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The Importance of Cruise Tourism for the Local and National Economy. The Example of the Seaport of Kołobrzeg

Keywords: cruise tourism; Kołobrzeg seaport; local economy; input-output method; economic effects; economic indicators

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Abstract

Theoretical background: Cruise tourism is a rapidly growing economic sector, with an impact on the local economy. Previous studies have focused on cruise tourism from large seaports, using different methodologies and emphasizing different economic impact factors.
Purpose of the article: This article identifies the importance of cruise tourism from a small seaport for the economy of the Koszalin sub-region and the country. Different methodological approaches to the studied phenomenon were highlighted. Factors influencing the importance of cruise tourism were identified.
Research methods: The importance of cruise tourism was determined using the input-output method, which allows for determining direct, indirect and induced effects. The regionalization of the national input-output table was performed based on the Flegg location quotient. The research material was obtained as a result of the conducted surveys. Materials using different methodologies in cruise tourism research were adopted for comparative analysis. The research results were presented in tabular form.
Main findings: Cruise tourism is a crucial component of the local economy, generates EUR 31.50 million of global output and EUR 13.70 million of added value, providing 370 jobs for the Koszalin subregion. The corresponding values at the national economy level are EUR 51.24 million of global output, EUR

21.67 million of added value, and 570 jobs. There are two approaches to studying cruise tourism in the literature, but they do not affect the results. The importance of cruise tourism depends on the number of tourists, the amount of expenditure, the type of port, the reference area and the accuracy of calculations. The industry's financial situation has recently deteriorated following rising operating expenses and market competition. The improvement of the situation should be seen in the promotion of cruise tourism, especially among foreign tourists, and the establishment of network contacts with the ports of the Southern Baltic.

Introduction

Maritime cruise tourism is growing in popularity worldwide (Płoska, 2025). According to the Cruise Lines International Association (2024), 31.7 million cruise travelers took part in cruises in 2023, an increase of more than 100% over 2019. The number of passengers will increase to nearly 40 million by 2027. Cruise revenue in 2022 was USD 138 trillion, providing 1.2 million jobs and USD 43 trillion in wages. Poland, too, has seen an increase in cruise passengers, especially short-haul cruise passengers, for many years (Central Statistical Office [CSO], 2019b; 2023b). The development of cruise tourism increases the need for knowledge of its economic impact, which is currently an essential direction of research (Artal-Tur et al., 2018).

There is a widespread belief in the literature on the subject that tourist cruises have a positive impact on the economy (Chase & Alon, 2002; Gibson & Bentley, 2006; Kuźmicki & Wasilewska, 2015; Pratt & Blake, 2009; Quan-Novelo et al., 2007). Hence, the primary purpose of this article is to determine the economic significance of cruise tourism. The scope of the subject concerns one form of cruise tourism, namely coastal tourism, practiced on the waters of the Southern Baltic Sea without calling at ports (Ptaszycka-Jackowska, 2012). The study was limited to the port of Kołobrzeg – the largest tourist port on the Polish coast. The area of impact of cruise tourism was referred to the local (Koszalin subregion) and national economy. The study results are for 2023, so they are as up-to-date as possible. The economic significance of cruise tourism was determined based on three indicators, i.e. output, added value, and employment, measures commonly used in the quantitative assessment of economic phenomena (Colbert-Busch et al., 2012; Jenniches, 2018). The above indicators were determined using the input-output method, which, along with the CGE model, is the most popular among researchers (Cho et al., 2013; Kahouli & Martin, 2018; Lee & Yoo, 2014; Morrissey & O'Donoghue, 2013). It allows for distinguishing direct, indirect, and induced effects, and the results of the study can be applied to smaller territorial units, which is a definite advantage of the method (Brown et al., 2012; Dwyer et al., 2004; Miller & Blair, 2009).

The article formulates the following research questions:

1. What is the economic significance of cruise tourism for the local and national economy?

2. What factors determine the economic significance of maritime cruise tourism?

3. What methodologies are used to study the significance of cruise tourism and do they influence the final results?

Previous studies on the economic importance of cruise tourism have been conducted based on different methodologies, making reliable comparisons difficult (Chang et al., 2016). Therefore, an additional purpose of the article is to identify factors influencing the research results. Specifically, the methodology for estimating economic effects "without reliance" and with "reliance" on a seaport was considered. For this purpose, a comparative analysis was conducted based on two studies, namely Artal-Tur et al. (2018) and Vayá et al. (2017). A comprehensive analysis of the literature on the subject revealed a clear research gap. There is a lack of studies in the domestic literature addressing the economic importance of cruise tourism. However, in foreign literature, research on cruise tourism is not a frequently addressed research topic. According to Vayá et al. (2017), few studies have attempted to quantify the economic impact of cruise tourism. Chang et al. (2016) speak similarly, adding that this is especially true in developing country markets. Moreover, according to the authors, the methodology of existing studies is so general that it does not allow for international comparisons. Secondly, few international studies focus on the economic significance of cruise tourism from large seaports. To the best of the author's knowledge, no one has studied the significance of cruise tourism from the perspective of smaller port structures, which is undoubtedly a novelty. Frequently cited authors addressing the issue of cruise tourism include Dwyer and Forsyth (1998), Braun et al. (2002), Brida et al. (2012), BREA (2013), Worley and Akehurst (2013), Papadopoulou and Sambracos (2014), CERTeT Bocconi (2015), Chang et al. (2016), Vayá et al. (2017), or Artal-Tur et al. (2018).

We can consider the added value of this article on three levels. In the first case, the importance of cruise tourism has been identified, which is new to the country. Identification of factors influencing the research results is a review and synthesis of previous scientific achievements. However, for the first time, attention was paid to methodological differences, which affect the varied value of economic effects.

The article consists of three parts. The first part reviews the literature. It focused on studies that use the input-output method to assess cruise tourism's economic importance. Attention was paid to various methodological approaches. Three economic effects were defined. The second part presents the theoretical assumptions of the input-output method and the regionalization of the input-output table. The study results are presented in the third part, and a discussion and comparative analysis are carried out. The article concludes with a summary.

Literature review

It is widely acknowledged that the first authors to establish the structure of cruise spending comprehensively were Dwyer and Forsyth (1998), as pointed out by Chang et al. (2016), Vayá et al. (2017) and Artal-Tur et al. (2018). They distinguished between expenses incurred by passengers and marine vessel operators. The first group of costs includes expenses related to the arrival of tourists at the home port (transportation, accommodation, food, purchases of goods and services, tourist attractions), the sea voyage (ticket price, tourist attractions), and the stay at ports of call (food, purchases, tourist attractions). Operators' costs, however, are related to services provided to the marine vessel and expenses incurred by crew members. The former include but are not limited to repair and maintenance expenses, navigational services (for the vessel's entry/exit to/from the port), port charges (berthing and passenger), purchase of fuel and energy carriers, and pollution collection, marketing, crew salaries. In turn, crew members' expenses are related to transportation, accommodation, food, shopping, and tourist attractions.

The authors noted the regional as well as national nature of cruise-related expenses. They cannot be assigned to the two categories mentioned above of expenditures, as they depend on numerous factors, including the ownership of the sea vessel, the level of economic development of the region, the area of the tourist destination, and the means of transportation to/from the port.

According to the authors, the benefits of cruise tourism development should be considered in terms of net benefits, i.e. considering the use of the potential of the regional economy and the costs associated with externalities. The more the economy's potential is utilized, the lower the net benefits of cruise tourism development. On the other hand, costs may be related to the increase in port land prices and the displacement of less competitive port activities. Hence, the various approaches to quantifying the benefits of cruise tourism development are the input-output method and the CGE general equilibrium model.

The authors mentioned above distinguish two types of benefits, i.e. direct and indirect. The former includes operators and tourists related to passenger cruise profitability and tourist satisfaction. Indirect benefits, on the other hand, are to be identified with an increase in the country's net foreign exchange earnings, the generation of profits and taxes in cruise-related sectors, an increase in employment, external benefits, an increase in the price of tourism services, and economies of scale, resulting in an increase in the volume and variety of tourism service provision.

According to the authors, the most commonly used metrics in the economic evaluation of cruise tourism are output, employment volume, and added value. In addition, the authors noted that most of the benefits from the development of cruise tourism are concentrated in home ports, and a small part of them become shared by ports of call.

Based on the methodology outlined above, Dwyer and Forsyth (1998) studied cruise tourism in Australia, concluding that it brings net benefits to regional and na-

tional economies. The item often cited by the authors (Chang et al., 2016; Danielis & Gregori, 2013; Vayá et al., 2017) is the publication by Braun et al. (2002). The authors studied the importance of the Port of Canaveral cruise tourism in Florida, USA. They determined the direct effects by utilizing a survey that included expenditures of marine units, passengers, and crew members. They used a regional input-output model to estimate the total effect.

BREA (2013), on the other hand, conducted a study for the Port of Victoria in Canada. A survey method determined the direct expenditures of passengers, crew members, and marine units. Then, the indirect impact on British Columbia's regional economy was estimated using a regional input-output table.

Worley and Akehurst (2013) determined the direct impact of cruise tourism in 11 New Zealand ports. In doing so, they used information obtained from seaport boards and national accounts. Using the input-output method, they calculated cruise tourism's indirect and induced impact on the regional economy. They used a simple location factor to regionalize the input-output table. The measures of economic impact were output, added value, and employment.

Chang et al. (2016) studied the economic importance of cruise tourism in the port of Incheon in South Korea. The territorial scope of the study included the Incheon region, the Seoul region, and other regions, as well as the entire country's area. The authors studied the direct impact using a survey method – and the indirect and induced impact using a regional input-output table. The measures of economic impact were output, added value, and employment. The authors presented the study results for the current situation of the cruise tourism industry and an alternative scenario. It assumed the location in the Incheon region of all tourist attractions declared by respondents in the survey. The article highlights the disparity in economic effects between the home port and the port of call in favor of the former.

Vayá et al. (2017) determined the importance of tourist cruises to the economy of Catalonia. The study included spending by tourists, crew members, and passenger ships. In addition to the direct and indirect effects, the authors also determined the induced effect. The direct effect was determined from a survey, while the indirect and induced effects were determined from a regional input-output table. Gross domestic product, employment, and tax revenues were used as measures of economic impact. The study's novelty was the presentation of survey results at a high level of data disaggregation.

Artal-Tur et al. (2018) made an economic assessment of cruise tourism based on the activities of the Cartagena seaport. The authors took tourism services, for the provision of which the existence of the port is necessary, as the direct effect. The direct effect was evaluated based on data obtained from surveys and other primary sources of information, i.e. the business database commercial records. In turn, the authors included in the indirect effect the other expenses of marine units, for which the port's existence is not necessary, and the expenses of tourists and crew members. On the other hand, the induced effect was taken as the expenditure of households employed in sectors directly and indirectly related to the activities of maritime units.

The indirect and induced effects were determined using a regional input-output table for the Region of Murcia. The authors used various economic measures, i.e. output, operating surplus, wages, and employment. In addition, they noted the varying range of benefits for home ports and ports of call.

Taking into account the cited literature review, the economic effects of cruise tourism implemented in the Kołobrzeg seaport were defined (Karyy & Hlynskyy, 2015). The direct effect includes the expenditures of those directly related to cruise tourism, i.e. marine vessels and tourists. However, crew members are omitted, as their place of residence is the city of Kołobrzeg, and therefore, they do not incur any expenses related to cruise tourism. In the case of marine units, the direct effect represents the price tourists pay for the cruise. Expenditures taken in this way create output, which is allocated to intermediate consumption (purchase of inputs) and creates added value (profit, wages, taxes, depreciation). On the other hand, tourists' expenditures are spent on transportation, food, accommodation, and purchasing goods and services. Sources of information on the direct effect are surveys of shipowners and tourists, financial reports, and CSO data (2023a).

The indirect effect includes sectors that are sources of supply for marine units and tourism service providers. Maritime units report demand for repair and maintenance services, fuel, energy, water, etc. In turn, tourism service providers source from their suppliers. Surveys and CSO data (2023a) are sources of information on the indirect effect. On the other hand, the method to quantify the amount of spending is the input-output model, based on the national input-output table of the CSO (2019b).

The induced effect was the consumption expenditures of workers directly employed in the tourism service and indirectly in the supply sectors. Determining the induced effect required obtaining information on wages, households' consumption propensity, and the spending structure. The above information was obtained from CSO sources (CSO, 2023c; CSO – LDB, 2024). As with the indirect effect, the input-output method is the way to quantify the amount of spending.

Research methods

The input-output model is a method allowing for the determination of inter-industry linkages, or indirect and induced effects. The indirect effect for output is calculated using the following formula referred to as the Leontief inverse matrix:

$$X_{indi} = (I - Aij)^{-1}Y \tag{1}$$

where:

X_{indi} – output in the industries that are a source of supply for maritime units and entities providing tourist services

I – identity matrix

$A_{ij} = \frac{xij}{Xi}$ – technical coefficients of intermediate consumption, where xij is flow from i-th industry to j-th industry

Y – demand for tourist services.

In order to avoid double-counting of the values, the value of the direct effect should be subtracted from the indirect effect expressed by formula (1), that is:

$$X_{indi} = (I - Aij)^{-1}Y - X_{dir} \tag{2}$$

where:

X_{dir} – direct effect, i.e. revenues of maritime units, which are the price paid by tourists.

The indirect effect for added value and employment is derived by incorporating the diagonal matrix into the model. Its diagonal is constituted by the added value share and the employment per output coefficients, that is:

$$V_{indi} = \hat{v}(I - Aij)Y \tag{3}$$

$$L_{indi} = \hat{l}(I - Aij)Y \tag{4}$$

where:

V_{indi} – added value created by entities that are a source of supply for maritime units and for entities providing tourist services

L_{dir} – employment in entities that are a source of supplies for maritime units and for entities providing tourist services

$\hat{v}$ – the diagonal matrix of added value

$\hat{l}$ – the diagonal matrix of employment.

Subsequently, the value of the direct effect for added value and employment is subtracted from the indirect effect for added value and employment, that is:

$$V_{indi} = \hat{v}(I - Aij)Y - V_{dir} \tag{5}$$

$$L_{indi} = \hat{l}(I - Aij)Y - L_{dir} \tag{6}$$

where:

V_{dir} – added value created by maritime units and entities providing tourist services

L_{dir} – employment on maritime units and among entities providing tourist services.

The induced effect is derived from the basic input-output model formula by adding an additional row and column to the matrix. The elements in the row represent net income (wages) per unit of output. The elements in the column represent

household consumer spending. The induced effect is the difference between the sum of the direct, indirect, and induced effects and the direct and indirect effects:

$$X_{indu} = X_{dir+indi+indu} - X_{dir+indi} = (I - \bar{A}ij)^{-1}Y - (I - Aij)^{-1}Y \quad (7)$$

where:
X_{indu} – induced effect resulting from household income growth
$\bar{A}$ – matrix of the technical coefficients expanded by consumer income and spending.

As with the indirect effect, the induced effect for added value and employment is calculated by incorporating the diagonal matrix into the Leontief inverse matrix:

$$V_{indu} = V_{dir+indi+indu} - V_{dir+indi} = \hat{v}(I - \bar{A}ij)^{-1}Y_i - \hat{v}(I - Aij)^{-1}Y_i \quad (8)$$

$$L_{indu} = L_{dir+indi+indu} - L_{dir+indi} = \hat{l}(I - \bar{A}ij)^{-1}Y_i - \hat{l}(I - Aij)^{-1}Y_i \quad (9)$$

where:
V_{indu}– induced added value resulting from household income growth
L_{indu} – induced employment resulting from household income growth.

The input-output method in our model makes use of data from input-output tables published in Poland at 5-year intervals (the latest available version is for 2015 – CSO, 2019a). Statistics Poland publishes input-output tables at the national level, which necessitates their adaptation to the regional dimension. Such regionalization allows for the determination of the target area's self-sufficiency, while being the most difficult task within the input-output method. Prior to regionalization, the input-output table was aggregated from 98 to 19 divisions corresponding to the PCA [Polish Classification of Activities] 2007 sections. The decision to narrow down the table was dictated by the sort of statistical data available for the Koszalin subregion. In addition, a too extensive disaggregation affects model complexity, thus hindering result interpretation.

National table regionalization was carried out based on the Flegg location quotient expressed by the following formula (Flegg & Tohmo, 2010; Flegg & Webber, 1997):

$$FLQ_{ij} \equiv CILQ_{ij}\ x\ [log_2(1 + \frac{TRE}{TNE})]^{\delta} \quad (10)$$

where:
FLQ_{ij}– Flegg location quotient
TRE – employment in the region's economy (in all industries)
TNE – employment in the national economy (in all industries)

$$CILQ_{ij} = \frac{SLQ_i}{SLQ_j} = \frac{REi/NEi}{REj/NEj}$$

where:
RE_i – regional employment in the retailer industry
NE_i – national employment in the retailer industry
RE_j – regional employment in the buyer industry
NE_j – national employment in the buyer industry
δ – delta parameter, whose value ranges between ($0 < \delta < 1$).

Location coefficients are most commonly used to regionalize a national table, with the Flegg location quotient demonstrating the highest accuracy in determining the self-sufficiency of regions. The value of the critical parameter δ was adopted based on Flegg and Tohmo's study of Finland's regions (Flegg & Webber, 2000). Consequently, the regression function was estimated for the purpose of determining the value of the δ parameter:

$$ln\ \delta = -1.8379 + 0.33195\ ln\ R \tag{11}$$

By substituting the *R* parameter with added value, the value of the δ parameter for the Koszalin subregion was estimated to be 0.2224.

Results and discussion

Table 1 shows the value of the direct effect for marine units. The global value was EUR 2,008,031, the added value was EUR 630,715, and the employment was 41 people. In 2023, 264,728 passengers participated in cruises; the average ticket price was nearly EUR 7.5. The share of added value in the global value was 31.41%. Tourist cruises employed 44 people, including eight shipowners and 33 crew members.

Table 1. Direct effect values (EUR and persons) for maritime units in 2023

Values	Economic category		
	Output value (EUR)	Added value (EUR)	Employment (persons)
	2,008,031	630,715	41

Source: Author's own study based on the surveys conducted.

In turn, Table 2 shows the structure of expenses of marine units, knowledge of which is necessary to determine the indirect effect. In 2023, expenditures on the purchase of inputs amounted to EUR 1,377,510 which accounted for 68.59% of revenues. The most critical item was expenditures on repair and maintenance of units EUR 499,947 which accounted for nearly 25% of costs. Port fees accounted for EUR 361,446, with an 18% share of costs. Port fees were collected for the possibility of departure/entry of a marine vessel from/to the port and the use of port wharves, and they included the costs of using energy, water, and waste collection. Another item is

expenditure on insurance for tourist units, i.e. EUR 198,795, with a 9.9% share of costs. A significant portion of the funds was consumed by fuel expenses of EUR 160,643, with an 8% share of costs. Expenses for promotion, amounting to EUR 100,402 accounted for another expense item, with a 5.0% share of costs. Other expenses, i.e. tax service costs and security maintenance expenses, were already less important.

Table 2. Structure of expenditures (in EUR and in %) of maritime units in 2023

PCA 2007	Name of section (expenditure)	Expenditure structure	
		EUR	%
A	Costs related to agricultural, forestry, hunting and fishing activities	0	0
B	Mining and quarrying	0	0
C	Repair and maintenance of fishing/tourist vessels	499,947	24.9
D	Expenses on energy, gas, hot water	0	0
E	Water supply and waste collection	0	0
F	Expenditures related to port infrastructure reconstruction/expansion	0	0
G	Costs of purchasing food and beverages and other products. Fuel expenses	160,643	8.0
H	Port fee costs	361,446	18.0
I	Accommodation and food costs	0	0
J	Internet connection expenses, purchase of promotional materials	100,402	5.0
K	Expenses on insurance, financial, and other services	198,795	9.9
L	Real estate activities	0	0
M	Costs of accounting, legal services, and market research and expert reports	38,153	1.9
N	Cleaning and security maintenance costs	18,072	0.9
O	Public administration	0	0
P	Expenditure on vocational courses improving skills	0	0
Q	Healthcare and social assistance	0	0
R	Costs of organizing recreational and sports events	0	0
S	Activities in member organizations	0	0
Total	PCA sections	1,377,510	68.6

Source: Author's own study based on the surveys conducted.

In turn, Table 3 shows how to determine tourist spending in the local economy. For this purpose, four groups of tourists were distinguished by considering nationality and the rationale for choosing a vacation destination. As for the first criterion, 25% of the tourists came from abroad and 75% from the country. For foreign tourists, cruises were one of the many attractions of selecting Kołobrzeg as a place to stay. Thus, it was assumed that part of their spending was directly related to cruise tourism. As for domestic tourists, on the other hand, 5% of them came from Kołobrzeg, and their expenses could not be linked to cruise tourism. Another 56% of tourists spent their leisure time in Kołobrzeg; cruise tourism was one of the many attractions for them. Some of their spending also had to be linked to tourist cruises. Passenger cruises were the main tourist attraction for the remaining 14% of domestic tourists. Their expenditures could be linked entirely to cruise tourism. However, they do not constitute a homogeneous group of tourists. Some of them came from closer geographic surroundings and are mainly day-trippers. The other part came from further afield and are multi-day tourists.

Table 3. Tourist spending (EUR) in the local economy in 2023

Groups of tourists	Expenses					
	Accommodation	Catering	Transportation	Purchase of goods	Other services	Total
Foreign tourists (cruises on one of many tourist attractions)	37.25	30.50	16.50	8.75	5.25	98.25
	2,463,885	2,021,816	1,085,670	585,092	344,554	6,501,016
Domestic tourists (cruises on one of many tourist attractions)	27.25	22.25	12.00	6.50	3.75	71.75
	4,028,527	3,305,731	1,775,103	956,642	563,356	10,629,359
Domestic tourists (cruises are the main attraction – closer surroundings)	0.00	15.00	19.50	5.25	3.00	42.75
	0.00	277,965	361,354	97,287	55,593	792,199
Domestic tourists (cruises are the main attraction – further surroundings)	33.75	35.25	36.25	15.75	8.50	129.50
	626,337	655,134	669,533	290,371	158,384	2,399,759
Total	98.25	103.00	84.25	36.25	20.50	342.25
	7,118,750	6,260,645	3,891,659	1,929,392	1,121,887	20,322,333

– the first line – expenses per family or angler
– the second line – total expenses of families or anglers

Source: Author's own study based on the surveys conducted and (CSO, 2023a).

The data in Table 3 indicate that tourist spending in 2023 could amount to EUR 20,322,333, which is EUR 307 per tourist. In comparison, these values are lower than in the study by Vayá et al. (2017) but higher than in the Artal-Tur et al. (2018) study. It is likely related to the nature of the port. In the first case, the port of Barcelona is the home port for most tourists, while in the second case, the port of Cartagena is the port of call.

Based on the data in Table 3, we can see that the importance of tourist spending to the local economy varies, as influenced by the number of tourists, nationality, and length of stay in the city. In terms of numbers, the most significant importance is held by domestic tourists, for whom cruises are one of many attractions (with 56% share), followed by foreign tourists (with 25% share), and minor importance is held by domestic tourists, for whom passenger cruises are the main attraction (7% each for tourists from closer and further afield). Considering the criterion of nationality, the expenses of foreign tourists are about 37% higher than those of domestic tourists. On the other hand, in terms of length of stay in the city, the most significant impact on the local economy is exerted by domestic tourists from further afield, for whom passenger cruises are the main attraction. They extend their stay in the city by three days. Domestic and foreign tourists, for whom passenger cruises are one of many attractions, account for one day of their stay in the city. On the other hand, the least important for the local economy are tourists from closer surroundings, who limit their stay in the city to one day. In their case, expenses for lodging and partially for food are not included. Although, as a whole, transportation costs should be included in the expenses associated with cruises, unlike tourists for whom cruises are one of many attractions.

Thus, from a hypothetical standpoint, foreign tourists, for whom passenger cruises would be the main attraction, would be most important to the local economy. On the other hand, the least influential would be domestic tourists from closer to home.

Knowledge of the structure of expenditures of marine units, tourists, and households became the basis for determining the total importance of tourist cruises, as presented in Tables 4–6 and the corresponding Figures 1–3. Considering all effects, the output value for the Koszalin sub-region was EUR 32,131,948, and for the country, EUR 51,867,126 (Table 4 and Figure 1). The direct effect was of most significant importance (EUR 22,330,364), while the indirect (EUR 3,031,143 and EUR 16,535,819 for the local and national economies, respectively) and induced (EUR 6,770,441 and EUR 13,000,943) effects were of lesser importance. The lesser importance of the indirect effect is determined by the degree of intermediate consumption in the national economy, which is about 55% (the more significant the intermediate consumption, the greater the importance of the indirect effect through the action of the expenditure multiplier). On the other hand, the importance of the induced effect is a function of the level of net wages in the economy, which is close to 12% (the more significant the share of wages, the greater the importance of the induced effect), the propensity of households to consume at an average level of 67% (the more significant the propensity to consume, the greater the importance of the induced effect) and the structure of spending (departments characterized by a high share of intermediate consumption, increase the importance of the induced effect).

The most immense impact on the value of the effects is tourist spending. It is due to the large number of tourists using marine services, which is related to the nature of cruise tourism, i.e. short trips without port calls. The small expenditure on the side of tourist units is determined by their size (six units).

The strength of the impact of cruise tourism on the local and national economy is represented by the expenditure multiplier, which expresses the ratio of direct to indirect and induced value. In this study, the value of the multiplier for the local economy is 1.44, i.e. one zloty of spending on cruise tourism generates an additional EUR 0.44 of value for the local economy. For the national economy, the value of the multiplier is 2.32.

The multiplier also determines the self-sufficiency of the local economy relative to the national economy. In the case of the direct effect, we can assume that the beneficiary of the benefit is entirely the local economy, where shipowners and tourists purchase products and services. The self-sufficiency of the Koszalin sub-region is just over 62%, tantamount to benefits for the local economy. The remainder, i.e. nearly 38%, are the so-called outflows from the local economy, i.e. the loss of benefits to the national economy.

Table 4. Effects of the impact of tourist cruises (EUR) on global production in 2023

Groups studied	Effects					Total	
	Direct	Indirect		Induced			
		Subregion	Poland	Subregion	Poland	Subregion	Poland
Maritime units	2,008,031	274,445	1,027,290	379,425	728,983	2,661,901	3,764,304
Tourists	20,322,333	2,756,699	15,508,529	6,391,016	12,271,961	29,470,048	48,102,822
Total	22,330,364	3,031,143	16,535,819	6,770,441	13,000,943	32,131,948	51,867,126

Source: Author's own study based on the surveys conducted.

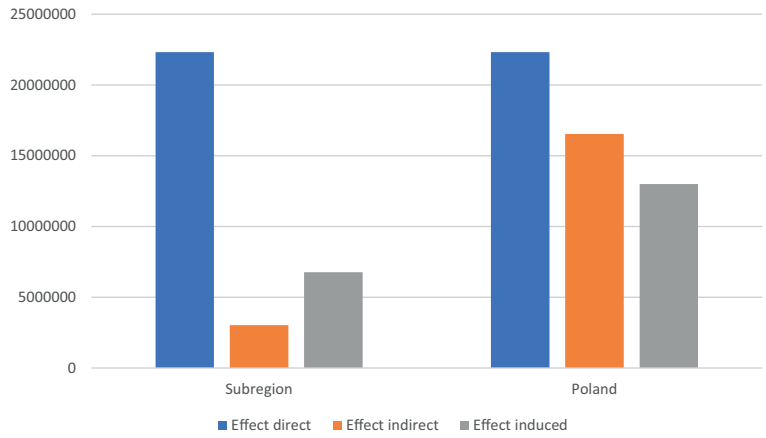

Figure 1. Effect of the impact of tourist cruises (EUR) on global production in 2023

Source: Author's own study based on the surveys conducted.

As for the second indicator, the value added for the subregion was EUR 13,701,847, and for the country, EUR 21,669,903 (Table 5 and Figure 2). The share of added value in output for the Koszalin subregion and the country was about 42%. It is worth noting that the added value of tourist cruises for marine units, which amounts to 31.41%, is lower than the overall value (42%) and slightly lower than the value for the "water and air transport" division, included in the input-output table, which amounts to 32.08%. However, it should be remembered that passenger cruises are only one of the subclasses of the "water and air transportation" division. The lower value, in the case of passenger cruises, may be a consequence of the small profit (or lack thereof) and low depreciation (or lack thereof), while at the same time, significant expenditures on repairs and maintenance of units (compounding intermediate consumption).

Turning to the data analysis in Table 5, it should be noted that the relationships between the various effects are similar to those for global production. The direct effect has the most tremendous significance, and the indirect and induced effects are less critical.

As for the multipliers, they take slightly lower values. The multiplier for the local economy is 1.33, and the national economy is 2.10.

The beneficiary of the benefits of the direct effect is entirely the local economy. The self-sufficiency of the Koszalin subregion is more than 63% and is slightly higher than that of global production.

Table 5. Impact of tourist cruises (EUR) on added value in 2023

Groups studied	Direct	Effects				Total	
		Indirect		Induced			
		Subregion	Poland	Subregion	Poland	Subregion	Poland
Maritime units	630,715	120,940	439,332	114,381	237,398	866,035	1,307,445
Tourists	9,688,137	1,221,050	6,677,878	1,926,625	3,996,443	12,835,812	20,362,458
Total	10,318,852	1,341,989	7,117,210	2,041,006	4,233,841	13,701,847	21,669,903

Source: Author's own study based on the surveys conducted.

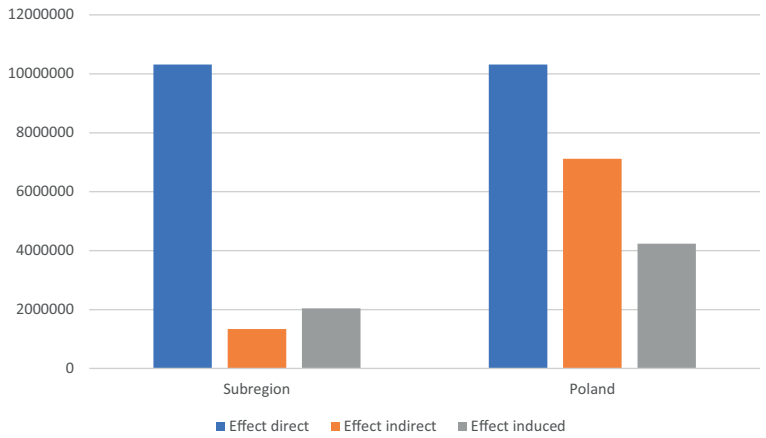

Figure 2. Effect of the impact of tourist cruises (EUR) on added value in 2023

Source: Author's own study based on the surveys conducted.

Regarding employment, tourist cruises can create nearly 370 jobs in the Koszalin subregion and nearly 517 in the country (Table 6 and Figure 3). Forty-one people work directly on tourist cruises, making them a highly labor-intensive sector of the economy.

Relationships between the effects have been maintained. However, the disproportions are slightly smaller due to the labor intensity mentioned above in the sector under study. The multiplier value for the subregion is 1.21, and for the country is 1.69.

Given that all shipowners and crew members reside in the Koszalin subregion, the direct effect is limited to the local economy. Tourist cruises create nearly 72% of jobs in the local economy, and 28% are outflows to the national economy.

Table 6. Effects of the impact of tourist cruises (persons) on employment in 2023

Groups studied	Direct	Effects				Total	
		Indirect		Induced			
		Subregion	Poland	Subregion	Poland	Subregion	Poland
Maritime units	41.00	2.40	8.32	2.19	4.50	45.59	53.82
Tourists	264.33	22.26	122.23	36.80	75.79	323.39	462.35
Total	305.33	24.66	130.55	39.50	80.54	369.49	516.42

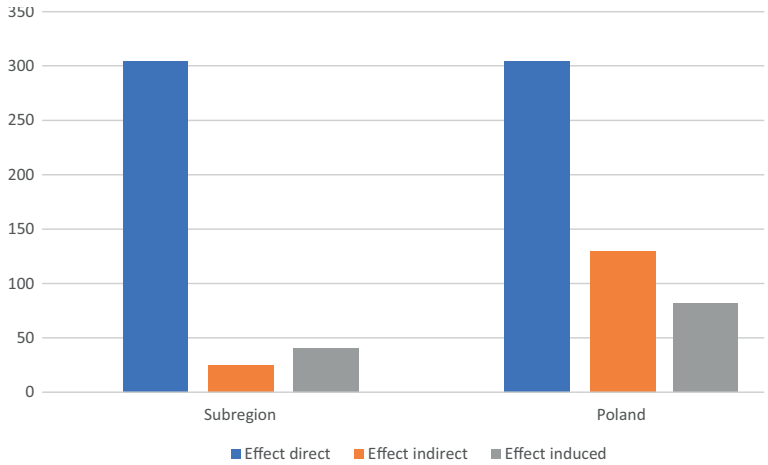

Figure 3. Effect of the impact of tourist cruises (persons) on employment in 2023

Source: Author's own study based on the surveys conducted.

Referring to Tables 4–6 and Figures 1–3, it should be noted that the direct effect is the most significant, while the indirect and induced effects are less significant. The second observation is that the indirect and induced effects are significantly smaller for the subregion's economy, which is a consequence of its smaller size and, consequently, its lower economic self-sufficiency.

Table 7 shows data on the importance of cruises to the local and national economy. The values between the three studied indicators are similar, with a slight advantage for employment. This is due to the greater labor intensity of the passenger cruise sector.

As for the assessment of importance, on the other hand, there appears to be little significance. In the case of the subregion, only tenths of a percent, and in the case of the country, thousandths of a percent. However, it should be considered that there are other seaports in the Koszalin subregion with passenger cruises, such as Darłowo. Secondly, narrowing the reference area to, for example, the municipality or the city of Kołobrzeg would increase the importance of tourist cruises. In addition, it should be remembered that the phenomenon under study is one of several hundred subclasses in the input-output table. Considering these factors, cruise tourism may

be an essential component of the local economy. In contrast, it will not be a critical driver of the national economy.

Table 7. Economic importance (EUR thousand and %) of tourist cruises in 2023

Economic category	Economy		Tourist cruises			
	Subregion	Poland	Subregion		Poland	
			value	%	value	%
Output value	12,911	1,735,813	31.50	0.2489	51.24	0.0030
Added value	5,426	729,502	13.70	0.2525	21.67	0.0030
Employment	126,401	15,168,969	370	0.2927	517	0.0034

Source: Author's own study based on the surveys conducted.

The difference in methodological assumptions prevents reliable international comparisons. From this perspective, comparative analysis may mislead the reader. The following are two different ways of evaluating the economic importance of cruises.

As mentioned, an identical methodology (input-output) in determining the economic significance of cruises was used by Vayá et al. (2017). Table 8 presents data on the importance of cruise tourism for the Catalonia region (in the NUTS 2 Classification of Territorial Units), and Table 9 for the Koszalin sub-region (NUTS 3) and the country. There is one significant difference between the tourist destinations. The volume of tourist spending in the study by Vayá et al. (2017) is much higher than in the present study. This may not be surprising, given the scale of cruise tourism in Catalonia (more than two million passengers) and the higher per capita spending. For most passengers, Barcelona is the home port. As mentioned, passenger spending at home ports is much higher than at ports of call. The other comparative criteria are similar to each other. Relationships between economic effects, multiplier values, and self-sufficiency place the Catalonia region between the Koszalin subregion and the national economy, which is logical given the reference area.

Table 8. Impact of cruise tourism (EUR million and people) in the Catalonia region in 2014

Effects	Indicators		
	Output value	Added value	Employment
Direct	442.5	225.9	4 026
Indirect and Induced	353.5	187.3	2 733
Total	796.0	413.2	6 759
Multiplier	1.80	1.83	1.63
Self-sufficiency of the region (%)	75	75	75

Source: Author's own study based on (Vayá et al., 2017).

Table 9. Impact of cruise tourism (EUR million and persons) in the Koszalin subregion and in the country in 2023

Effects	Indicators					
	Output value		Added value		Employment	
	Subregion	Poland	Subregion	Poland	Subregion	Poland
Direct	22.3	22.3	10.4	10.4	305	305
Indirect	3.0	16.5	1.3	7.1	25	131
Induced	6.8	13.0	2.0	4.2	39	80
Total	32.1	51.9	13.7	21.7	369	516
Multiplier	1.44	2.32	1.33	2.10	1.21	1.69
Self-sufficiency of the region (%)	62		63		72	

Source: Author's own study based on the surveys conducted.

The second study that was accepted for comparison is an article by Artal-Tur et al. (2018). As already mentioned, the authors studied the importance of cruise tourism, but based on seaport activities. In this approach, the direct effect includes only that part of the seagoing vessels' bravery for which the location of the seaport is necessary, i.e. pilotage, towing, mooring, repair and servicing, fuel supply, etc. Thus, the importance of the direct effect decreases in favor of indirect and induced effects and, consequently, the value of multipliers. Table 10 shows the study results for the port of Cartagena, and Table 11 shows the results for the present study, but modified, i.e. for the activities of the seaport of Kołobrzeg. The comparative analysis is limited to global production. There are some differences between the studies. First, the Artal-Tur et al. (2018) study shows smaller disparities between economic effects. This is due to the smaller number of tourists and lower tourist spending, factors that affect the value of indirect and induced effects, and characteristics of ports of call. As mentioned, Kołobrzeg is the home port, and cruises at sea occur without calling at nearby ports.

The second way of determining the importance of cruise tourism significantly influences the value of multipliers, the numerical values of which become larger. In the case of the port of Cartagena, they are 3.72–2.71–6.46 for output, added value, and employment, respectively. In the case of the port of Kołobrzeg, the values of multipliers for output are 30.14 and 49.00 for the subregion and the country, respectively.

As for the importance of cruise tourism, the Artal-Tur et al. (2018) study referred to the Murcia region (in the NUTS 2 Classification of Territorial Units), while this article refers to the Koszalin subregion (NUTS 3). A smaller reference area, with higher tourist spending, increased the importance of cruising for the Koszalin subregion. In addition, Artal-Tur et al. (2018) based their determination of indirect and induced effects on the regional input-output table for the Murcia region, while this study regionalized the national table. The second way is always less precise, which may impact the final results.

Interestingly, the global importance of cruise tourism in both the first and second ways of determining economic effects (Table 9 and Table 11) is very close, which means that only the proportion of economic effects changes between the approach-

es, not the importance itself. The slight differences are because the added value of marine units is not considered in the second way, hence the slightly smaller values.

Table 10. Impact effects of cruise tourism (EUR and persons) based on the seaport of Cartagena in 2011

Effects	Indicators		
	Output value	Added value	Employment
Direct	1,056,998	840,914	8.0
Indirect	3,284,886	1,919,972	44.6
Induced	650,762	357,074	7.1
Total	4,992,646	3,117,960	59.7
Importance for the region (%)	n.d.	0.0122	0.0109

Source: Author's own study based on (Artal-Tur, 2018).

Table 11. Effects of the impact of cruise tourism (EUR and persons) based on the activities of the sea port in Kołobrzeg in 2023

Effects	Output value	
	Subregion	Poland
Direct	1,022,088	1,022,088
Indirect	24,036,445	37,230,866
Induced	6,769,221	12,854,282
Total	31,827,754	51,107,236
Importance for the region (%)	0.2465	0.0029

Source: Author's own study based on the surveys conducted.

Finally, the economic significance of cruise tourism in selected regions of the world, i.e. the USA, Canada, Europe and the rest of the world, was compared (Table 12). In terms of the proportions between the effects (direct, indirect, induced) and multipliers, they are comparable to the case of cruise tourism in Poland analysed in this article (Table 9). The direct effect dominates, the indirect effect is less significant, and the induced effect is the least significant. The value of the cruise tourism multiplier in Poland does not differ from the corresponding values for the compared regions of the world. In the case of the Koszalin subregion (Table 9) and the Catalonia region (Table 8), the indirect and induced effects are less significant, and consequently so are the values of the multipliers, which results from the adoption of a smaller reference area.

Table 12. Effects of the impact of cruise tourism (USD billions) in selected regions of the world in 2023

Effects	Output value				
	Global	USA	Canada	Europe	RoW
Direct	76.3	27.7	1.9	28.1	18.5
Indirect	53.4	18.8	1.2	20.7	12.7
Induced	38.9	18.9	0.7	10.9	8.4
Total	168.6	65.4	3.9	59.7	39.6
Multiplier	2.21	2.36	2.05	2.12	2.14

Source: Author's own study based on (Tourism Economics, 2024).

Conclusions

This article identifies the importance of tourist cruises for the Koszalin subregion and the country. Sea cruises depart from the port of Kołobrzeg, cover the coastal waters of the southern part of the Baltic Sea, and are carried out without calling at surrounding ports.

In 2023, 264,728 passengers participated in sea voyages. The output value was EUR 32.13 million and EUR 51.87 million for the subregional and national economies, respectively, and the added value was EUR 13.70 million and EUR 21.67 million. Cruise tourism created 370 and 517 jobs. Among the economic effects, the direct effect is the most important, and the indirect and induced effects are less critical. The dominance of the direct effect affects the value of multipliers and the self-sufficiency of the subregion. The value of multipliers (the ratio of the direct effect to the indirect and induced effects) was 1.21–1.44 and 1.69–2.32 for the subregion and the country, respectively. In contrast, the self-sufficiency of the Koszalin subregion, depending on the indicator studied, was 62%, 63%, and 72%.

The importance of tourist cruises for the Koszalin subregion is tenths of a percent, while for the country, it is thousandths of a percent. These are not large values. However, it should be noted that tourist cruises are one of several hundred subclasses of the Polish Classification of Activities. Secondly, the study does not consider the other ports where tourist cruises are carried out. Finally, narrowing the reference area would naturally increase the importance of the phenomenon studied.

The comparative analysis strongly suggested that the importance of cruise tourism depends on the number of tourists, the amount of spending, the type of port (home port and port of call), the reference area (local, regional, and national economy), and the accuracy of the results (regional input-output table).

In the literature, there are two ways of determining the importance of tourist cruises. The first does not focus on the seaport. As a result, it counts the spending of marine units, tourists, and crew members as a direct effect. The second way is to examine the importance of tourist cruises based on the activities of the seaport. In this case, only the bravery of marine units, for which the location of the seaport is essential, is included in the direct effect. The importance of cruise tourism in the first and second ways of determining economic effects is very similar – only the proportion of economic effects changes, which consequently affects the value of multipliers.

Thus, the contribution of this article to science is not only to determine the importance of cruise tourism for the economy. Factors influencing the importance of cruise tourism and various methodologies for estimating tourist expenditure have also been presented.

The study of the volume of tourism expenditure in the local economy was based on information obtained from shipowners and data from the Central Statistical Office. Future studies should specify the volume and structure of expenditure on the basis of comprehensive surveys conducted among tourists. The study should cover

other seaports where tourist cruises are operated. The input-output method used in the article allows the significance of cruise tourism to be related to the subregion at most, which is too large an area. The ideal solution would be to relate the results to the municipality/city of Kołobrzeg. However, this would require the use of a different research method.

Tourist cruises carried out in Polish seaports have a long-standing tradition. However, the growing trend was halted, followed by the pandemic and the war in Ukraine. Due to the demographic crisis, the share of the youngest participants in tourist cruises has long declined. The industry's profitability is declining due to rising wages and energy and fuel costs. The market is becoming increasingly competitive due to the involvement of small fishing vessels in tourist cruises. There is a risk that tourist operators will reduce or even cease their activities. This must not be allowed to happen. Tourist cruises are an important part of the local economy, especially in the context of the decline of Baltic fishing and restrictions related to the development of transport functions. The port development strategy provides for the multifunctional development of economic activity, including tourist cruises. The local port is prepared to handle tourist traffic. It does not require investment in the development of capital-intensive port infrastructure. There is no shortage of berths for tourist vessels in the port. The attractiveness of tourist cruises should be increased by promoting maritime services, especially among foreign tourists, which should involve the Kołobrzeg Maritime Port Authority and the local government. Establishing network contacts with Polish and foreign ports should be considered. In the latter case, this will require the relaxation of regulations on which the extent of maritime tourism depends.

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