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Determinants of Poland's economic growth in the context of inbound tourism: Linear regression modelling

Determinanty wzrostu gospodarczego Polski w kontekście turystyki przyjazdowej – modelowanie regresji liniowej

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Abstract

This article evaluates the impact of international tourism and migration flows on key macroeconomic aggregates and the labour market in Poland, with a specific focus on identifying structural differences based on the country of origin and visitor profiles.

The empirical analysis is based on econometric modelling and multiple regression analysis using aggregated macroeconomic data for the period 2010–2024. The results reveal a significant structural asymmetry in the impact of migration and tourism streams. A 1% increase in overnight stays and tourist expenditure leads to a GDP increase of 1.19% and 0.798%, respectively, while simultaneously boosting employment in the HoReCa sector (Hotel, Restaurant, Café/Catering). Conversely, a 1% increase in the total number of arrivals results in a 1.66% decline in GDP. Highly positive economic impacts are driven by long-term arrivals from Ukraine (labour migration) and premium/business travellers from the UK. In contrast, cross-border and transit flows from Belarus and Russia show negligible or negative elasticities due to low-margin shopping profiles and geopolitical barriers. The findings suggest that Poland's tourism policy should shift from quantitative growth (volume of arrivals) to qualitative stimulation (length of stay and expenditure).

Strategic support should target premium, business, medical, and MICE tourism (Meetings, Incentives, Conferences, and Exhibitions tourism) segments to maximize the economic multiplier effect.

Keywords: HoReCa sector, international migration, econometric modelling, GDP, Poland, international tourism

Streszczenie

Celem artykułu jest ocena wpływu międzynarodowego ruchu turystycznego i migracyjnego na kluczowe agregaty makroekonomiczne oraz rynek pracy w Polsce, ze szczególnym uwzględnieniem identyfikacji strukturalnych różnic wynikających z kraju pochodzenia i profilu odwiedzających. Analiza empiryczna została przeprowadzona z wykorzystaniem modelowania ekonometrycznego oraz wielorakiej analizy regresji na podstawie zagregowanych danych makroekonomicznych z lat 2010–2024. Wyniki estymacji dowodzą strukturalnej asymetrii wpływu strumieni migracyjnych i turystycznych. Wzrost liczby noclegów i wydatków turystów o 1% generuje wzrost PKB odpowiednio o 1,19% i 0,798%, stymulując jednocześnie zatrudnienie w sektorze HoReCa. Z kolei wzrost ogólnej liczby przyjazdów o 1% skutkuje spadkiem PKB o 1,66%. Silnie dodatni wpływ wykazują napływy długookresowe z Ukrainy (migracja zarobkowa) oraz segment premium/biznes z Wielkiej Brytanii. Strumienie przygraniczne i tranzytowe z Białorusi i Rosji wykazują elastyczność znikomą lub ujemną ze względu na niskomarżowy charakter zakupów i bariery geopolityczne. Wyniki sugerują konieczność reorientacji polityki turystycznej Polski z podejścia ilościowego (liczba przyjazdów) na ujęcie jakościowe (długość pobytu i wielkość wydatków). Wsparcie strategiczne powinno koncentrować się na turystyce premium, biznesowej, medycznej oraz sektorze MICE w celu maksymalizacji efektu mnożnikowego.

Słowa kluczowe: sektor HoReCa, migracje międzynarodowe, modelowanie ekonometryczne, PKB, Polska, turystyka międzynarodowa

Introduction

The contemporary global economy is characterized by dynamic shifts, in which the service sector plays an increasingly vital role as a catalyst for economic growth. One of the key components of this expansion, particularly in Central and Eastern European countries, is inbound tourism. In Poland, this sector has undergone a profound transformation over recent decades, evolving into a significant source of foreign exchange reserves, a generator of employment, and a driving force behind national infrastructure development. According to UN tourism data, the number of international arrivals reached approximately 1.52 billion in 2025, representing an increase of nearly 60 million compared to the previous year (*The UN Tourism Data Dashboard. International Tourist Arrivals*, 2026). These results

confirm the sustained high demand for tourism and a return to pre-pandemic growth trends. In Poland, 2025 proved to be another record-breaking year for the tourism industry. Between January and November 2025, 39.6 million tourists utilized tourist accommodation establishments, representing a 9.9% increase compared to the corresponding period of 2024 (*Rekordowe wyniki polskiej turystyki w 2025 roku – branża turystyczna rośnie szybciej niż polskie PKB*, 2026). The number of domestic tourists grew by 9.3%, while the number of international tourists expanded by 12% (*Rekordowe wyniki polskiej turystyki w 2025 roku – branża turystyczna rośnie szybciej niż polskie PKB*, 2026).

According to the UNWTO (*International Tourism Highlights, 2024 Edition*, 2024), inbound tourism significantly contributes to economic development by providing foreign currency inflows and stimulating job creation. The influx of foreign tourists generates direct demand for transport, housing and public services, which, due to multiplier effects, leads to an increase in production in other sectors of the national economy. Therefore, understanding the relationship between the arrival of foreign tourists and the dynamics of key macroeconomic indicators is crucial for effective planning of the country's economic and tourism policy.

The importance of inbound tourism for the development of the national economy: Theoretical provisions and empirical evidence

The study of the relationship between tourism development and economic growth is an important issue in modern academic literature. The theoretical basis of the hypothesis regarding the positive impact of tourism on economic growth is most often the theory of endogenous growth, according to which trade liberalization promotes economic growth by facilitating transactions with goods and services, increasing the efficiency of investments and providing positive externalities for firms (Rivera-Batiz, Romer, 1991). The strengthening of the impact of inbound tourism on the national economy occurs as a result of the growth of the size of the tourism market (Habibi, Rahmati, Karimi, 2018), which is explained by the theory of economic growth in terms of the impact of international tourism activity on GDP. The theory of economic growth is directly related to the concept of export-led growth, which explains economic growth through determinants such as human resources employed, new technologies, and increased foreign exchange earnings (Rivera, 2017). Tourism has direct, indirect, and induced effects on the economy, increasing jobs, foreign exchange earnings, and national income (Perles-Ribes et al., 2017). Confirmation of the relationship between economic growth and the development of the tourism sector was obtained by Antonios Adamopoulos and Eleftherios Thalassinos as a result of econometric modelling based on statistical data for the six largest industrialized countries (Canada, France, Germany, Italy, Great Britain and the USA), which are also considered the most attractive tourist destinations. Adamopoulos and Thalassinos argue that "[t]ourism development has greater positive and direct effect on economic growth for Canada, Italy, UK and USA; travel services have a positive indirect effect on economic

growth through tourist arrivals for Canada, Italy and USA" (Adamopoulos, Thalassinos, 2020).

Alex Acheampong et al. examined the impact of inbound tourism on inclusive growth using data for 154 countries from 2000 to 2020 and found that foreign tourist arrivals and the spending they make in the host country are directly related to inclusive growth (Acheampong, Opoku, Koomson, 2025). Anyu Liu and Doris Chenguang Wu confirmed the impact of tourism productivity on economic growth in Spain (Liu, Wu, 2019). Rauniyar Ashish Kumar proved that inbound tourism stimulated short-term and long-term economic growth in Nepal and also confirmed the long-term one-way Granger causality from tourism to economic growth (Kumar, 2019).

Aleksandra Milczarek, considering the economic significance of tourism, emphasizes the importance of tourism potential: countries that are largely dependent on tourism and foreign travellers (Malta, Croatia, Spain, Greece, Cyprus, Portugal) have higher employment in tourism and a larger share of tourism in GDP than other EU countries (Milczarek, 2017). Anna Semmerling explains the dependence of a country's GDP on income from the sale of tourism services by the fact that tourism enterprises form a service chain, and cash receipts from tourists are redistributed, circulating throughout the economy, creating a financial effect at all phases of economic turnover (Semmerling, 2017: 9–10).

Academic publications provide arguments to confirm the relationship between the development of inbound tourism and the dynamics of economic growth. Inbound tourism is an important export sector, providing the necessary foreign exchange reserves, stimulating investment in infrastructure and contributing to increased employment in countries that have tourism potential and effectively use it. Empirical studies confirm that foreign tourist spending generates a direct increase in income in the service sector, which, through the multiplier mechanism, is transformed into an increase in aggregate demand and GDP.

The state of research on inbound tourism and its impact on the Polish economy

Significant interest of researchers is focused on studying the dynamics of inbound tourism, analysing economic, technological and informational factors of the development of tourist services in Poland (Rowiński et al., 2023). Ewa Bąk-Filipek, Gábor Szalkai and Katarzyna Podhorodecka studied inbound tourism during the COVID-19 pandemic in Poland according to the main indicators (number of foreign tourist arrivals, structure of inbound tourism by purpose of trip and duration of stay of tourists, average tourist spending) and concluded that the waves of pandemic exacerbation had a significant impact on the dynamics of tourist flows and structural changes in the services provided (Bąk-Filipek, Szalkai, Podhorodecka, 2022).

Using the relationship between the WEF composite Travel & Tourism infrastructure score and the sector's direct contribution to GDP, Beata Będzik and Sylwia Gołąb found that Poland's position is below the EU average (Będzik, Gołąb, 2020). To study the relationship between active foreign tourism revenues and foreign visitors in the V4 countries

in 2009–2015, Daniela Matušíková et al calculated the Pearson correlation coefficient for each of the four countries separately and confirmed a positive relationship between active tourism revenues and the number of foreign visitors in Slovakia, the Czech Republic and Poland. (Matušíkova, Šambronská, Żegleń, 2020).

An important direction of research into the impact of tourism on the Polish economy is the analysis of the relevant processes in metropolitan areas that have become attractive tourist destinations. Thus, according to estimates by Maciej Dębski et al., the contribution of inbound tourism to Warsaw's GDP, which consists of the added value generated by visitors' consumption, supplemented by net indirect taxes on this consumption, in 2019 amounted to approximately 2.0% of Warsaw's GDP (Dębski et al., 2021: 53–54). According to a study conducted by Zygmunt Kruczek and Leszek Mazanek, in 2018 the GDP generated by the tourism industry in Krakow amounted to more than 8% of the city's total GDP (Kruczek, Mazanek, 2019).

As the analysis of academic literature has shown, scholars recognize the significant role of inbound tourism in Poland's economic growth. However, these conclusions are mainly based on the study of the structural and dynamic characteristics of the tourism industry and GDP. At the same time, the relationship between the indicators characterizing inbound tourism and economic growth remains insufficiently studied. Despite a significant number of publications devoted to the role of tourism in the Polish economy, there are no studies of the relationship between tourism and economic growth using econometric tools, in particular regression models, which allow separating the actual impact of tourism on economic growth from general macroeconomic trends.

This article aims to identify and analyse the determinants of economic growth in Poland that are related to inbound tourism. The main research tool is linear regression modelling, which allows quantifying the impact of tourism variables on macroeconomic indicators.

Methodology for studying the impact of inbound tourism on the Polish economy

To build econometric models that will allow assessing the impact of inbound tourism on the Polish economy, the linear multiple regression method was used. The list of variables characterizing economic development includes GDP; income of enterprises in the field of services related to servicing tourists; number of employees in enterprises in the field of accommodation and catering, culture, entertainment and recreation (tab. 1).

Tab. 1. Indicators characterizing economic growth and development of tourism-related economic sectors

	GDP, in mln PLN	Total revenues in accommodation and food service enterprises, in mln PLN	Total revenues in activities related to arts, entertainment and recreation, in mln PLN	Revenues from catering activities, in mln PLN	Employed persons, in thousands	
					Accommodation and catering	Arts, entertainment and recreation
2010	1434368	8294,723	12046,14	12964,89	243,2	149,1
2011	1528127	9438,996	12136,77	13649,27	237,5	153,3
2012	1595225	9761,300	11534,95	14719,95	246,4	147,0
2013	1656341	9714,978	11050,98	15617,25	244,7	140,0
2014	1719097	10322,360	10082,89	17111,89	248,7	144,9
2015	1809564	11417,330	10621,90	19177,59	252,3	146,1
2016	1858637	12468,020	11669,46	22187,76	270,6	150,6
2017	1989351	14033,880	14254,90	24285,73	291,4	154,2
2018	2115242	14947,800	15552,56	26026,72	295,9	157,3
2019	2288492	16676,360	23277,82	30017,10	307,3	160,7
2020	2362909	11952,960	26734,81	19809,45	290,1	155,3
2021	2623948	15733,130	39952,89	27620,21	269,8	153,8
2022	3067495	22009,020	58831,32	39147,78	321,0	166,3
2023	3415274	26707,580	73917,55	47275,29	320,6	169,3
2024	3653432	30019,580	–	52679,19	325,9	172,5

Source: compiled based on data from the Central Statistical Office of Poland (*Przychody z działalności gastronomicznej*, 2024; *Wyniki finansowe wg sekcji PKD 2007,* 2024; *Roczniki Statystyczne Rzeczypospolitej Polskiej*, 2025).

Variables characterizing inbound tourism include: spending by foreigners during travel; the number of foreign tourists who stayed overnight in accommodation establishments; the total number of foreigners and the number of citizens of Belarus, Germany, Great Britain, Russia and Ukraine who visited Poland (tab. 2).

Tab. 2. Indicators characterizing foreign tourism in Poland

	Expenses of foreigners, bln PLN	Foreign tourists accommodated in tourist accommodation establishments, in thousands	Total arrivals of foreigners to Poland, in thousands	Arrivals of foreigners to Poland by citizenship, thousands				
				Belarus	Germany	Russia	Great Britain	Ukraine
2010	26,7	10064,630	8912,6	2650,8	168,4	792,1	294,4	4307,1
2011	25,7	10620,260	10763,9	3145,2	165,2	1092,8	321,2	5218,5
2012	28,9	11876,600	12469,0	3342,4	185,3	1506,9	341,9	6108,0
2013	32,1	12471,270	14123,4	3306,1	164,3	2123,7	402,5	7132,7
2014	43,1	12992,240	14863,0	3352,5	132,9	2038,0	455,1	7897,5
2015	51,0	13757,660	15890,5	3041,1	142,0	1642,0	562,3	9492,9
2016	54,7	15579,230	16942,2	3097,5	192,2	1418,6	675,3	10136,6
2017	56,7	16705,220	18257,8	3632,6	195,2	1578,7	809,0	10328,7
2018	58,3	17742,650	18049,1	3480,4	241,0	1436,1	898,2	9963,6
2019	61,0	18683,580	18619,4	3370,1	242,1	1470,9	1024,1	10408,2
2020	27,4	6622,952	6189,0	1114,0	61,9	346,6	321,8	3762,9
2021	28,6	7165,013	6457,4	865,3	96,7	167,9	206,6	4294,1
2022	44,8	14759,250	13668,0	1435,1	150,3	156,4	656,1	9594,9
2023	53,4	17010,910	14019,8	1275,8	224,3	236,0	925,3	9519,8
2024	56,9	18392,030	13791,7	1199,9	262,0	309,0	979,2	9226,6

Source: compiled based on data from the Central Statistical Office of Poland (*Turystyka w 2024*, 2024; *Turyści zagraniczni w turystycznych obiektach noclegowych*, 2024; *Roczniki Statystyczne Rzeczypospolitej Polskiej*, 2025).

In order to test the impact of inbound tourism on the Polish economy, models were constructed that are described by the following relationship:

$$Econ = a_0 + a_1 Accom_FT + a_2 Arrivals_F + a_3 Exp_F + \varepsilon_{1t},$$

where *Econ* denotes the dependent variable, for which indicators characterizing the Polish economy are alternately utilized (*GDP* – Poland's gross domestic product, *Reven_Accom* – total revenues in accommodation and catering, *Reven_AER* – total revenues in enterprises engaged in activities related to arts, entertainment and recreation; *Reven_Catering* – revenues from catering activities; *Empl_Accom* – employed persons in accommodation and catering enterprises Employment in accommodation and catering enterprises; *Empl_AER* – employed persons in arts, entertainment and recreation enterprises); *Accom_FT* – accommodation provided to foreign tourists in accommodation facilities; *Arrivals_F* – total arrivals of foreigners to Poland; *Exp_F* – expenses of foreigners.

Additionally, the relationship between economic indicators (GDP, income of enterprises whose activities are related to serving foreigners, employment in the sectors providing accommodation and catering services, and related to culture and entertainment) and the number of arrivals of foreigners to Poland by citizenship was modelled:

$$Econ = b_0 + b_1 Arriv_{Bel} + b_2 Arriv_{Germ} + b_3 Arriv_{GB} + b_4 Arriv_{Rus} + b_5 Arriv_{Ukr} + \varepsilon_{2t}.$$

The number of arrivals of foreign citizens from those countries from which tourist flows were the largest was used as independent variables in this model: *Arriv_Bel* – tourists from Belarus; *Arriv_Germ* – tourists from Germany; *Arriv_GB* – tourists from Great Britain; *Arriv_Rus* – tourists from Russia; *Arriv_Ukr* – tourists from Ukraine.

All raw statistical data obtained from the Central Statistical Office were transformed using the natural logarithm, which ensured statistical correctness and linear interpretability of the regression model. The estimation of the regression model parameters and the verification of the models' goodness-of-fit were conducted using Statistica software.

Results of the assessment of the impact of foreign tourists on the Polish economy

The regression analysis confirmed the significant impact of inbound tourism indicators on the Polish economy, as evidenced by three models of this dependence, shown in table 3. According to the first model, in 2010–2024, Poland's GDP directly depended on the change in the number of foreign tourists who spent the night in the relevant tourist facilities and on the expenses that foreign tourists made during the trip: with an increase in each of these independent variables by 1%, the dependent variable increased by 1.19% and 0.798%, respectively, with other constant conditions. At the same time, an inverse relationship was found between GDP and the number of foreigners who visited Poland: with an increase in the independent variable by 1%, the dependent variable decreased by 1.66%, with other constant conditions. Two other models characterizing the impact of inbound tourism on the income of enterprises whose activities are related to tourist accommodation and gastronomy also showed a positive impact of overnight stays of foreign tourists and their expenses on the income of these enterprises, while the number of foreigners arriving in Poland had a negative impact. The reliability of the obtained models is confirmed by high values of the correlation and determination coefficients, a low level of statistical error in the calculation of the parameters of linear equations and the absence of autocorrelation. The calculated F-statistics (Fisher's criterion values) for all models exceed the critical (tabular) values, which indicates the statistical significance of the relationship between the dependent and independent variables.

Tab. 3. Results of regression analyses of foreign nationals in the Polish economy in 2010–2024

Factor features	Dependent variable		
	GDP	***Reven_Accom***	***Reven_Catering***
Number of observations	15	15	15
Intercept	16,05*** (1,701)	8,045*** (1,961)	9,186*** (2,114)
Accom_FT	1,190** (0,417)	1,9*** (0,481)	1,839*** (0,518)
Arrivals_F	-1,663*** (0,320)	-2,086*** (0,369)	-2,211*** (0,397)
Exp_F	0,798*** (0,248)	0,866** (0,285)	1,174*** (0,308)
DW	0,996	1,081	1,038
R	0,889	0,916	0,924
R2	0,791	0,840	0,854
F-statistics	F(3,11)=13,860	F(3,11)=19,287	F(3,11)=21,587

* statistical error rate (p-level) ≤10%;

** statistical error rate (p-level) ≤5%;

*** statistical error rate (p-level) ≤1%.

Source: calculated by the author.

The negative sign associated with the number of foreign visitors, coupled with the positive signs for overnight stays and expenditures, provides evidence of an inefficient structure within a segment of migration and tourism flows. The total number of foreigners encompasses every individual crossing the border – including cross-border workers, transit travellers, short-term visitors staying for only a few hours without an overnight stay, as well as economic migrants. If this particular group expands at the fastest rate, it imposes real costs on the state infrastructure (burdening roads, transport networks, border services, and the environment) without leaving a financial equivalent in the economy in the form of paid hotel accommodations or gastronomic services. Interpreting this situation within a migration context points to the potential occurrence of a substitution effect in the labour market. Consequently, it can be inferred that the Polish economy does not benefit from the mere "fact of the physical presence" of a foreigner, but rather from the duration of their stay and their propensity to consume. It is the quality and value added of the tourism stream that matter, rather than its volume.

The regression analysis revealed no statistically significant relationship between the income of cultural, entertainment, and recreational enterprises and either the number of international tourists or their travel expenditures. The lack of a statistically significant relationship between the income of enterprises in the culture, entertainment, and recreation sector and the variables describing the influx and expenditures of international tourists indicates a distinct economic profile of this industry compared to the accommodation and food services sector (HoReCa). This empirical finding allows for the conclusion that the financial condition of cultural and recreational entities in Poland is primarily determined by domestic demand and – in the case

of public institutions – by a system of non-market subsidies. Despite its documented strong impact on the HoReCa sector and GDP in previous models, international tourism does not constitute a direct macroeconomic driver of revenue for the culture and recreation enterprises as a whole. This may stem from language barriers within the offered services, as well as the marginal share of cultural expenditures in the structure of travellers' budgets.

The regression analysis allowed for the construction of two models confirming a direct dependence of employment in sectors related to tourism services on both the number of international tourists utilizing accommodation and international tourist travel expenditures, as well as an inverse relationship with the total number of foreigners arriving in Poland (tab. 4). Thus, with a 1% increase in the number of international tourists utilizing accommodation and a 1% increase in international tourist expenditures, the number of employees in enterprises providing accommodation and catering services increased by 0.408% and 0.323%, respectively. Concurrently, a 1% increase in the number of foreigners arriving in Poland caused a decrease in the number of employees in this service sector.

Tab.4. Results of regression analysis of the impact of foreign arrivals on the number of people employed in the service sector in Poland in 2010–2024

Factor features	**Dependent variable**	
	Empl_Accom	***Empl_AER***
Number of observations	15	15
Intercept	5,582*** (0,636)	4,334*** (0,224)
Accom_FT	0,408** (0,156)	0,452*** (0,065)
Arrivals_F	-0,532*** (0,119)	-0,378*** (0,060)
Exp_F	0,323*** (0,093)	–
DW	1,659	1,403
R	0,895	0,895
R^2	0,803	0,801
F-statistics	F(3,11) = 14,925	F(2,12) = 24,160

* statistical error rate (p-level) ≤10%;

** statistical error rate (p-level) ≤5%;

*** statistical error rate (p-level) ≤1%.

Source: calculated by the author.

An interpretation of these results through the prism of the labour market and employment structure in the tourism services industry (accommodation and catering) indicates that employment is directly linked to labour intensity. The model's findings perfectly reflect this: (1) overnight stays stimulate employment because an overnight tourist generates full demand for hotel operations (front desk, housekeeping, administration) and catering

services (breakfasts, hotel restaurants), and an increase in the number of overnight stays provided forces hotels to expand headcount to maintain service standards; (2) expenditures stimulate employment because higher spending implies that tourists do not merely sleep in hotels but intensively utilize additional services (premium restaurants, SPA areas, tour guides, or local attractions), which generates higher demand for personnel across the entire tourism-related sector; (3) the total number of foreigners has a negative impact due to the fact that this indicator largely depends on transit, same-day, or cross-border workers, who typically do not utilize accommodation facilities and minimally engage with catering services (often bringing their own provisions or purchasing only fuel/basic products at petrol stations).

The obtained results indicate the occurrence of a scale and optimization effect: if mass same-day tourism expands without a corresponding increase in overnight stays, restaurants and hotels have no incentive to expand employment. Furthermore, a large influx of foreigners (e.g., economic migrants seeking employment, including within the HoReCa sector) increases the labour supply. This can lead to a situation where employers, instead of increasing the number of official full-time positions, optimize costs, introduce flexible employment arrangements, or partially shift labour into the informal economy (which is reflected in official statistical data as a "decrease in the number of employees").

The obtained empirical results confirm that employment in the accommodation and catering services sector in Poland exhibits a strong dependence on the qualitative structure of tourism flows rather than on their quantitative volume. The positive elasticity of employment with respect to the number of overnight stays (+0.408%) and expenditures (+0.323%) indicates a direct mechanism of job creation by tourists who generate high value-added for the economy (requiring full hotel and commercial services). Conversely, the inverse relationship in the case of the total number of arriving foreigners suggests that mass transit or same-day movement does not generate incentives to expand labour resources in the analysed enterprises.

The assumption regarding the vital importance of the qualitative structure of tourist flows for accelerating economic growth and achieving positive effects in the tourism industry is confirmed by the results of the regression analysis of the impact of the number of foreigners arriving in Poland, broken down by their citizenship. As shown in table 5, during the analysed period, Poland's GDP demonstrated a statistically significant direct relationship with the number of arrivals of UK citizens (Model 1) and Ukrainian citizens (Model 2), whereas the dependence of GDP on the number of arrivals of Belarusian citizens (Model 1) and Russian citizens (Model 2) was inverse. According to Models 3 and 4, total revenues in accommodation and catering depended directly on the number of arrivals of UK citizens, while the relationship with arrivals of Russian citizens was inverse. Concurrently, no statistically significant relationship was found between the total revenues of enterprises in the aforementioned fields of activity and the arrivals of Belarusian and Ukrainian citizens.

Tab. 5. Results of regression analysis of the impact of the number of foreign arrivals by citizenship on the Polish economy in 2010–2024

Factor features	Dependent variable			
	GDP	***GDP***	***Reven_Accom***	***Reven_Catering***
	Model 1	***Model 2***	***Model 3***	***Model 4***
Number of observations	15	15	15	15
Intercept	16,158*** (0,271)	12,651*** (0,764)	8,127*** (0,409)	8,296*** (0,467)
Arriv_Bel	-0,499*** (0,029)	–	–	–
Arriv_GB	0,362*** (0,029)	–	0,537*** (0,058)	0,624*** (0,067)
Arriv_Rus	–	-0,283*** (0,034)	-0,294*** (0,031)	-0,323*** (0,036)
Arriv_Ukr	–	0,427*** (0,088)	–	–
DW	1,710	1,138	1,976	2,05
R	0,983	0,929	0,963	0,962
R^2	0,968	0,864	0,927	0,926
F-statistics	F(2,12)=182,96	F(2,12)=38,324	F(2,12)=77,318	F(2,12)=75,874

* statistical error rate (p-level) ≤10%;

** statistical error rate (p-level) ≤5%;

*** statistical error rate (p-level) ≤1%.

Source: calculated by the author.

The obtained empirical results (tab. 5) can be explained by significant differences in the expenditure profiles and purchasing power of the citizens of the analysed countries. Citizens of the United Kingdom typically utilize the full spectrum of commercial infrastructure, including hotels, catering, air transport, and cultural services. This generates high unit revenue, which directly impacts GDP growth by stimulating consumption. Conversely, arrivals of Belarusian citizens (particularly during the analysed period) frequently bear the characteristics of cross-border, shopping, or economic tourism. Their expenditures are concentrated on essential goods characterized by lower profit margins or partially situated within the informal economy, which translates into the official growth of the Gross Domestic Product to a significantly lesser extent.

Another factor determining the varied impact of arrivals from the United Kingdom, Belarus, Ukraine, and Russia on the Polish economy is the specific nature of the tourist movement itself. Movement from the United Kingdom largely encompasses business tourism and city breaks (primarily to Krakow and Warsaw). Business tourism exhibits a strong, positive correlation with economic growth, as the arrivals of specialists and investors directly stimulate the market environment. In contrast, movement from Belarus most frequently takes the form of visiting friends and relatives (VFR tourism). Such

tourists rarely utilize commercial accommodation and catering facilities, which drastically limits the multiplier effect within the national economy.

The modelling results, indicating a positive correlation between arrivals of Ukrainian citizens and Poland's GDP alongside a negative relationship in the case of Russian citizens, reflect profound structural differences in the nature of these flows. The impact of Ukrainian arrivals on the Polish economy reflects a unique cross-border mobility dynamic. During the analysed period, these inbound visitor flows – which encompass short-term travel, cross-border shopping, and Visiting Friends and Relatives (VFR) tourism associated with labour mobility – demonstrated a distinct macroeconomic relationship with domestic GDP. The influx of workers effectively filled supply-side gaps in highly labour-intensive sectors, such as construction, services, and agriculture, which directly translated into an expansion of the economy's productive capacity and an increase in gross value added. Unlike short-term tourists, Ukrainian citizens frequently settle in Poland for extended periods, generating sustained demand for consumer goods, real estate rentals, and services. Furthermore, the growing number of business entities established in Poland by Ukrainian citizens additionally stimulates GDP dynamics through investments and job creation.

The negative parameter associated with the variable for arrivals from Russia can be interpreted as a statistical consequence of the co-occurrence of crisis-related phenomena, such as heightened geopolitical risk, a regression in bilateral trade, and the low-margin transit and shopping nature of the visits. Personal movement from Russia was historically intertwined with commercial trade (inter alia, within the framework of the Local Border Traffic agreement). Institutional restrictions and sanctions led to a situation where, despite the physical presence of individuals, the associated capital and commodity flows decreased drastically, which the econometric model identifies as an inverse relationship. Similar to the case of Belarus, a significant share of the movement from Russia (particularly with regard to the Kaliningrad Oblast) took the form of short-term shopping trips. Under conditions of high inflation and exchange rate fluctuations, the real contribution of these visits to GDP generation proved to be lower than the infrastructural costs of managing this traffic or the losses resulting from the general cooling of economic relations.

Conclusion

The empirical analysis conducted in this study, based on econometric modelling, allowed for the formulation of key conclusions regarding the impact of international tourism and migration flows on selected macroeconomic aggregates and the labour market in Poland in the years 2010–2024.

1. Structural asymmetry of the impact of migration flows. The estimation results of the regression models unequivocally prove that the impact of foreigners on the national economy (GDP) and the tourism services sector (HoReCa) is conditioned by the structure and quality of this stream, rather than its quantitative volume. The positive elasticity of GDP with respect to the number of overnight stays (+1.19%) and expenditures (+0.798%) confirms that the key drivers

of economic growth are tourists who generate high value-added, whose stays are characterized by a longer temporal exposure and a higher propensity to consume.

2. The quantitative paradox. The negative relationship identified in the models between GDP and the total number of arriving foreigners (a 1.66% decrease with a 1% increase in the variable) constitutes an important diagnostic conclusion. This result suggests that mass movement of a purely transit, same-day, or cross-border nature, which does not translate into the purchase of accommodation services, may generate social and logistical costs for the state infrastructure that exceed the direct financial benefits.
3. Job creation and revenue generation in the HoReCa sector. The sectoral regression analysis confirmed the direct transmission of tourism demand onto the labour market. An increase in the number of overnight stays and expenditures generates employment growth in enterprises providing accommodation and catering services. This demonstrates the high labour intensity of the sector and its capacity to absorb labour resources under the influence of a demand impulse. Similar to the case of GDP, the overall increase in the number of foreigners exhibits a negative correlation with official employment, which economically can be interpreted as an effect of introducing flexible employment arrangements or supply-side pressure on the labour market under conditions of an influx of short- and medium-term migrants.
4. Heterogeneity of international flows. The impact of international personal movement on Poland's GDP is not homogeneous and depends on the economic structure and motivations of inbound migrants. While flows from the United Kingdom (business and premium tourism) and Ukraine (settlement and labour migration filling supply-side gaps in the labour market) constitute strong stimulators of economic growth, cross-border movement from Belarus and Russia exhibits negligible or negative elasticity with respect to GDP. This stems from the low profitability of expenditures of a purely shopping-and-transit nature, as well as geopolitical barriers that restrict the occurrence of a positive multiplier effect in the national economy.

Based on the empirical findings, the strategic objective of Poland's tourism policy should be the selective stimulation of increasing the length of stay and encouraging tourist expenditures (a qualitative approach). Promotional and infrastructural activities should focus on premium, business, medical, and MICE (meetings, incentives, conferences, and exhibitions) tourism segments, as the estimated regression models demonstrate that these sectors most effectively stimulate corporate revenues, employment, and Gross Domestic Product growth.

References

Acheampong A.O., Opoku E.E.O., Koomson I. (2025), *Effect of inbound tourism on inclusive growth: Does institutionalized democracy matter?*, "Tourism Management Perspectives", vol. 58, article no. 101382, https://doi.org/10.1016/j.tmp.2025.101382

Adamopoulos A., Thalassinos E.I. (2020), *Tourism Development and Economic Growth: A Comparative Study for the G-6 Leaders*, "European Research Studies Journal", vol. 23(1), pp. 368–380, https://doi.org/10.35808/ersj/1555

Bąk-Filipek E., Szalkai G., Podhorodecka K. (2022), *Foreign inbound tourism to Poland and Hungary during the COVID-19 pandemic times – comparing the solutions and outcomes*, "Rozwój Regionalny i Polityka Regionalna", vol. 58, pp. 11–25, https://doi.org/10.14746/rrpr.2022.58.03

Będzik B., Gołąb S. (2020), *A comparison of the tourism sector in Poland and the Czech Republic*, "Studia Periegetica", nr 1(29)/2020, pp. 73–86, https://doi.org/10.5604/01.3001.0014.1341

Dębski M., Dziedzic E., Skalska T., Zawistowska H. (2021), *Wpływ turystyki na gospodarkę Warszawy*, Raport, https://go2warsaw.pl/wp-content/uploads/Wplyw-turystyki-na-gospodarke-Warszawy.pdf [accessed: 2.05.2026].

Habibi, F., Rahmati, M., Karimi A. (2018), *Contribution of tourism to economic growth in Iran's Provinces: GDM approach*, "Future Business Journal", vol. 4(2), p. 261–271, https://doi.org/10.1016/J.FBJ.2018.09.001

International Tourism Highlights, 2024 Edition (2024), Madrid: UN Tourism, https://doi.org/10.18111/9789284425808

Kruczek Z., Mazanek L. (2019), *Krakow as a Tourist Metropolitan Area. Impact of Tourism on the Economy of the City*, "Studia Periegetica", nr 2(26), pp. 25–41, https://doi.org/10.26349/st.per.0026.02

Kumar R.A. (2019), *The Impact of Inbound Tourism on Economic Growth of Nepal*, "International Journal of Academic Research in Business and Social Sciences", vol. 9(3), pp. 183–195, http://dx.doi.org/10.6007/IJARBSS/v9-i3/5647

Liu A., Wu D.C. (2019), *Tourism productivity and economic growth*, "Annals of Tourism Research", vol. 76, pp. 253–265, https://doi.org/10.1016/j.annals.2019.04.005

Matušíková D., Šambronská K., Żegleń P. (2020), *Relacja między dochodami z zagranicznej turystyki przyjazdowej a ruchem turystycznym: studium przypadku czterech krajów Grupy Wyszehradzkiej*, "Nierówności Społeczne a Wzrost Gospodarczy", vol. 2(62), pp. 294–308, https://doi.org/10.15584/nsawg.2020.2.19

Milczarek A. (2017), *Gospodarcze znaczenie turystyki w krajach Unii Europejskiej*, "Studia i Prace WNEiZ US", nr 47, t. 1, pp. 137–147, https://doi.org/10.18276/sip.2017.47/1-12

Perles-Ribes J.F., Ramón-Rodríguez A.B., Rubia A., Moreno-Izquierdo L. (2017). *Is the tourismled growth hypothesis valid after the global economic and financial*

crisis? The case of Spain 1957–2014, "Tourism Management", vol. 61, pp. 96–109, https://doi.org/10.1016/J.TOURMAN.2017.01.003

Przychody z działalności gastronomicznej (2024), https://bdl.stat.gov.pl/bdl/metadane/cechy/1476 [accessed: 10.05.2026].

Rekordowe wyniki polskiej turystyki w 2025 roku – branża turystyczna rośnie szybciej niż polskie PKB (2026), https://www.gov.pl/web/sport/rekordowe-wyniki-polskiej-turystyki-w-2025-roku--branza-turystyczna-rosnie-szybciej-niz-polskie-pkb [accessed: 2.05.2026].

Rivera M.A. (2017), *The synergies between human development, economic growth, and tourism within a developing country: An empirical model for Ecuador*, "Journal of Destination Marketing & Management", vol. 6(3), pp. 221–232, https://doi.org/10.1016/J.JDMM.2016.04.002

Rivera-Batiz L.A., Romer P.M. (1991), *Economic Integration and Endogenous Growth*, "Quarterly Journal of Economics", vol. 106(2), pp. 531–555, https://doi.org/10.2307/2937946

Roczniki Statystyczne Rzeczypospolitej Polskiej za lata 2010–2025 (2025), https://stat.gov.pl/obszary-tematyczne/roczniki-statystyczne/roczniki-statystyczne/rocznik-statystyczny-rzeczypospolitej-polskiej-2025,2,25.html [accessed: 10.05.2026].

Rowiński R., Hawlena J., Kowalska G., Mazurek-Kusiak A., Kobyłka A. (2023), *Selected Factors Determining the Development of the Tourist Services Market in Poland*, "European Research Studies Journal", vol. XXVI(4), pp. 62–71, https://doi.org/10.35808/ersj/3272

Semmerling A. (2017), *Udział turystyki zagranicznej w rozwoju gospodarczym wybranych krajów Europy Wschodniej*, "Zeszyty Naukowe Wyższej Szkoły Turystyki i Języków Obcych w Warszawie. Turystyka i Rekreacja", z. 1, pp. 7–25.

The UN Tourism Data Dashboard. International Tourist Arrivals (2026), https://www.untourism.int/tourism-data/un-tourism-tourism-dashboard [accessed: 2.05.2026].

Turyści zagraniczni w turystycznych obiektach noclegowych (2024), https://bdl.stat.gov.pl/bdl/dane/podgrup/teryt [accessed: 10.05.2026].

Turystyka w 2024 r. (2024), https://stat.gov.pl/obszary-tematyczne/kultura-turystyka-sport/turystyka/turystyka-w-2024-r-,1,22.html [accessed: 10.05.2026].

Wyniki finansowe wg sekcji PKD 2007 (2024), https://bdl.stat.gov.pl/bdl/metadane/cechy/2695 [accessed: 10.05.2026].

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