allow the most accurate and objective assessment of economic impact attributed to the share in GDP and National Income for each country, will definitely be supported by the utilization of the presented analysis.

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