41

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Contents

Introduction

The present volume, "Selected economic issues of international markets", contains a collection of six papers addressing selected issues in economics and finance. The monograph concerns the current problems and challenges in the field of international economic relations, economics and finance. The authors study and evaluate selected segments of international markets, considering both theoretical and practical aspects.

The first article discusses a selected transport problem. Rahman Fakhani presents *Important drivers influencing the transport mode choice for leisure activities – a study from Warsaw and Berlin*. The aim of this article is to identify underlying behavioural attitudes which impact the transport mode choice for leisure activities in Warsaw and Berlin, where mobility is becoming increasingly important alongside daily commuting.

In the second article, *The impact of the 2007–2008 crisis on NBA attendance*, Stamatiki-Maria Atsave examines whether the economic crisis of 2007–2009 had an impact on the number of spectators of the NBA games. The analysis also examines whether some teams are more recession-proof than others.

In the next paper, *The start-up visa system in Japan and its current state*, Wojciech Bizon and Hsin-Yi Tsai focus on foreign start-ups in Japan. This paper includes the background of the start-up visa system and its current situation.

The fourth paper, *Human capital and economic growth – evidence from the Balkan region*, is written by Emirgena Nikolli and Przemysław Borkowski. In this study, the authors empirically examine the relationship between human capital and economic growth in 8 Balkan countries over the period 2000–2019. The study documents the positive and statistically significant impact of human capital on economic development.

The subject matter of the fifth paper, written by Jonida Balliu and Tomasz Brodzicki, is the impact of economic growth and inflation. In this article, the research examines the impact of economic growth and inflation on the unemployment rate. The authors' evidence is based on a sample of 11 countries of the Balkan region over the period 2000–2021.

The last paper is written by Barbara Szejgiec-Kolenda. The author in the article *The application of survival analysis in the study of export and import duration – first insights from intermediaries in Poland* used non-parametric survival techniques (Kaplan Meier function) analysing the duration of trade relations between Polish intermediaries and their foreign partners from 2007–2015. In addition, differences in survival curves for exporters and importers are analysed.

The diversity of international economic problems shows a holistic approach to composing this volume, which offers a novel and a scientific view on aspects of the world's economy.

I hope you will find this publication interesting and useful. I wish you a pleasant read!

Dariusz Tłoczyński
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Important drivers influencing the transport mode choice for leisure activities – a study from Warsaw and Berlin

The goal for most urban areas within the European Union is the transition to sustainable mobility, achieving CO_2 neutrality by 2035, at least in the inner-city areas. The research field of transport behaviour has already been investigated in literature from various perspectives. However, both in science and in practical implementation, there is a shortage of research in the area of transport mode choice for leisure activities, with a concentration on Poland and Germany. The aim of this article is to identify underlying behaviour attitudes, which impact the transport mode choice for leisure activities in Warsaw and Berlin, where mobility is becoming increasingly important alongside daily commuting. Besides a comprehensive literature and internet research, a survey was conducted to obtain new insights from the data analysis. The focus is on generations Z, Y and X and thus includes survey participants aged 18 to 56. Based on descriptive statistics, a bivariate preliminary analysis was executed to find out significant potential predictors. The final specified exploratory model comprises a binary logistic regression analysis to identify influencing factors for the transport mode choice for leisure time activities. The analysis shows that the core influencing factors are the availability of a car, income, and satisfaction with access to public transport. Although future expectations suggest that alternative modes of transportation for recreation have to be improved, the car remains dominant because it represents a high degree of freedom and perceived comfort. Secondary data shows that congestion and burdens from air pollution are increasing and require a more holistic implementation of a sustainable mobility approach focusing on environmental factors and the quality of life of urban citizens. Based on data collection from a structured survey, new insights were gained on important drivers influencing the choice of transport for leisure activities with reference to the cities of Warsaw and Berlin. In addition, it provides guidance and ideas of how the transport services could be improved and how to incentivise more sustainable mobility behaviour among urban citizens.

Keywords: sustainable urban mobility, leisure time activities, mobility behaviour, transport mode choice

JEL classification: R11

Introduction

Despite some efforts toward greater sustainability, the world's exponentially growing population is causing increasing emissions of pollutants and putting pressure on the land and water environment at various levels. Especially the rising population of urban areas worldwide [World Bank, 2018] bears new challenges which require new concepts of urban planning. The cityscape is still mostly characterized by motorized means of transport with an internal combustion engine such as the car, which on the one hand leads to a high volume of traffic, especially during rush hours, but also high noise and pollutant emissions [Kaleniuk et al., 2021]. This in turn has enormous negative consequences on the mental and physical health of urban citizens [Brazier, 2016; Matz et al., 2019; Salvi, Salim, 2019].

Nevertheless, many city dwellers drive their own car because there is a lack of alternative means of transport. In addition, even short distances are often not covered with alternative transport modes such as the bicycle because, for example, the bike paths are not well developed and thus lead to a lack of perceived safety, which is unfortunately also confirmed by many accident statistics in practice [Nuyttens, 2020; Schimek, 2017].

In the scope of a smart city, well-developed urban mobility is one of the core elements of a well-functioning, connected and vibrant city. It provides the basis for the social interactions of its citizens and thus contributes significantly to a good quality of life. A high level of leisure satisfaction includes short commute times, active transportation, such as walking and cycling, and general physical activities [Mouratidis, 2019]. With regard to the structure of a city, it can be observed that compact architecture and more restrictive traffic policies for car traffic can have a positive effect on travel satisfaction [Mouratidis et al., 2019]. Lifestyle also has an influence on leisure activities [Scheiner, 2010]. Together with the spatial environment of the place of residence and its availability and quality of mobility offers, the mobility behaviour of urban residents is significantly influenced. In addition, many crucial factors such as the quality of the urban transport infrastructure, cultural characteristics, and the expectations of society, as well as the economic purchasing power, play an important role in determining the mobility behaviour and thus the preferred choice of transport mode of everyone.

The main objective of this study is, based on literature research, to explore the question of which essential influencing drivers play a role in the choice of transport mode for leisure activities – such as shopping or pursuing hobbies and meeting up with friends.

1. Literature review

The decision-making process on which mode of transportation is best for an individual depends on various factors. There are different trip types, such as the daily commute to work or education facility, trips to leisure activities such as meeting friends, shopping and going to the cinema, and a trip for a vacation. In addition, the place of residence, whether in a rural or urban area, and the associated mobility options also play a decisive role [Berg, Ihlström, 2019]. In the present study, a basic distinction is made between two categories (1) the daily commute to work or education facility and (2) all trips made during leisure time, whether after work or at weekends.

Even though alternative means of transportation are increasingly being developed, cars still dominate the cityscape in most cities in Europe, but also worldwide. The reasons why urban citizens prefer their own car are, for example, the availability and convenience of being able to travel individually at any time, determining their own travel time, or minimizing their own effort. Underlying this motive is often a desire for control [Gardner, Abraham, 2007]. Habits are strong influencers of the mode of transportation choice regardless of the purpose of travel [Ramos et al., 2020]. In addition, car use in particular shows that symbolic and affective motives are decisive for the transport mode choice [Steg, 2005]. Gartman [2004] defines the car as individualized mobility, expressing the ultimate compensatory consumption.

Various reasons such as higher time investment, lack of infrastructure (inconvenient transfer connections, too far distance to the next stop), a perception of insufficient safety in public transport, lack of comfort, lack of flexibility and dependence on the often not tightly existing frequency are major reasons for not using public transport [Suder, Pfaffenbach, 2021]. Thus, there is a gap between the required and desired efficiency, reliability, flexibility, and the price-performance-ratio for public transportation. In addition, particularly in poorer countries or those where the gap between rich and poor is very wide, public transport is considered the primary mode of transport for low-income users [Maia et al., 2020]. Thus, members of the middle or upper class might even avoid it for status reasons.

In addition to a "green mobility transition" of the vehicle fleet, an increased use of public transport and focus on active means of transportation (e.g., bicycles and walking) are essential for a sustainable transition in transport with the goal of CO_2-neutrality [Biernat et al., 2018]. Several behavioural influencing factors, such as availability (e.g. proximity to the next stop, frequency), personal safety and comfort, service, and atmosphere (cleanliness, pleasant climate, service personnel, entertainment and information, etc.), especially travel time, and actual cost [Chen,

Li, 2017], have to be addressed when implementing for the betterment of public transport.

People who tend to rate alternative means of transport poorly also currently use them less and rarely feel the need to change this [Fan, Chen, 2020]. The study shows that walking has a positive effect on the use of public transport. Another study shows that especially for distances up to 5 kilometres, the bicycle is a competitive means of transport in terms of satisfaction of the urban citizens. The satisfaction degree is influenced by functional suitability, agreement on symbolic suitability, and agreement with supporting environmentally friendly principles through bicycling [Hamidi, Zhao, 2020]. The study also shows that people with a higher level of environmental awareness are more likely to use public transportation or bicycles.

Moreover, socio-economic, and socio-demographic factors play a role in the choice of transport mode. Women tend to behave in a more environmentally and health-conscious manner than men, which is also reflected in their choice of more sustainable means of transport [Saigal et al., 2021a]. Research shows that low-income households are less likely to use polluting modes of transport [Saigal et al., 2021b]. The extent to which this is related to the fact that such social groups generally travel less and simply cannot afford a car, however, requires further investigation. Other studies show that, in general, an improvement in public transport also leads to its greater use also by higher-income households, although not quite as much as for lower-income households [Cui et al., 2020]. Besides income, and travel time, other socio-demographic factors such as the age group, education level and lifestyle play a role with regard to the transport mode choice [Verhoeven et al., 2007].

2. Urban mobility in Warsaw and Berlin

By consideration of the demographic factors of the capitals of Poland and Germany, it can be observed that the total population in Berlin is more than twice as high as in Warsaw. The total area is 70% bigger in Berlin and thus the population density is effectively 22% higher than in Warsaw. The average age of city residents is higher in Warsaw (46.7), which may give an indication of the more dynamic influx of young people in Berlin (42.6). In Warsaw, more residents have paid jobs in percentage terms, which also has a corresponding effect on the lower unemployment rate (Table 1).

Table 1. Warsaw vs Berlin: Basic numbers of demographics

	Measure	Warsaw	Berlin	Unit
Demographics	population	1,794	3,777	thousands
	area size	517.24	891.68	km^2
	population density	3,469	4,228	inhabitants/km^2
	average age	46.7	42.6	years
	people in paid work	60.2	47.5	%
	unemployment rate	2.0	7.6	%

Source: Own elaboration based on, e.g., statistics offices in Poland and Germany; for source and details of the different measurement indicators, see Appendix A.

When analysing the key traffic figures, one value emerges that is highly different between the two cities (Table 2). The percentage of car use in Warsaw is more than twice as high as in Berlin. Other traffic values also show that Warsaw citizens are much more likely to be stuck in traffic jams and must put up with correspondingly greater time delays than in Berlin. The coverage of the urban area that is connected to public transport is almost identical in both cities (Warsaw: 77%, Berlin: 75%). However, Berlin has a much higher frequency and effectively faster public transport connections.

Table 2. Warsaw vs Berlin: Key mobility indicators

	Measure	Warsaw	Berlin	Unit
Key mobility indicators	car use	76.4	37.4	% of the population
	relative fuel costs	32nd	24th	ranking of 38 cities
	traffic congestion index	4.7	4.0	out of 10
	congested roads	8.72	2.58	% of road network
	time delay in traffic	29	23	mins per 100 km
	public transport frequency	189	442	trips per stop per day
	public transport expense	2.82	3.92	% of monthly income
	public transport coverage	77	75	% of city area
	Green spaces	8.7	27.0	% of city area
	public transport vs car speed	24th	15th	ranking of 38 cities

Source: Own elaboration based on, e.g., statistics offices in Poland and Germany; for source and details of the different measurement indicators, see Appendix A.

The relative cost of petrol is higher in Warsaw and the cost of public transportation is even cheaper than in Berlin, yet car use dominates. The proportion of green space is more than three times higher in Berlin than in Warsaw, which is an

important factor for the local recreation of the urban citizens. In addition, it makes an important contribution to the air quality in the city [Krajnik et al., 2019; Nieuwenhuijsen et al., 2017].

The car driver ratio in Berlin is relatively low in comparison to Warsaw. In Warsaw and Berlin new concepts are being tested, leading to constant changes in the field of urban mobility. In recent years, the Berlin Senate has been pursuing a change from a city dominated by combustion engines to an intermodal use of transport with a focus on public transport and the expansion of bicycle lanes. In addition, buses with internal combustion engines are also gradually being replaced by electric and hydrogen propulsion ones. Different projects are being coordinated in the various areas of pedestrian traffic, bicycle traffic, buses and trains, and local transportation plans. The goal is to achieve CO_2-neutrality in the inner part of the city (S-Bahn ring) by 2030. To achieve this, no more vehicles with combustion engines are to be allowed to enter the city area by then. Currently 74% of trips in the city of Berlin are made by bicycle, buses, trains, or on foot [Senate Department for Environment, 2021].

Initial measures have also been adopted in Warsaw based on EU funding for a Sustainable Urban Mobility Plan (SUMP). These include an increase in public transport coverage. However, a report also shows that there is a lack of a concrete implementation plan for the strategies. For example, there are no specific targets in terms of the modal share [European Court of Auditors, 2020]. In addition, only 37% of Warsaw's urban area is covered by spatial plans, which limits the effectiveness of the urbanization design for urban mobility.

In guiding further urban development actions towards a sustainable and healthy environment for urban citizens, the reasons that lead to a particular mode of transport choice should also be explored as input variables to be assessed.

3. Survey structure, sampling method and descriptive statistics of the data analysis

To collect primary data, an online survey was conducted in June 2021 among citizens of Warsaw and Berlin. The target age group (from 18 to 56 years) was derived based on the generations to be considered. The sample was selected based on the inclusion criteria for generations Z, Y and X and their place of residence, i.e. it is a semi-random sampling. Since no under-age participants could be interviewed in the survey, Generation Z was only surveyed from the age of 18.

To obtain a corresponding representation of the generational and gender distribution, the data collected through the survey was weighted based on relevant

structural characteristics of generation and gender obtained from secondary data [Federal Statistical Office; Statistical Information Centre][1]. Since Berlin and Warsaw differ in this respect, the two cities were also weighted separately and taken into account accordingly in the data analysis with SPPS.

The target generations were surveyed using a quantitative questionnaire to express their opinions on several statements related to urban mobility and its development prospects. In addition, the typical use of different modes of transport was considered. The questions were divided into four different areas: (1) personal values of different generations, (2) urban mobility and travel behaviour, (3) future living in a smart city, and (4) general information about socio-economic and socio-demographic factors.

For the most part, closed questions based on a 5-point Likert scale were used. Thus, the characterization of the variables was mostly categorial (ordinal). Other variables such as gender and having a driving license can be classified as binary data. Other questions where the survey participants had the possibility to choose one or more options were scaled nominally. Some of the data collected in the survey (e.g. questions with a 5-point-Likert-scale) were transformed into continuous numbers, which are better suitable to statistical analysis. Details about the applied variables can be found in Appendix B.

For this paper, the overall sample has 537 valid answers, obtained from the participants among the three selected generations (Z, Y and X) from Warsaw and Berlin. The distribution indicates that there were slightly more survey participants in Berlin (54.2%) than in Warsaw (45.8%). The size of the overall sample, but also the distribution between the two cities, is sufficient to derive a statistical significance [Memon et al., 2020]. Depending on the question, the significance of the results, and the field of expertise, however, samples can vary in terms of their informative content [Malterud et al., 2016]. The informative value of the present sample will be examined in the further course [Boddy, 2016].

Table 3 shows basic socio-demographic statistics.

The generation and gender distribution are interpolated on the basis of real figures to ensure representativeness. It also shows that the number of those who live in their own property is much higher in Warsaw (69.3%) than in Berlin (28.8%).

Table 4, on the other hand, shows the specific essential mobility parameters.

[1] For Warsaw, the data were interpolated based on the age population numbers for urban areas for the Masovia Province (all data processed according to age groups).

Table 3. Socio-economic parameters of the research sample for GEN Z, GEN Y and GEN X

Factor	Values
overall participants	Warsaw: 45.8% (246), Berlin: 54.2% (292)
distribution generation Warsaw	GEN Z: 15.0% (37), GEN Y: 52.8% (130), GEN X: 32.1% (79)
distribution generation Berlin	GEN Z: 15.8% (46), GEN Y: 41.8% (122), GEN X: 42.5% (124)
sex Warsaw	female: 48.4% (119); male: 51.6% (127)
sex Berlin	female: 50.0% (146); male: 50.0% (146)
living situation Warsaw	home rented: 68.3% (168); home owned: 31.7% (78)
living situation Berlin	home rented: 28.8% (84); home owned: 71.2% (208)
education level Warsaw*	ISCED-level 1–2: 2.9% (7), ISCED-level 3–4: 24.4% (60); ISCED-level 5–6: 16.7% (41); ISCED-level 7–8: 56.1% (138)
education level Berlin	ISCED-level 1–2: 5.5% (16), ISCED-level 3–4: 22.4% (65); ISCED-level 5–6: 19.3% (56); ISCED-level 7–8: 52.8% (153)
monthly disposable income per person Warsaw**	low-income: 15.4% (38); middle-income – lower range: 10.2% (25); middle-income – upper range: 44.7% (110); high-income: 29.7% (73)
monthly disposable income per person Berlin	low-income: 19.9% (58); middle-income – lower range: 8.2% (24); middle-income – upper range: 26.5% (77); high-income: 45.4% (132)

Notes: Calculations by the author. The sum of the rows may not add up to 100 because the values are rounded.

* ISCED-level 1–2: Completion of elementary school (lower secondary school, usually 8 or 9th grade + Secondary school diploma; ISCED-level 3–4: Vocational education / technical school and Upper secondary school (high school or similar); ISCED-level 5–6: Bachelor's degree or equivalent; ISCED-level 7–8: Master's degree or equivalent and doctoral degree.

** Normalization based of Purchasing Power Parity (PPP).

Source: Own survey conducted between end of May and end of June 2021.

Table 4. Main mobility parameters of the research sample of GEN Z, GEN Y and GEN X

Category	Value
car driving license Warsaw	yes: 84.0% (207); no: 16.0% (39)
car driving license Berlin	yes: 94.2% (275); no: 5.8% (17)
access to a car in household Warsaw	yes: 78.9% (194); no: 21.1% (52)
access to a car in household Berlin	yes: 70.4% (206); no: 29.6% (86)
average travelled kilometres on a weekend day / day off from work	below 5 km: 14.5% (78): 5 to 10 km: 25.1% (135); 10 to 20 km: 30.8% /165); 20 to 30 km: 19.3% (104); 30 to 50 km: 6.1% (33); more than 50 km: 4.2% (23); mean value for Warsaw: 16.3 km; mean value for Berlin: 19.4 km
transport choice for free time activities Warsaw	own car / taxi / car sharing: 53.9% (133); public transport: 33.1% (81); Active commute: 12.9% (31)
transport choice for free time activities Berlin	own car / taxi / car sharing: 47.7% (139); public transport: 25.2% (74); active commute: 27.1% (79)
dominant transport mode Warsaw	car: 53.9%; green transport: 46.0%
dominant transport mode Berlin	car: 47.7%; green transport: 52.3%

Notes: Calculations by the author. The sum of the rows may not add up to 100 because the values are rounded.

Source: Own survey conducted between end of May and end of June 2021.

Almost 90% of respondents have a driver's license and around 74% have access to a car in the household. For leisure activities such as going to the cinema or museum, but also for visits to friends etc., a good half of those surveyed prefer to use the car.

The largest share (56%) covers a daily distance of between 5 and 20 kilometres. In the last line, the variable dominant transport mode (DMT) is set as the primary basis for the ensuing research approach. Thus, all transport modes other than the car are defined as "green transport" (GT), assuming them to be either CO_2 neutral or at least low-CO_2-emitting[2].

4. Data analysis

The survey asked the following question regarding transportation choices for leisure activities: "Based on a typical week, what mode of transportation do you use most often for your leisure activities such as meeting with friends and family, shopping, sports activities, etc.?". Different means of transportation could be selected as an answer. In the focus consideration, the car (own car, car sharing, taxi) is examined with the other means of transport such as public transport, bicycle as well as walking (GT). Therefore, binary logistic regression is used for the statistical analysis, which is a classic model of discrete decision theory that, as its name implies, requires a binary code. The binary categorization takes place with the variable name "trans_typ_leis_dmt", which is defined as the dependent variable, by coding the car with "0" and GT with "1" nominally scaled.

To identify significant variables influencing the choice of transport in leisure time, a bivariate preliminary analysis was conducted to preselect the significant potential predictors. Depending on the scaling of the variables (nominal, ordinal or metric / quasi-metric), different tests were used (Pearson chi-square, Kruskal–Wallis test, and ANOVA). Then a subject-specific logical model was built up, and significant input variables were determined step by step with a binary logistic regression. This also prevents an increased consideration of strongly correlated predictors (independent variables) in a regression analysis and thus reduces undesirable multicollinearity. The aim was to find those variables that have a high correlation with the dependent variable "trans_typ_leis_dmt" (criterion / dependent variable).

The established hierarchical model selection approach with a stepwise performing of a logistic regression was conducted as follows.

[2] This assumption is made to simplify the comparison, since in Warsaw, but also in Berlin, the proportion of alternative and CO_2-free drive systems is still quite low compared to internal combustion engines in private motorized transport.

Table 5. Stepwise procedure model for the analysis of factors influencing the choice of transport mode during leisure time

Step	Description focus area
primary main influencing variables	average distance travelled on a weekend day / non-working day, access to a car and bicycle in own household, holding of a monthly public transport ticket
future expectations regarding urban mobility	questions regarding urban mobility and future living in a smart city in the areas of: measures for improvement of the transport infrastructure; perceived importance of smart city areas such as mobility, health, security, cultural and informational offering, citizen participation, technological innovation and mobile apps, sustainable urban planning, car infrastructure and public transport
satisfaction of living environment	satisfaction with the living environment, e.g. proximity to facilities for daily needs, family and friends, work; but with the quality of the living environment, the quality / cost of the apartment / house and access to public transport.
personality characteristics	selected clustered variables based on a factor analysis for the questionnaire part "personal values of different generations" - questions about values and attitudes and how these are manifested in the various areas of life, both professional and private
socio-economic factors	supplementing of the demographic and socio-economic factors

Source: Own elaboration based on the established methodological approach.

In Berlin, the correlation between the distance travelled at the weekend and car use is more pronounced than in Warsaw (cf. Figure 1). This shows that cars are

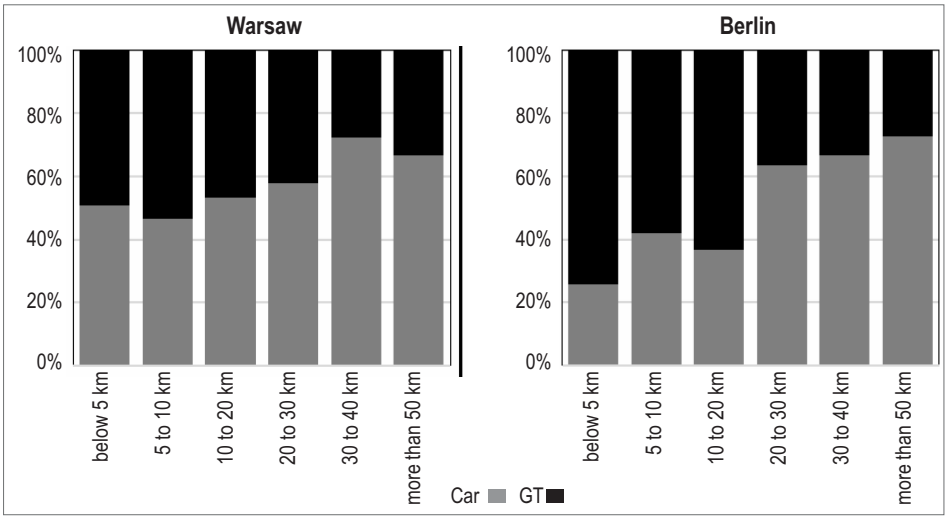

Figure 1. Warsaw vs Berlin: Car use for leisure time activities in correlation with the distance

Source: Own elaboration based on the descriptive statistics obtained from the survey.

especially used for longer journeys. In Warsaw, this tendency is only very slightly pronounced. This means that shorter distances are also travelled frequently by car.

Comfort is cited as the main reason for using one's own car for Warsaw and Berlin alike. For the use of alternative means of transport, primarily the health aspects play an important role. The reasons for not using a car differ significantly between Berlin and Warsaw. Berlin tends to have an even distribution of reasons. Compared to Warsaw, however, sustainability is cited as a key reason. In Warsaw, costs are much more dominant in this respect (Figure 2).

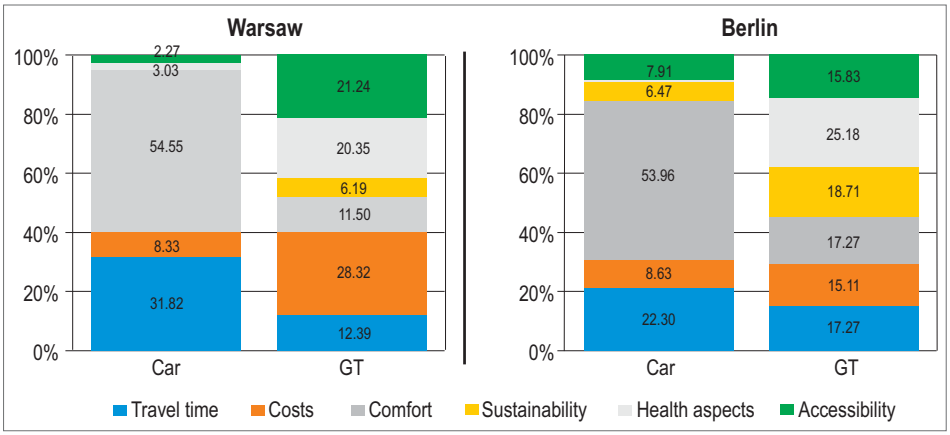

Figure 2. Warsaw vs Berlin: Reason for transport mode choice for leisure time activities

Notes: Values below 1% are not depicted.

Source: Own illustration based on the descriptive statistics obtained from the survey.

After conducting a binary regression model based on the established stepwise approach as depicted in Table 5, the following R^2 and delta R^2 values for the significance of the model according to Nagelkerke are shown (cf. Table 6). In addition, the selected variables based on the analysis for each step are depicted.

To analyse the reliability and significance of the model in addition to the Nagelkerke R^2, an omnibus test, and a Hosmer–Lemeshow goodness-of-fit test, were applied. As the descriptive statistics show, 49.4% of the survey participants prefer transport modes other than the car for leisure time activities, and the classification cut-off of 0.49 is set. The aiming value of the variable "trans_typ_leis_dmt" (depend variable) is GT.

A Nagelkerke-R^2 of 0.469 for the final model as a quality measure for the statistical explanatory power of the estimated logit model is a good variance resolution (medium effect) of Nagelkerkes $R^2 = 0.469$ according to the recommendation of Backhaus et al. [2016]. After execution of the Omnibus test, it shows that the binomial logistic regression model is statistically significant, $\chi^2(10) = 232.99$, $p < 0.001$.

The Hosmer–Lemeshow test indicates a good model fit, χ^2 (8) = 11.00, p > 0.05 with an p-value of 0.202 (confirmation of a null hypothesis).

Table 6. R^2 and delta R^2 values

Step	Description	R^2 (in %)	delta R^2 (in %)	Selected variables*
1	primary main influencing variables	31.5	–	trans_km_leis_x, ress_car, ress_lic
2	travel behaviour and future expectations urban mobility	40.1	8.6	urb_live_traffic_free, imp_lc_secure, imp_ul_pt, tp_car_freedom
3	satisfaction of living environment	42.4	1.3	sat_access_pt
4	personality characteristics	44.1	1.7	wol_city
5	socio-economic factors	46.9	2.8	soz_income
Final	overall model	46.9	–	trans_km_leis_x, ress_car, ress_lic, ress_pt_tick, urb_live_traffic_free, imp_lc_secure, imp_ul_pt, sat_access_pt, wol_city, soz_howner, soz_income

* For detailed variable definition, see Appendix B.

Source: Own elaboration based on the established methodological approach.

After each step, the not significant variables were dismissed. The final overall model results are shown in Table 7.

Table 7. Final model

Variable	B	SE	Wald	P-value	Odds ratio
ress_car	–1.588	0.308	26.518	0.001	0.204
soz_income	–0.499	0.107	21.758	0.001	0.607
sat_access_pt	0.021	0.005	15.301	0.001	1.021
tp_car_freedom	–0.015	0.005	11.201	0.001	0.985
imp_ul_pt	0.736	0.222	10.972	0.001	2.087
ress_lic	–1.301	0.447	8.460	0.004	0.272
urb_live_traffic_free	0.011	0.004	7.750	0.005	1.011
imp_lc_secure	–0.939	0.344	7.468	0.006	0.391
trans_km_leis_x	–0.016	0.008	4.054	0.044	0.984
wol_city	0.009	0.004	3.919	0.048	1.009

Notes: Constant blanked out, Hosmer–Lemeshow: p-value = 0.202, Nagelkerke R^2 = 0.469, Omnibus test: p-value < 0.001.

Source: Own elaboration based on the established methodological approach.

Significant influencing variables could be found by the sequential procedure. The effect of the influence quantity is expressed by the odds ratio and the importance of the influence quantity is expressed by the Wald value.

With the model set up with the stepwise approach and with the adjustment of non-significant variables, an attempt was made to avoid multicollinearity as far as possible (Table 8).

The verification of the modal fit was analysed with the calculation of the variance inflation factor (VIF).

Table 8. Multicollinearities between the independent variables of a model

Variable	Collinearity statistics	
	tolerance	VIF
ress_car	0.747	1.339
soz_income	0.929	1.076
sat_access_pt	0.888	1.126
tp_car_freedom	0.858	1.165
imp_ul_pt	0.960	1.042
ress_lic	0.897	1.115
urb_live_traffic_free	0.908	1.102
imp_lc_secure	0.973	1.027
trans_km_leis_x	0.966	1.035
wol_city	0.908	1.102

Source: Own elaboration based on the established methodological approach.

All values of the tolerance are clearly above 0.1 as well as none of the VIF values is above 5 (> 5 is a problematic high correlation)[3]. This means that the model shows no indication of multicollinearity [Akinwande et al., 2015].

5. Results

The three most important factors are the availability of a car, income, and satisfaction with access to public transport. For the practical implication, it seems logical that access to one's own car is also strongly associated with the transport mode choice for leisure activities.

For the practical implication, it seems logical that the access to one's own car is strongly related to the choice in leisure time. It is clear, moreover, that people with a high income tend to choose their own car.

[3] It should be noted that the tolerance is the inverse of the VIF and basically one of the two values is sufficient for interpretation.

In addition, the findings of the binary logistic regression analysis show that people who perceive that ownership of a car provides them with a feeling of freedom, in the majority refuse to use alternative means of transport. The previous descriptive statistics showing comfort as the most important reason for choosing a car give an indication that there is a strong correlation with the factor "car freedom". People who prefer alternative modes of transportation place less emphasis on comfort. The choice of a car as the preferred means of transport for leisure activities is almost equal in Warsaw (48.9%) and Berlin (50.4%). The percentage of driving license holders is very high in both cities, with Berlin surpassing Warsaw by almost 10%. Having a driver's license is negatively correlated with choosing GT.

Furthermore, future expectations regarding mobility in cities also influence the choice of transport. People who are in favour of a less expensive and more well-developed public transport tend to prefer alternative means of transport. Nowadays, a lack of availability together with an insufficient frequency and the resulting overcrowded public transportation are often reasons why many people prefer to travel by car. An expansion of the public transport system to allow a fast and comfortable possible journey from A to B is crucial to achieving its higher acceptance as a means of travel from urban citizens among all generations and income levels. Measures like this can be an essential cornerstone to create incentives among established drivers and to induce a change in their mobility behaviour towards their willingness to use public transport instead of the car. The same applies to the establishment of traffic-calmed zones, pedestrian and bicycle paths and the widening of sidewalks, also by reducing the number of roads and parking spaces. This may show a change in awareness, which also has an impact on actual mobility behaviour.

The regression analysis confirms the theory that the longer the distance travelled, the lower the chance of using alternative means of transport. But the effect is weak compared to the other influencing variables. The analysis also shows that the likelihood of a car holder using public transport is comparatively low compared with non-car holders, which is an obvious fact. Having a driving license achieves a similar effect. Nevertheless, people who have a driving license and no access to a car are more likely to use public transport than car holders. The availability of a monthly or annual pass for public transport plays a rather subordinate role. It was not included in the model because of a lack of significance.

The findings of the binary regression model also show that a high level of perceived safety and sufficient measures for a secure city with a low crime rate is another significant, but not that important, influencing factor. People with a high demand for security prefer to use the car. The perceived but also actual safety in public transport clearly shows that there is a need for improvement [Ingvardson, Nielsen, 2021]. In addition, safety is often linked to comfort. The last significant

variable but with a rather low importance of the influence quantity expressed by the Wald, is the positive attitude towards a preferred life in a big city because of the opportunities for leisure activities such as cultures' facilities, historical landmarks and attractions, nightlife, sports activities, etc. For urban citizens it seems to be more important to have a wide range of possibilities rather than to live in nature. They often use city parks or trips during the weekend to enjoy their free time in a green environment.

Interestingly, according to the research conducted, neither the place of residence Berlin or Warsaw, nor the different generations Z, Y and X, have a significant influence on the choice of transport for leisure activities.

Conclusions

This study has focused on the analysis of the main drivers influencing the transport mode for leisure activities. With its reference to the two capitals Warsaw and Berlin, it closes a gap that has not yet been considered in science. Based on the data collected from the sample for generations Z, Y and X, the core of the statistical analysis is a binary logistic regression based on a hierarchical model. Basically, two different categories of transportation were defined: On the one hand, the classic use of owners own vehicles, mostly, and, on the other hand, alternative means of transport such as public transport, bicycles, and walking.

The results bring some interesting findings. There is still a very strong tendency to use one's own car for leisure activities. The use of one's own car in Warsaw is even more common for shorter distances compared to Berlin. A look at the descriptive statistics shows that Warsaw has a fairly good coverage of public transport, but the frequency is relatively low compared to Berlin. In both cities, comfort was cited equally as the primary reason for using the car, indicating that many urban citizens perceive alternative modes of transportation as less convenient and cumbersome.

It also shows that an incentive for car drivers to switch to alternative modes of transportation can be created in particular if the reliability and frequency of public transport are increased [Redman et al., 2013]. Sustainability does not seem to play an essential role among car drivers, or at least it is not present in their awareness. Furthermore, car use is highly dependent on actual availability and income. Satisfaction with access to public transportation also correlates strongly with usage, confirming that it is not seen as an adequate alternative by car drivers. Frequently overcrowded trains and buses in rush hours, too frequent breakdowns and thus a lack of reliability, and costs that are still too high show that public transportation is far from being developed to the point where it is recognized as an adequate means of getting around the city [Hensher, 2000].

The high significance of the influential factor that the car gives many people a feeling of freedom confirms previous findings from the literature research [Pojani et al., 2018; Pucher, 1998]. When examining the users of alternative means of transport, it becomes apparent that the environment and health aspects are much more in focus [Jakubiak-Lasocka et al., 2014; Zalakeviciute et al., 2019]. However, there is often a lack of proper infrastructure for cyclists, also leading to an insufficient road safety [Iwińska et al., 2018].

Surprisingly, neither the different generations nor the genders have significantly different influencing factors when deciding on the means of transport for leisure time. Fundamentally, these also do not differ between Warsaw and Berlin. Only a closer look reveals that there are differences in attitudes towards the environment, car use and perceived quality of alternative means of transport. The extent to which the differences are due to cultural differences and the existing range of services can be the subject of a supplementary analysis to this study.

Secondary research has shown that Berlin, more than Warsaw, is already paving the way towards a CO_2-neutral transport policy through various pilot projects and concretely implemented measures [Rode et al., 2015]. It is not a question of completely displacing or banning motorized individual transport. Rather, the aim is to make it emission-free with the appropriate propulsion technologies and, at the same time, to expand public transportation in such a way that it is possible to get around the city quickly, comfortably, and inexpensively. At the same time, bicycle paths in the city must be expanded in such a way (key point: structural separation between bicycle paths and car roads) that all citizens feel safe, regardless of their age group [Sheldrick et al., 2017].

The findings provide indicators of attitudes toward different modes of transport. Moreover, measures can be derived that create an incentive for individuals to be more open-minded towards alternative modes of transport in the future. Therefore, it is critical to develop collaborative approaches to sustainable urban mobility that are embedded in spatial urban planning and consider behavioural economics principles being integrally implemented into public policy [Grochowski, 2015]. This also means involving citizens to increase acceptance and willingness to encourage greater use of public and non-motorized transportation [Maier, 2012]. In this context, sustainable transport concepts should be developed in the planning of urban mobility that also take leisure traffic into account.

In this context, a Sustainable Urban Mobility Plan should be developed which also considers leisure transport. A SUMP is aimed at developing urban mobility within the framework of urban architecture, starting from the political framework conditions, and covering all levels, to find solutions to traffic-related problems [Kiba-Janiak, Witkowski, 2019]. Thereby, the urban citizens are in the centre of attention. Besides the improvement of the service offer with a higher efficiency, the

focus should be on the air quality and safety in urban mobility [Pisoni et al., 2019; Spadaro, Pirlone, 2021]. A sustainable smart city should aim for an ecologically oriented green urbanism with the objective to reduce the ecological footprint, bringing these aspects increasingly back into harmony with nature [Beatley, 2006]. This also leads to a higher quality of life and health.

Focusing on a specific question and limiting the scope of this study also imposes certain limitations on this article. The survey questions asked about the preferred means of transport which is most frequently used for leisure activities. No further detailed distinction was made here. In the next step, the different types should be further differentiated. For example, people may use public transportation to visit a museum or a cinema but use their own car for daily errands. In addition, the different behavioural patterns regarding car ownership [Magdolen et al., 2021] in terms of leisure activities should also be analysed in more detail.

Moreover, two categories were formed for the bivariate regression analysis, incorporating those who drive and those who are more likely to use alternative modes of transportation, referred to in this article as "green transport". Because this is a simplification, more detailed consideration would require detailed distinctions. For example, it may make more sense to use an e-vehicle instead of running double-decker buses in a city at night, which have high emission levels with a very low passenger load. Therefore, a realistic CO_2 emission value per kilometre would have to be calculated for the different means of transport on the basis of the actual utilization as well as the consumption.

Trends show that it will be more difficult to draw up dedicated personality-based mobility profiles, since mobility is becoming increasingly heterogeneous, especially among the younger generations. Finally, the question is less whether to use one's own car or rather public transportation or the bicycle since it will not be an either-or decision in the future. Rather, the use of the means of transport will be diverse depending on the purpose of the journey and, in the wake of the sharing principle with mobility-as-a-service (MaaS) and "pay-as-you-go" payment model, various modes of transport will be combined in such a way that, depending on needs and budget, one can get from A to B in the fastest, most comfortable, most cost-effective, or most environmentally friendly way. In this way, a "mobility consumer" only pays for the actual use of the demanded mobility and not for 95% of the time that a car is parked [Burgstaller et al., 2017; Esztergár-Kiss, Kerényi, 2020; Xi et al., 2020]. A transparent display of the CO_2 emissions caused in each case can make a further contribution to raising awareness in the direction of sustainable mobility.

As a result of the convergence of different transport services, in particular the use of sharing offers ("using instead of owning"), intermodal transport use is becoming increasingly dominant among many city dwellers [Reichenbach, 2019]. In

achieving this, urban citizens must be convinced by addressing essential needs, such as easy access, fast and inexpensive connections, and convenience, to also increase their willingness to change their habitual behaviour patterns. This is shown by the results of this study, but also by other studies [Goletz et al., 2020].

This work is therefore intended to build a bridge between the "traditional thinking" in the direction of the classic use of certain means of transport, to the intermodal use of different means of transport depending on the purpose, situation, and financial budget.

Further scientific analyses in the area of mobility behaviour in leisure time should be performed. Currently, the generations of the total sample did not show a general significant influence; the next step could, however, be to examine the different generations in more detail. In addition, the mobility behaviour in everyday life, i.e., the way to work or to the educational institution, was not examined. The relationship between daily commuting and leisure mobility also represents another interesting area of investigation.

Disruptive changes caused by the Corona pandemic, which are likely to have a long-term impact on mobility behaviour, should also be investigated in the next step.

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Appendix A. Details to basic numbers and key mobility indicators for Warsaw and Berlin

Measure	Details	Source of data for Warsaw	Date of data for Warsaw	Source of data for Berlin	Date of data processing
population	–	warszawa.stat.gov.pl/en	30.06.2021	download.statistik-berlin--brandenburg.de/70fd75104b57d0fa/83cc240d450f/21-02-10.pdf	31.12.2020
area size	–	as above	–	as above	31.12.2020
population density	number of inhabitants per km2; calculated value: population / area size	as above	–	as above	31.12.2020
average age	–	ugeo.urbistat.com/AdminStat/en/pl/demografia/dati-sintesi/warszawa—-srodmiescie/1465108/4	2020	de.statista.com/statistik/daten/studie/1095771/umfrage/bevoelkerung-berlins-nach-altersgruppen	31.12.2020
percentage people in paid work	–	warszawa.stat.gov.pl/en	–	berlin.de/berlin-im-ueberblick/zahlen-und-fakten	31.12.2019
unemployment rate	–	as above	–	as above	31.12.2019
car use	calculated value of cars divided by total population	stat.gov.pl/en/topics/transport-and-communications/transport/road-transport-in-poland-in-the-years-2018-and-2019,5,6.html	31.12.2020	berlin.de/berlin-im-ueberblick/zahlen-und-fakten	31.12.2019
relative fuel costs	the average cost of fuel relative to income per capita (we calculated the affordability of fuel by averaging prices from the city's petrol stations and comparing them to mean net monthly income)	urbanmobilityindex.here.com/city/warsaw	2018	urbanmobilityindex.here.com/city/berlin	2018

Measure	Details	Source of data for Warsaw	Date of data for Warsaw	Source of data for Berlin	Date of data processing
traffic congestion index	a measure of city congestion during peak times (we compared the flow of traffic during weekday rush hours, i.e. 6–10AM and 4–8PM, to an ideal free-flow environment. This index is represented on a scale of 0–10 where 0 is least congested and 10 is most congested)	as above	2018	as above	2018
percentage of congested roads	the percentage of roads congested at peak times, i.e. 6–10AM and 4–8PM on weekdays (calculated by comparing the total length of congested roadway segments with the total length of a city's road network)	as above	2018	as above	2018
time delay in traffic	a measure of the extra time spent driving due to traffic congestion. Calculated by comparing journey times for 100km (62 mi) travelled during peak times (6–10AM and 4–8PM on weekdays) with journey times for those roads when traffic moves freely.	as above	2018	as above	2018
public transport frequency	a measure of how often a public transport service calls at a public transport stop (calculated based on average numbers of trips per public transport stop, per day)	as above	2018	as above	2018
public transport expense	the cost of a monthly transport pass as a percentage of monthly income (we calculated this based on the relative costs of a monthly public transport ticket and mean net monthly income)	as above	2018	as above	2018

Measure	Details	Source of data for Warsaw	Date of data for Warsaw	Source of data for Berlin	Date of data processing
public transport coverage	The total area of the city within 1km of a public transport stop, relative to the total area of the city.	as above	2018	as above	2018
percentage of green spaces	the percentage of a city's area which is covered in accessible green space (calculated by considering the area covered by green spaces, such as parks, lakes, and woodland, relative to the total area of the city)	as above	2018	as above	2018
public transport vs car speed	the ratio between average journey time by public transport and by car, excluding time spent parking (we randomly selected random points of interest around the city and then compared average journey times between them, at hourly intervals between 6AM and 8PM)	as above	2018	as above	2018
car use	calculated value of cars divided by total population	stat.gov.pl/en/topics/transport-and-communications/transport/road-transport-in-poland-in-the-years-2018-and-2019,5,6.html	31.12.2020	berlin.de/berlin-im-ueberblick/zahlen-und-fakten	31.12.2019
relative fuel costs	the average cost of fuel relative to income per capita (we calculated the affordability of fuel by averaging prices from the city's petrol stations and comparing them to mean net monthly income)	urbanmobilityindex.here.com/city/warsaw	2018	urbanmobilityindex.here.com/city/berlin	2018

Source: Own elaboration.

Appendix B. Variables' details

var_name	var_label	Scale	label_code	label_name
x_gen	generation	nominal	1	Z
x_gen	generation	nominal	2	Y
x_gen	generation	nominal	3	X
x_city	city	nominal	1	Warsaw
x_city	city	nominal	2	Berlin
soz_male	gender	nominal	0	no
soz_male	gender	nominal	1	yes
soz_work	job or education status	nominal	0	no
soz_work	job or education status	nominal	1	yes
soz_howner	home owner	nominal	0	no
soz_howner	home owner	nominal	1	yes
soz_income	total personal disposable income per month	nominal	1	low-income group
soz_income	total personal disposable income per month	nominal	2	middle-income group – lower range
soz_income	total personal disposable income per month	nominal	3	middle-income group – upper range
soz_income	total personal disposable income per month	nominal	4	high-income group
ress_lic	driving licence	nominal	0	no
ress_lic	driving licence	nominal	1	yes
ress_car	access to car based on cars in household	nominal	0	no
ress_car	access to car based on cars in household	nominal	1	yes
tp_car_freedom	"Owning a car gives me a feeling of…" (originally based on a 5-point Likert scale)	metric	1, 2, 3, 4, 5	I strongly agree; I agree; neither nor / neutral; I disagree; I strongly disagree
trans_typ_leis	Given a typical week, what modes of transportation do you use most often during your leisure time, in situations such as meeting friends and family, shopping, sports activities, etc.?	metric	1, 2, 3	own car / taxi / car sharing, public transport / long distance train, active commute (bike & on foot)

var_name	var_label	Scale	label_code	label_name
trans_reas_leis	main reason for means of transport for leisure time	metric	1, 2, 3, 4, 5, 6	travel time, costs, comfort, sustainability, health aspects, accessibility
trans_km_leis	travel on average on a weekend day / day off from work (originally based on a 5-point Likert scale)	metric	1, 2, 3, 4, 5, 6	below 5 km, 5 to 10 km, 10 to 20 km, 20 to 30 km, 30 to 50 km, more than 50 km
sat_access_pt	satisfaction with accessibility to public transport	metric		I am very satisfied; I am satisfied; neither satisfied nor dissatisfied; I am dissatisfied; I am very dissatisfied; not applicable / not relevant
urb_live_traffic_free	increase of subsidies for alternative means of transport (originally based on a 5-point Likert scale)	metric		I strongly agree; I agree; neither nor / neutral; I disagree; I strongly disagree
wol_city	creation of traffic-calmed zones, pedestrian, and bicycle lane (originally based on a 5-point Likert scale)	metric		I strongly agree; I agree; neither nor / neutral; I disagree; I strongly disagree
imp_lc_secure	most important factor to you for a liveable city – healthy lifestyle and environmental aspects	nominal	1, 2, 3, 4, 5, 6	affordability, urban mobility, healthy lifestyle and environmental aspects, security, information and cultural facilities, personal development opportunities
imp_ul_pt	improve public transportation overall while making it affordable (e.g., subsidized monthly/annual public transportation passes) and efficient (fast and comfortable travel from A to B)	nominal	0	no
imp_ul_pt	improve public transportation overall while making it affordable (e.g., subsidized monthly/annual public transportation passes) and efficient (fast and comfortable travel from A to B)	nominal	1	yes

var_name	var_label	Scale	label_code	label_name
trans_leis_dmt	differentiation of car vs other means of transport such as bike and public transport ("green transport")	nominal	0	car
trans_leis_dmt	differentiation of car vs other means of transport such as bike and public transport ("green transport")	nominal	1	green transport (GT)
trans_km_leis_x	travel on average per day to and from education / work in km	metric	1, 2, 3, 4, 5	below 5 km, 5 to 10 km; 10 to 20 km; 20 to 30 km; 30 to 50 km; more than 50 km

Source: Own elaboration.

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The impact of the 2007–2008 crisis on NBA attendance

Consumer behaviour is shaped by a number of parameters. One such parameter is the state of the economy and the level of disposable income, as the demand for goods is shaped according to the circumstances and the type of good. This paper examines whether the economic crisis of 2007–2009 had an impact on the number of spectators of the NBA games. The analysis examines, as well, whether some teams are more recession-proof than others. In order to establish the above, an econometric analysis has been conducted, having as independent variables the GDP, the real disposable income and the ranking position of the teams, and as a dependent variable the number of tickets. Correlation analysis has being conducted, while a multiple regression analysis has been performed. The results show that the number of tickets has a correlation with GDP. The regression analysis shows that the ranking position is an explanatory variable of the number of tickets, while unemployment is not a statistically significant factor. As a conclusion, the analysis shows that recession has a negative impact on the number of tickets, while the ranking position of the team plays a significant role on the number of spectators.

Keywords: recession, economic crisis, disposable income, sports economics, consumer behaviour

JEL classification: G01, R22, Z20

Introduction

The current study examines the impact that one factor, i.e. the income, had on stadium attendance during the period of the economic crisis 2007–2008. The reason for this choice is because the price of the tickets changes not only among periods but also among matches, resulting in the difficulty of obtaining detailed ticket price data, while the presence of superstar players also differs among seasons, in the sense that a player who is considered to be the star in a season might be less attractive in the next season. Since the study examines the impact of the income alone, it should be underlined that other factors may have had an impact on the attendance.

The factors that influence consumer behaviour consist of social, personal, psychological and cultural characteristics [Solomon et al., 2013, p. 362]. Buying behaviour usually depends and is influenced by a wide range of factors [Martins et al., 2012,

p. 37] such as income, demographic, social, as well as cultural factors. In addition to the above internal factors, there are also the external factors of the circumstance surrounding the environment as mentioned in the literature. Nilesh [2013] divides the factors into external, culture and subculture, social class/group, family or interpersonal influences and the others encompassing the geographical, political, religious and economic environment.

One of the most important factors that influence consumers' behaviour and their decision to buy or not to buy a particular good is disposable income [Schiffman et al., 2014, p. 368]. In general, depending on the change in income, the change in demand for goods is also modulated, but having a distinction depending on whether goods are considered as inferior, regular or luxury.

Attending matches in the stadium as spectators at their team's games has multiple functions. It is a way to socialize [Hall et al., 2010, pp. 331–335], and to express their support for the team [Cavdar, Circova, 2018, p. 674], while at the same time it is a means of financial support, by buying the tickets and team's paraphernalia [Bristow, Sebastian, 2001, pp. 264–265] so that the fan can contribute directly to the team's revenues and the team can be competitive. The decision to attend the game is defined by a number of factors. Some factors are economic ones, based on the concept that the consumer is rational and makes a decision according to the expected utility from the game in comparison to the price; a decision well-described in the utility theory [Blunder, 1988, pp. 18–22; Gilboa, Schmeidler, 1997, pp. 740–752]. Other factors are social, including the preferences of the family, the habits of the friends and the habits of the friends [Ramya, Mohamed, 2016, p. 78]. While some factors are general, in the sense that shape a person's purchasing behaviour and decisions, as the ones mentioned above, other factors are more sports-related, such as the uncertainty of the outcome [Coates, Humphreys, 2012, pp. 373–375; Mills, Firt, 2014, pp. 214–216; Pawlowski, Nalbantis, 2015, p. 4128], the other games and events, which act as a "direct" and "indirect" substitute respectively [Addessa, Bond, 2021, p. 4], and the attractiveness of the match [Addessa, Bond, 2021, p. 12], which, in a way, is associated by the presence of superstar players [Humphreys, Johnson, 2020, p. 174].

Having reviewed the factors above, the current study focuses on the disposable income as the key factor having an impact on attendance, having an economic rather than a social perspective. As stated above, although it is a factor having an impact on buying behaviour, it was not possible to examine thoroughly the price of the tickets, due to the lack of available data. While stating that, the researcher took into account that the net change of the average price of tickets from 1999 to 2008 was 1 dollar or 2% [Josza, 2011, p. 142]; thus, since no major differences have been recorded, it can be assumed that the price of tickets would not be a factor having a decisive impact on the decision to attend a game. Also, for the reasons mentioned above, the research does not include a variable regarding

"superstars". Hence, the study includes only one independent variable, namely the disposable income.

The question therefore arises as to whether the economic crisis has brought about a change in the number of spectators attending professional basketball games with a physical presence on the court. In order to examine this question, the paper performs a correlation coefficient analysis to determine whether the number of tickets changes along with the change in the economy and disposable income, and also performs a linear regression to determine whether changes in the number of spectators can be explained by changes in income.

The importance of this study is based both on academic reasons and on the contribution that it can make to the management of teams participating in the NBA. In terms of the paper's contribution to academic research, this research examines an important aspect of sports economics and microeconomics, which concerns how the demand for one of the most popular US sporting events is shaped during periods of recession and declining disposable income. So, in this light, this research adds to the literature regarding the income elasticity of NBA games and whether watching games can be considered a normal good. It also strengthens the academic literature regarding the impact of an economic crisis on various sectors and activities of the economy. In addition to contributing to the academic literature, this research also contributes to decisions regarding sports economics, in the sense that, knowing income elasticity may be helpful for NBA managers.

In Vacsi's [2013, p. 146] research, it is found that in 2007–2008 there was a decrease in ticket sales for NBA teams, while Parlow's [2010, p. 196] article states that NBA teams in 2007–2008 recorded losses due to the economic crisis, but there is no mention of the effect of the change in income. In Gao and Kim's [2017, pp. 16–17] research it is found that the decrease in income affected the decrease in demand for entertainment expenditure, which includes "admission fees to sporting events [single admissions and season tickets]", but without a specific measurement for this category and without any reference to the demand for tickets to NBA games.

1. Literature review

First of all, when the economy has a recession, i.e. the GDP is declining, instead of increasing, then both the enterprises and the consumers are decreasing their expenditure due to two main factors: first of all, they have less disposable income, as a result of the recession [De Nardi et al., 2011, pp. 2–3]. Second, the marginal propensity to save is increasing, because the households are afraid that they will have less disposable income in the future, thus they should have a higher amount of savings, in order to address their future needs. In this sense, the house-

holds prefer to cut their current expenditure and increase their savings, in order to be protected from the recession that might continue [Pistaferri, 2016, p. 9]. Thus, the marginal propensity to save increases, and the additional amount of savings acts as insurance for the households, since the market itself cannot have an insurance instrument to protect the disposable income in cases of crises [Mishkin, 2007]. As a result of the increase of the marginal propensity to save, the multiplier of the economy decreases, leading to a decrease in the GDP [Parkin et al., 2008, p. 164].

Except for the fears of the households, the other reason is that they have lower disposable income, thus the decrease in the expenditure is due to the fact that, during the recession, the households do not have the economic means to continue the same rate of consumption as they used to before the crisis. This is because of two reasons. The first reason is because, during the recessions, the unemployment increases and the wages decrease [Kalleberg, Von Wachter, 2017, p. 17], thus there is lower income from employment [Elsby et al., 2010, p. 3]. The other reason is that, during the recession, the value of the property and assets households have decreased as well. For example, the value of stocks decreased in the 2008 recession [Dwyer, 2009], thus there is a decrease in the households' wealth.

The first two years of the recession in the United States witnessed a significant decline in consumption [Lee et al., 2010, pp. 3–6]. Concern about the occupational status of residents and the fear of losing their jobs dramatically reduced their willingness to make purchases, especially when they were for leisure and entertainment [Mansoor, Jalal, 2011, p. 112]. In fact, Stock and Schultz [2011, p. 229] state that consumers' reluctance to shop intensifies during economic downturns because it is affected by the consumer's social ties, both family and friends.

The consumption structure of households during recession deteriorates, resulting in lower consumption and more rational purchase decision making. Consumers, now spending less money on unnecessary expenses, are more careful and do not spend on products that do not meet their fundamental needs [Sobczyk, 2013, p. 345]. Also, household consumption expenditure is decreasing to the extent that their income is decreasing [McKenzie, Schargrodsky, 2011, p. 28].

Based on these, the study examines a key independent variable, i.e. the real disposable income per capita, in order to identify whether this factor has an effect on the stadium attendances of the NBA teams.

2. Methodology

The research uses the Pearson correlation coefficient r. Also, there is a regression analysis in order to determine the degree of the effect of change in disposable income on the number of tickets. In linear regression analysis, the p-value is a con-

tinuous measure of evidence. A low p-value means either that the null hypothesis is true and a highly improbable event has occurred or that the null hypothesis is false. The dependent variable Y is the number of tickets at the stadiums of each team in home matches.

The independent variable used is the level of real disposable income per capita.

However, for the completeness of the paper, a second independent variable was also considered, which is the team's involvement in the league competition. This variable was chosen as it is recorded that fans have an increased interest in attending their team at the stadium when the team has a chance to excel, while on the contrary, when the team cannot claim a competitive position to win the championship, fans' intrinsic interest decreases.

The linear regression analysis has the following limitations:

Parameter instability: this indicates the tendency for the relationships between variables to change over time due to changes in the economy or markets. For example, if a variable is highly dependent on a particular factor, then the regression analysis model will need to be adjusted for that factor in order to produce reliable results. In the case of the present analysis, no events have occurred which would determine the number of spectators in the stadium, so that the model would have to be adjusted.

Sensitivity to outliers: the linear regression model is sensitive to outliers. This means that a majority of the data occurs close to the x-axis, but if there are two points very far from the x-axis, then the regression results will be affected. In the case of this regression, no outliers have occurred in either the dependent or the independent variable, as determined by the descriptive statistics.

Over-fitting: when there are many independent variables, the linear regression model may over-fit the assumptions so that, in addition to the relationships between the variables, it will also shape the random error. In the case of the present regression, there is no multivariate model.

Linear correlation: if a relationship is non-linear, the model does not take it into account. In the case of the present regression, no non-linear correlation has occurred.

3. Data

The survey data are as follows.

Net disposable income per capita is in US dollars and is posted on the Federal Bank of St. Louis website.

Number of tickets refers to the number of tickets purchased for the teams' home games, as the total number of home and away is not recorded. However, the

statistics on the NBA Federation's website record the average number of home and away tickets, which is considered as an alternative.

The following teams have been excluded from the sample of total teams:

- The Hornets has been excluded from the sample, because the team did not participate in the 2001 to 2004 championship,
- Wizards has been excluded from the sample, because the team did not participate in the 2005 championship,
- Warriors and Trail Blaze have been excluded from the sample, because the teams did not participate in the 2009 championship.

4. Findings

First, descriptive statistics are recorded in terms of the total number of tickets. As recorded in Table 1, the annual average number of tickets for the teams' home games is 18,381,079 tickets (SD 433.87).

Table 1. Descriptive statistics, number of home tickets, 2001–2009

Descriptive statistics	Value
mean	18,381,078.56
median	18,449,282.00
standard deviation	433.87
kyrtosis	–1.28
range	1,221,536.00
minimum	17,816,096
maximum	19,037,632

Source: Own elaboration.

As presented in Figure 1, while until 2003 less than 18 million tickets had been sold per season, in 2004 this figure increased to 18.3 million and in 2007, i.e. the year before the recession, tickets reached 19.04 million, and in 2008 dropped to 18.4 million tickets.

As shown in Table 2, while the total number of tickets increased by 3.44% in the period 2001–2009, during the period of the economic crisis, i.e. the period 2007–2009, the number of tickets decreased by 2.77%, while in the period before the crisis, from 2001 to 2006, the number of tickets increased by 5.36%.

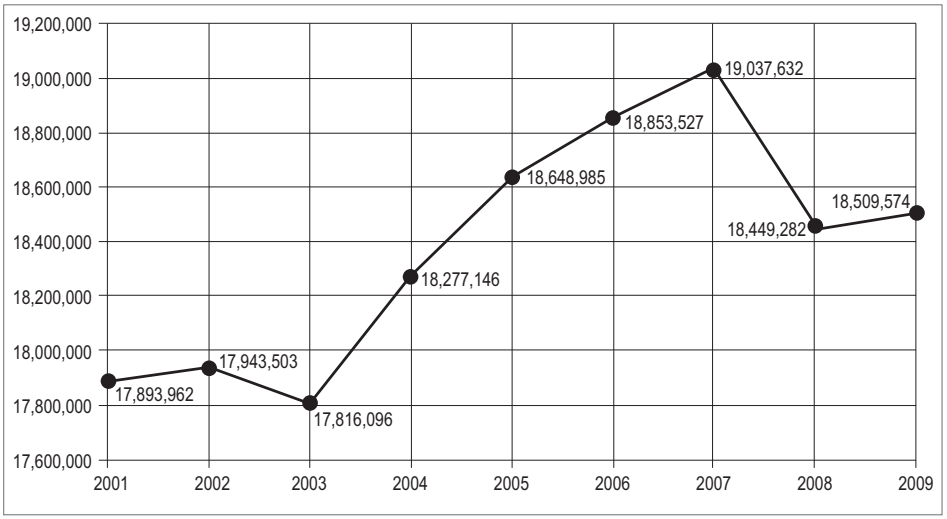

Figure 1. Number of tickets in NBA games, 2001–2009

Source: Own elaboration.

Table 2. Number of tickets and percentage differences per period

Period	Number of tickets
2001	17,893,962
2002	17,943,503
2003	17,816,096
2004	18,277,146
2005	18,648,985
2006	18,853,527
2007	19,037,632
2008	18,449,282
2009	18,509,574
Δ% 2001–2009	3.44%
Δ% 2001–2006	5.36%
Δ% 2007–2009	–2.77%

Source: Own elaboration.

This is the first indication that there has indeed been a reduction in the number of tickets.

It should then be examined whether there is a correlation between the number of tickets and the level of disposable income.

The correlation coefficient between the independent and dependent variable is 0.163.

Under the null hypothesis of no correlation: t[214] = 2.40923, with a two-tailed p-value of 0.0168.

Therefore, with this coefficient value, it is found that there is no correlation between the variables, so the number of tickets is independent of the level of disposable income.

If the dependent variable is the average number of total tickets, i.e. the tickets of home and away games of the teams, there is a relative increase in the value of the correlation coefficient r = 0.256, but even this value shows that there is no correlation.

The next correlation to consider is between the team's league position in each year and the number of tickets. For this, the correlation coefficient is –0.955. The negative sign is due to the fact that in the rankings there is a contrast of numbers, in the sense that the higher number in the ranking order represents a lower position; for example, the number 22 in the rankings is higher than the number 15, but represents a lower position. Therefore, the correlation coefficient of –0.0955 shows a significant correlation between the team's position in the annual league and the number of tickets, as the higher the position, the higher the number of tickets increases, while on the contrary, when the team becomes non-competitive, the number of spectators decreases.

Of course, one could argue that this correlation is so strong and statistically significant because it is based on tickets for home games, so the correlation is valid because only the number of fans of each local team is taken into account. However, the correlation coefficient is also very strong when considering the average number of tickets, i.e. home and away tickets, having the value of p = –0.913. Although the value of the correlation coefficient is relatively lower than the previous indicator, it still demonstrates a very strong correlation (the reason for the negative sign of the correlation coefficient is explained above).

Based on the above, a linear regression was performed to determine whether the level of disposable income is a factor that can explain the change in tickets in a statistically significant way.

The regression statistics are presented in Table 3. The multiple R shows the deviation of the dependent variable, which can be explained by the regression. The multiple R is 0.16, so there is no correlation.

Table 3. Model summary

Model	R	R square	Adjusted R square	Standard error of the estimate
1	0.163*	0.026	0.022	95448.36552

* Predictors: [Constant], Average_income

Source: Own elaboration.

The analysis examines the null hypothesis, in the ANOVA analysis. As presented in Table 4, the value of F is 5.804 while the significant F is 0.017 < 0.05, thus the null hypothesis cannot be accepted.

Table 4. ANOVA

Model		Sum of squares	df	Mean square	F	Sig.
1	regression	5.29E+10	1	5.29E+10	5.804	0.017*
	residual	1.95E+12	214	9.110E+9		
	total	2.00E+12	215			

* Predictors: [Constant], Average_income.

Source: Own elaboration.

The regression in Table 5 shows that the real disposable income has a p-value = 0.02 < 0.05, hence the independent variable is an explanatory factor of the number of tickets.

Table 5. Regression, real disposable income and home tickets

Coefficients*						
Model		unstandardized coefficients		standardized coefficients	t	sig.
		B	standard error	beta		
1	[Constant]	295907.661	172416.710		1.716	0.088
	Average_income	11.352	4.712	0.163	2.409	0.017

* Dependent variable: Home_tickets.

Source: Own elaboration.

Conclusions

The linear regression showed what is noted in the literature, that the change in the amount of disposable income is a factor that affects consumer choices. Fans clearly love their team and want to support it, both emotionally inside the stadium and financially. However as has been found, the decline in the number of tickets is explained to a statistically significant extent by the decline in income.

Compared to the results of previous studies that had shown that tickets decreased during the economic crisis, the present study has managed to make concrete and measurable the effect of the change in real disposable income on the

number of tickets for NBA games, and also gives a clear answer to the question whether the number of tickets is correlated with the position of the team in the championship. In fact, the analysis shows that the position of the team has a strong correlation with the number of tickets, which may substantiate the view that the more competitive teams are more resilient to recessionary conditions in terms of their ability to keep their fans in the stadium.

The findings of the research not only fill the literature gap regarding the effect of declining income on the demand for NBA game tickets, thus contributing to the strengthening and expansion of the academic literature, but can be used in practice by the teams participating in the NBA: based on the findings of the research, an NBA team has the possibility to plan how to deal with a new economic crisis that may occur in the economy: the team can know about the crisis' effect on tickets demand, to calculate this impact in terms of ticket revenues and to take the proper measures in their pricing policy and their cost management. Of course, it should be noted that a future study analysing the effect of the change in disposable income on the home tickets of a selected team and its fans will provide even more targeted results, taking into account the different changes in disposable income according to the demographic characteristics of local fans.

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The start-up visa system in Japan and its current state

This article will provide an in-depth look at the start-up visa system, as well as a comparison to a similar system in Taiwan. The method used in this study is a qualitative approach applying document analysis. According to the findings, the start-up visa system is adequate for improving economic conditions. The start-up visa is observed to have increased foreign entrepreneurs' investments in Japan even though, at the time, the COVID-19 pandemic impacted foreign entrepreneurs' entry to Japan. The role that start-ups play in Japan's economic environment is different from the European and American ones. A barrier, such as public institutions, is not a vertical collaboration, compared to Taiwan's single institution. In the start-up ecosystem, international student entrepreneurs and spin-out foreign entrepreneurs have advantages over imported foreign entrepreneurs because of the difficulty in culture and marketing. The main industries supported by the local governments are IT, energy, and tourism.

Keywords: foreign start-up, start-up visa, foreign entrepreneurs, immigrant entrepreneurship, Japan

JEL classification:E42, E52

Introduction

The goal of the paper is to discuss whether a business visa programme is a sufficient tool or not to improve foreign start-ups in Japan. Preliminary studies show the motivation of start-ups for the Japanese is low. In contrast, Chinese entrepreneurs in Japan have a high motivation for start-up and the research in the context of foreign entrepreneurs in Japan is still lacking [Takahashi, Han, 2020].

The visa system is a sufficient instrument, as argued by Horii and Goto [2021]; Japan is becoming more selective in opening its doors to foreign workers. The government is focusing on foreign workers in particular who are expected to contribute to the revitalization of Japan's economy. Start-up visas seek to further increase the acceptance of foreign entrepreneurs. It also allows international students to stay in Japan for up to two years after graduation for entrepreneurial activities. In general, most foreign start-ups are from Japanese spouses or the holder of a visa that permits a person to live in Japan.

Furthermore, the manpower of foreigners and entrepreneurs contribute to Japan's economy. A report from the Japan Finance Corporation (JFC) [Fukanuma et al., 2021] showed that diversity in business has become conventional in recent years. The diversity of manpower can facilitate innovation as well as create value. Foreigners are included in this diversity of manpower. However, this idea is often discussed on the side of the employee, even though there should also be a focus on the diversity of the entrepreneurs.

The difference between the living styles and business environment of foreign entrepreneurs is a concern for Japanese entrepreneurs because they have different perspectives from the foreigners. However, foreign entrepreneurs bring diversity to the business environment in Japan and facilitate the economy as well as globalization. An increase in foreign entrepreneurs, which is expected to continue, will be an important player in Japan's economy.

The role of Start-ups is defined to drive the regional economy. The existence of an innovative entrepreneurial ecosystem discussed in a previous study [March-Chordà et al., 2021] identifies industries that boost development and drive the regional economy. They are:

- start-ups,
- business consorts,
- research centres,
- accelerators and incubators,
- governmental institutions,
- private investors.

Due to legal restrictions and cultural reasons, it is difficult to get interviews with Japanese opinion leaders at this research stage. For instance, full-time employees have to inform the head of the department for them to do a standard interview and it takes time to receive the response. An interview with a Taiwanese expert was also required, but when the author contacted the Taiwanese government, there was some information not to be made public. Therefore, the research approach in this article will use a qualitative method by collecting data or documents from government websites and other research related to this article from Japan.

Thus, this paper focuses on analysing the start-up visa system introduced in Japan and its current state by analysing documents and government databases. Taiwan, as an example of a similar country, will be discussed as well. Both Japan and Taiwan's start-up visa system will be studied. It includes mostly statistics of the trend of foreign start-ups in Japan, but it also discusses foreign start-ups features and challenges as well.

1. Literature review – immigrant entrepreneurship

The literature review section shows that the start-up visa system has not been explored yet in research. In a study of female immigrant entrepreneurship within the Japanese context [Billore, 2011], the cases studied focused on the small and medium start-ups and a life cycle perspective: business at birth, business in early years, and business at maturity. The main barriers during the women's entrepreneurial journey happened between the birth of the business and the start-up period. Those main challenges could be distinguished by socio-cultural influences, lack of government initiatives, and support facilities. According to the cases in the research, the female entrepreneurs who are well-educated and skilled are identified as well. Furthermore, the study suggested that an executive policy and social acceptance would help create a more productive environment for immigrant entrepreneurs.

In another study, Billore et al. [2010] explored the status of women immigrant start-ups and analysed the experiences and challenges female entrepreneurs have to face before achieving a stable business in Japan. The stages of the business life cycle were applied by them, which are birth stage, maturity stage, and death stage. The primary motivation for female entrepreneurs during the birth stage of the business to its early years (between 0 to 3 years) is for them to have their independence and control their life. In the emotional view, even fear of failure is highly agreed upon, but the immigrants are confident of their own skill as the success factor. Local hire Japanese staff are employed by these female entrepreneurs, so the job creation contributes to the economy.

The two obstacles the entrepreneurs face are government support and language. There are still a few barriers such as ethical issues and problems with understanding the rules in the local community. There are not many changes during the early years. However, in this stage, the female entrepreneurs had low levels of fear of failure. Considering the maturity and death stages, there were no participants who had been in business for more than 5 years, and, therefore, there was no death stage in their business activities.

Another study on women start-ups in the rural area in Norway showed the following reasons people engaged in start-ups: "entrepreneurship as a way out of unemployment", "entrepreneurship as a means to avoid underemployment", "entrepreneurship as a means to live in a region of perceived attraction", and "entrepreneurship as a preferred choice for women in satisfactory wage labour" [Munkejord, 2017, p. 259]. The study not only focused on the reasons women join start-ups, but the study also pointed out immigrant entrepreneurs as significant factors of rural development.

Lofstrom [2014] states that immigrant entrepreneurial activities contribute to economic growth and innovation. Self-employment enhances labour marketing integration and success among immigrants, but there is no strong evidence to prove that low-skilled immigrants highly impact labour marketing integration or that high-skilled immigrants are proven to be more successful. Developed countries such as the US, Australia, Canada, and the UK, established special visas and entry requirements to attract immigrant entrepreneurs. It is the special visa system that facilitates the economic gains from immigration. Policymakers may like to focus on education and skills as the entry criteria and consistently strong predictors of immigrant success. Thus, the findings stated by Lofstrom [2014] show that:

- business ownership is higher among foreign-born than native-born workers,
- entrepreneurship positively affects labour market integration,
- high-skilled immigrants contribute to innovation
- higher schooling levels are the strongest and most consistent predictor of entrepreneurial success among immigrants,
- many immigrant business owners are low-skilled, with low income,
- business ownership is not an effective tool for significantly improving the economic outcomes of low-skilled immigrants,
- the effectiveness of immigrant entrepreneurship visa programmes is unknown.

Neupert and Baughn's [2013] study compared the country level in entrepreneurship, immigration, and education, among developed countries. The immigrant entrepreneurship founder with a higher education created more jobs. Thus, they argued that an immigration policy that would increase the country's economic growth by a start-up should be from an immigrant with higher education. These conclusions were also based on their study. First, entrepreneurship is related to its level of immigration in developed countries. Second, entrepreneurship is related to high education, since this can lead to having high growth in entrepreneurship.

March-Chordà et al. [2021] studied the key locational factors for immigrant entrepreneurs in the top entrepreneurial ecosystem which is Silicon Valley. Findings from Fang et al. [2015] and Theodoraki and Messeghem [2017] were adapted to show the industries in the innovative entrepreneurial ecosystem. These industries are start-ups, private investors, governmental institutions, accelerators and incubators, research centres, and business consorts.

More statements that are based by Stephens et al. [2019], and Tripathi et al. [2019] are introduced in this paper. According to Stephens et al. [2019], the key segments of entrepreneurial ecosystems can be distinguished by their network and connectedness, investment capital, and innovation – R&D. In addition, social

networks in Silicon Valley are an essential factor in retaining potential entrepreneurs. The primary finding of this paper is consistent with Stephens et al. [2019], and that is that the importance of networking, and social networks in Silicon Valley is an essential factor in retaining potential entrepreneurs.

Tripathi et al. [2019] used the eight top-ranked location factors in their study. It summarizes that the key elements and sub-elements of a start-up ecosystem includes the following: entrepreneurs, support factors (incubators, accelerators, events, legal framework, and mentors); finance (funding, seed investment, venture capital, crowdfunding, and government); demography (culture and language, geography, GDP, and immigrants); the market (global market, local market, and customers); education (educational institutions, experience, media, and family); human capital (talent, education, experience, and young talent); and technology (founders, industry, innovation, and products). Moreover, their study confirmed that image is a key location factor in the Bay area and the primary motivation for immigrant entrepreneurs to attend the Silicon Valley ecosystem is the image and reputation which they could obtain being located there.

The perspective of socio-economic challenges facing immigration in EU countries has been stated [Cymbranowicz, 2016]. The author describes the phenomenon of immigration as obvious from the enlargement of the EU in 2004, 2007, and 2013, with poorer migrants from countries of central EU countries moving to richer countries of western EU countries. In the context of the European employment policy, the immigration problem should be considered.

The paper also used the view of Mansoor and Quillin [2006] – economic and demographic – on the motives of migration, which can be divided into two factors – which are the push factor (original country) and the pull factor (host country).

The push factor includes poverty, unemployment, low wages, high fertility rates, lack of basic health and education. The pull factors are the prospects of higher wages, the potential for an improved standard of living, and personal or professional development. One more of the author's arguments is that the visa and asylum policy should be concerned in the issue of immigration.

From a social perspective, Turkina and Thi Thanh Thai [2013] studied at a cross-country level that social capital has a significant influence on high-value added immigrant entrepreneurship. Also, they pointed out the main motivation for immigrants to be entrepreneurs. By understanding this motivation, policymakers could develop appropriate programmes to facilitate immigrant entrepreneurship.

Turkina and Thi Thanh Thai [2013] further argued that the high-value immigrant entrepreneurship through immigrant entrepreneurs adds to the tech industries, as according to the OECD. In short, they stated that social capital can be distinguished as horizontal networking, interpersonal trust, institutional trust,

and trustworthiness. Horizontal networking is the connection with organizations in the civic sector, NGOs, and other associations. Interpersonal trust is the measure to facilitate exchanges, communication, and transactions with local people. According to their study, not all of the social capitals have a strong impact on immigrant entrepreneurship. An exception is trustworthiness in which immigrants are highly-motivated entrepreneurs even when they face the violation of morality such as free-riding and corruption during their entrepreneurial engagement.

2. Japan's background of the start-up visa system and its similar country – Taiwan

To create a broader perspective, in this part, the author brings Taiwan's visa system into consideration in order not to have a narrow view. Both Japan and Taiwan launched their start-up visa system in the same year, 2015.

The Japan Cabinet Office launched the "Foreigners' Business Start-up Activity Promotion Project" in July of 2015, which authorizes national strategic special zones to promote acceptance of a diverse range of foreigners who can serve as start-up personnel. Under this programme, if foreigners reach certain requirements and are approved by the local government, they will receive the residential status of business manager, for which a 6-month visa is available. By August 2021, 10 municipalities had been approved; Tokyo, Kanagawa Prefecture, Kyoto Prefecture, Niigata City, Fukuoka City, Kitakyushu City, Sendai City, Aichi Prefecture, Hiroshima Prefecture, and Imabari City.

In addition to the above policy, in December 2018, the Ministry of Economy, Trade, and Industry (METI), and the Ministry of Justice (MOJ), introduced the "Foreigners' Entrepreneurship Promotion Project" which allows foreigners to apply for residency status for entrepreneurial preparation activities. This residency status is up to a one-year duration for foreigners to prepare for their start-up activities [METI, 2018]. The main framework is combined as:

- local governments: create a supporting programme and conduct it,
- METI: approves the supporting programme created by local governments,
- immigration bureau: screens applicants for the special activity visa.

In brief, METI will grant approval for the support programme which is from the local government, and the immigration bureau will issue the "manager visa" if applicants reach the requirement. This framework is shown in Figure 1.

By August 2021, 12 municipalities had introduced the foreigners' entrepreneurship project. These municipalities were Fukuoka City, Aichi Prefecture, Gifu Prefecture, Kobe City, Osaka City, Mie Prefecture, Hokkaido, Sendai City, Ibaraki Prefecture, Oita Prefecture, Kyoto Prefecture, and Shibuya Ward.

Similarly, a preferential system was introduced for international students preparing to start their own businesses in 2020 by the Immigration Services Agency Japan. The maximum period of stay allowed under this policy is 2 years. The entrepreneurial activities must, however, be completed within these 2 years.

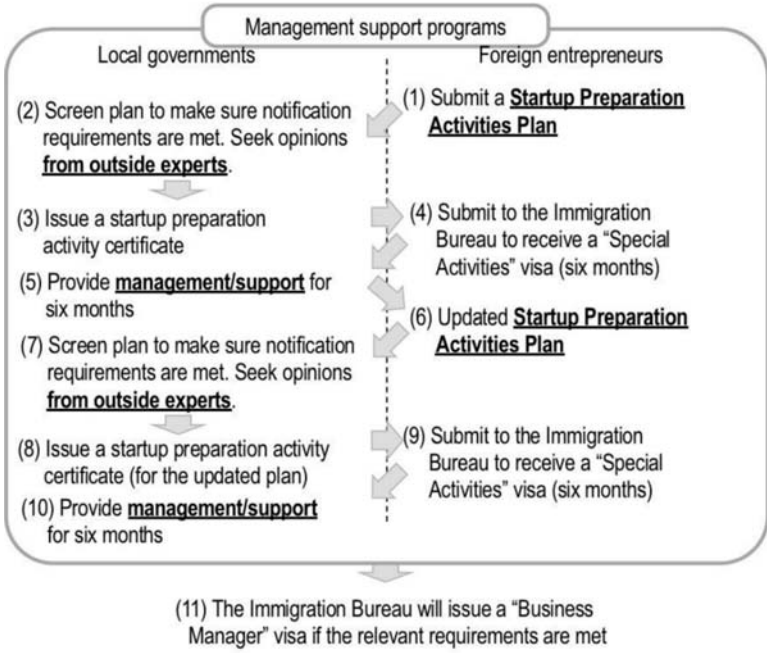

Figure 1. Framework of foreigners' entrepreneurship promotion project
Source: [J-Startup, 2020].

However, in order to obtain a start-up visa, a business plan should be submitted for review at the municipal office. The government will determine the feasibility of meeting the standard residential status of "business manager" requirements within the up to one-year Start-up Visa timeframe. In general, it is required to have an office and a minimum of 2 full-time staff or an investment portfolio exceeding 5 million yen [KOBE]. The steps on how to apply for the start-up visa are seen in Figure 2.

Taiwan Executive Yuan [2015]. In order to increase the international competitiveness for foreign start-ups coming to Taiwan to start their businesses and to have an innovative talent in the international context, the Executive Yuan has introduced the "Entrepreneur Visa", which targets foreign entrepreneurs from Hong Kong and Macao (excluding mainland China) with innovative ability and technology. The Taiwan Entrepreneur Visa is headed by the National development council of Taiwan and complemented by the SEMs administration of the

ministry of economic affairs. In general, the duration of start-up visas is one year. The qualification to apply the start-ups visa is:

- obtained domestic and foreign venture capital or international fundraising platforms to gather more than 2 million TWD,
- obtained admission to government-approved innovation and entrepreneurship parks or incubators,
- obtained domestic or international patents,
- individuals or groups who won awards in domestic and international entrepreneurship and design competitions,
- representative of a new business of innovative ability and invest more than 1 million TWD.

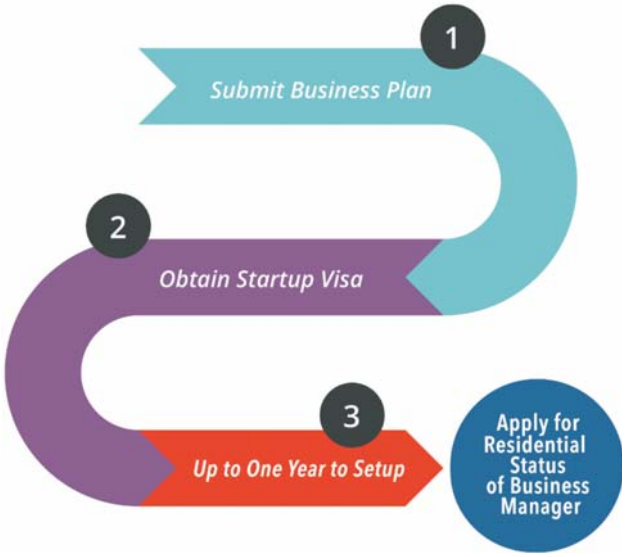

Figure 2. Flow of start-up visa application
Source: [Fukuoka City].

The Taiwan Employment Gold Card is part of the Act for the Recruitment and Employment of Foreign Professional Talent, implemented in October 2017. This Gold Card is combined for four uses: work permit, resident visa, alien resident certificate and re-entry permit. The cardholder also can do their start-ups activities as well; the application flow is as follows in Figure 3.

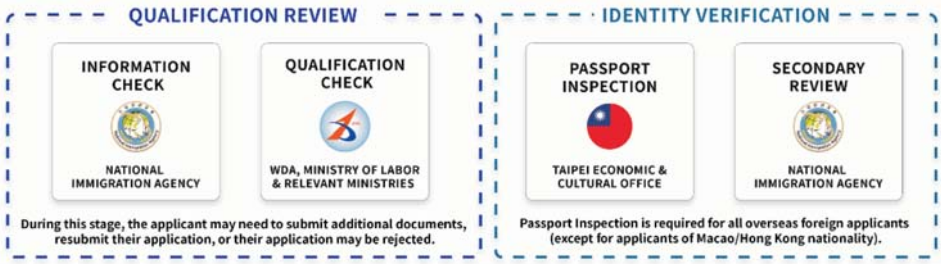

Figure 3. The flow of the start-up visa application

Source: [Taiwan Employment Gold Card Office, 2021].

3. The increasing trend of foreign start-ups entering Japan

Fukanuma et al. [2021] stated that it can be observed that foreign entrepreneurs have increased in Japan. They explore the data from the "Immigration Control Statistics" compiled by the Immigration Services Agency of Japan. The number of foreigners entering Japan with the residence status of "business manager" decreased from 863 in 2000, to 566 in 2002, before increasing. The number peaked at 919 in 2008, and followed a downtrend until 2013 and an uptrend later. In 2019, the number increased to 2,237. In 2020, it fell to 1,537 apparently under the impact of the COVID-19 pandemic. Figure 4 shows the data on the flow of numbers over the years.

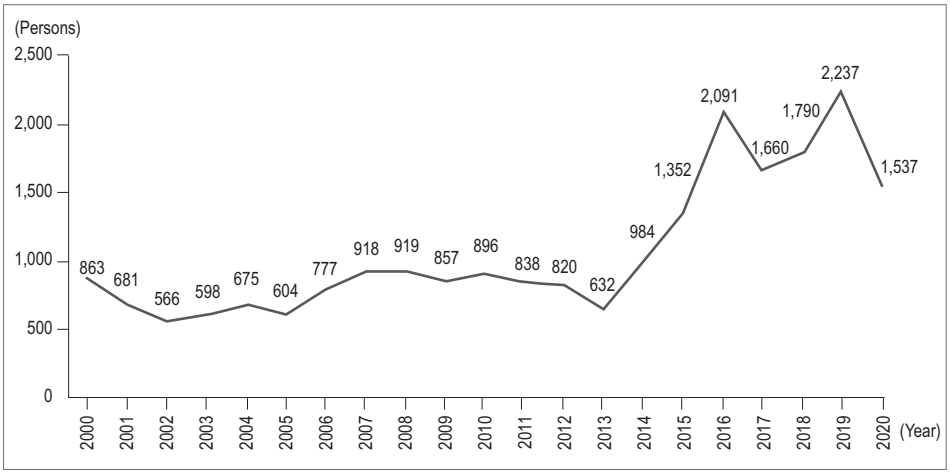

Figure 4. Number of foreigners newly entering Japan with the status of residence of "business manager"

Source: [Fukanuma et al., 2021].

Based on the statics provided by Fukanuma et al. [2021], data were collected from the Immigration Services Agency of Japan to review the number of Foreigners with the Status of Residence of "Business Manager". In Figure 5, it can be observed that between 2012 and 2020 the number increased from 12,609 to 27,235. This is more than a 100% increase rate. 2020 showed 27,235 in comparison to 27,249 from 2019, which stopped increasing apparently due to the influence of the COVID-19 pandemic.

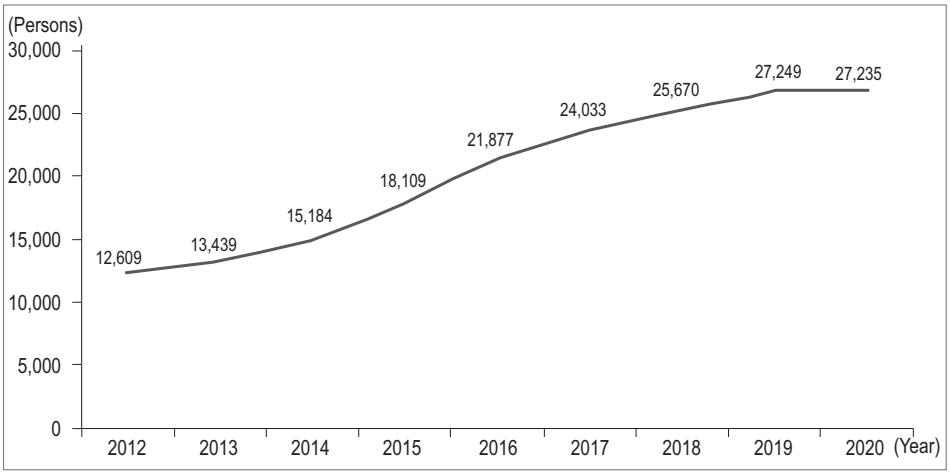

Figure 5. Number of foreigners with the residence status of "business manager"
Source: Own elaboration based on: [Immigration Services Agency of Japan].

4. Start-up visa features and its challenges

The key feature of the start-up visa is that the programme is administered by local authorities accredited by the government. The local governments have the discretion to conduct this programme. To reach the industry features of municipalities, the municipalities decide which industry can be the main one for supporting the start-up visa as in Table 1.

Moreover, METI Kinki [2019] indicates that start-ups are blooming in Japan. The rate of thriving Kansai venture businesses between 2016 and 2017 has been the highest in Japan. Against this background, the number of foreign entrepreneurs in Kansai is increasing due to the influx of people coming to establish businesses. Features of start-ups as distinguished by industry type are shown in Table 2. The following is a summary of the items in the table:

– international student entrepreneurs: these are foreign entrepreneurs who have studied at a Japanese university, graduate school, or vocational school.

In general, this type of foreign entrepreneur can smoothly do business activities, but their capital ability is often weak,

– spin-out foreign entrepreneurs: these are foreign entrepreneurs with experience in managing or working for a Japanese company. Like the international student entrepreneurs, spin-out foreign entrepreneurs also can smoothly do business. As opposed to Japan, start-ups usually take time where they come from,
– imported foreign entrepreneurs: these are foreign entrepreneurs who come to Japan for entrepreneurial purposes. In contrast to the above two foreign entrepreneurs, this type of foreign entrepreneur does their start-up promptly but has difficulty with language and culture.

Table 1. The main industry in municipalities that support start-up visa

Industry	Municipality
IT	Gifu, Ibaraki, Aichi, Mie, Oita, Kobe, Kyoto
energy	Mie, Oita, Fukuoka, Kobe, Osaka, Kyoto
tourism	Hokkaido, Gifu, Mie, Osaka, Kyoto
medical and health	Mie, Oita, Fukuoka, Kobe, Kyoto
life service and science	Ibaraki, Mie, Oita, Osaka, Kyoto
manufacturing	Hokkaido, Oita, Osaka, Kyoto
agriculture, forestry and fisheries	Hokkaido, Oita, Kyoto
food	Hokkaido, Mie, Oita
logistics	Oita, Fukuoka, Kobe
IoT	Gifu, Kyoto
AI	Mie, Kyoto
trade	Mie, Fukuoka
sport and culture	Osaka, Kyoto
robotics	Ibaraki
automobile	Oita
aviation	Oita
social business	Kyoto

Source: Own elaboration based on municipalities' websites.

Billore [2011], as mentioned earlier, identified the main barriers women face in their entrepreneurship journey between the birth of their business and the start-up period. The barriers are language, culture, as well as governmental support. The governmental support barrier can be met with adequate entrepreneurship visas.

Table 2. Features of foreign entrepreneurs

International student entrepreneurs	– new technologies and business models – entrepreneurial mind-set from the time of study – higher Japanese ability – understanding Japanese business culture – have the bank account before start-up – lower capital ability before start-up
Spin-out foreign entrepreneurs	– learning Japanese culture while studying and have an advantage for people connection – higher Japanese ability – the retention in Japan is higher – understanding Japanese culture – have the bank account before start-up – higher capital ability before start-up
Imported foreign entrepreneurs	– new technologies and business models, carting, tourism business – the reason for coming to Japan is influenced by anime and tourism – lower Japanese language ability – not well understanding Japanese business culture – lower people connection in Japan – do not have the bank account before start-up – higher capital ability, from the regions of the US, Europe and China

Source: [METI Kinki, 2019].

METI Kinki's [2019] study points out other challenges facing foreign entrepreneurs. These include:

– status of resident: the conditions for obtaining a "business manager" visa are strictly based on a capital of 5 million yen and setting up of the office before start-up,
– funding: the period of residence is usually only one year, which makes it difficult to obtain investment and loans from investors and financial institutions because of the lack of trust. Trust is however is important in securing credit and cooperation from financial institutions,
– language and office setting: reading and writing Japanese is also required in business, a Japanese guarantor is required to secure a place of business,
– supporting mechanism: when starting a business, there is a need for a one-stop foreign-language contact point that can help with language and funding issues,
– in addition to providing support for starting a business, providing information on tax, labour management, and start-up communities is needed.

Furthermore, when compared to other countries, both the operational and institutional aspects of the start-up visa system need improvement and the start-up community is existing but it is not obvious everywhere in Japan [Oi, 2021]. However, Oi [2021] points out that the start-up community is existing but it is not obvious everywhere.

In addition, the dissemination of information to foreign countries in foreign languages needs to be strengthened. The websites of local governments often seem to be a direct translation from Japanese information into English and do not fully convey the attractiveness of the region. There is also a gap of information in foreign languages to support systems and daily life information provided by local governments.

In terms of the institutional aspect, there is an overlap of systems that support start-ups – except for the duration of visas. The local governments in charge of processing the visas for foreign start-ups do not understand the system properly. This can be challenging when they have to support and give visas to businesses where they do not properly grasp how they work. These issues were also identified by Fukanuma et al. [2021] as disadvantages that the foreign start-ups face. These include:

- difficulty understanding the fine nuances of Japanese,
- difficulty in developing new business partners,
- difficulty in borrowing from financial institutions,
- difficulty in renting real estate.

Conclusions

This paper is the forerunner to capturing the topic of start-ups in Japan. The author has presented arguments that start-up visas are a sufficient tool that could encourage foreign talent to come into the country. An analysis from statistics, in the context of Japan, the increasing number of foreign start-ups could be observed both in the entering and present residents in the span of a decade. There were two peaks point in 2016 and 2017 with a record number of 2,091 and 2,237 start-ups respectively. In the context of Taiwan, a number of gold cards were issued to encourage the immigration of entrepreneurs. The number of gold cards went from 188, to 358, to 1,399 between 2018 to 2020, and in 2022 gold cards reached up to 5,598. It could be argued that the visa policy system had a positive impact on taking in foreign talent.

However, barriers for this visa system can still be observed. The current challenges show that Japan's cabinet office, the METI and the MOJ have a triangle collaboration to facilitate the start-up visa system. These public institutions have

supported the new foreign start-ups in the Japanese market in recent years. Oi [2021] argues in terms of the institutional aspect, the central administration and local government have overlapping policies, but there is the gap that the framework of the start-up visa system is not a vertical operation. For instance, each local government (Fukuoka city) has its own office and different benefits for foreign entrepreneurs. Applicants sometimes needed to know better how the process runs and what were the benefits available to them. In Taiwan, foreign applicants could easier to understand the process for the start-up visa because Executive Yuan implemented a single window which is called Taiwan Employment Gold Card Office, in Japan it is complicated for foreign applicants to know the information of start-up visa.

Comparing the main supported industries between Japan and Taiwan, in this situation in Japan it was shown in the paper that the top three industries in municipalities that support start-up visas are IT, energy, and tourism. Social businesses, however, are not well supported by the municipalities. In Taiwan, the situation is that the economic and IT industries are mainly supported by the government but the tourism is not mentioned. The tourism-oriented country policy is emphasised in Japan, but not in Taiwan.

The role that start-ups play in the economic environment of Japan is different from the European and American ones. According to Start-up Genome 2021 research and RouteX report [The Global Start-up Ecosystem Report], Tokyo is the sole new entrant to the Top 10, moving up six places to No. 9, even though Japan's venture capital investment to GDP ratio was 0.03% in 2016, one of the lowest among the G7 countries with only Italy having a lower rate. It is on the nascent stage, this means it has more chances for growth. In other words, Japan is playing a leading role in Asia.

In the start-up ecosystem, international student entrepreneurs and spin-out foreign entrepreneurs have the advantage of understanding the culture, including the business culture, language, and marketing in Japan when compared to imported foreign entrepreneurs. Imported foreign entrepreneurs, however, have a higher capital ability from the regions of the US, Europe, and China.

For the Recommendations in terms of further research, this paper focused on the start-up visa system and its current situation with a qualitative approach. Due to the fact it is difficult to conduct interviews with governmental institutions, a survey on the private sector can be done using a case study design. For the managerial contribution, this paper is a descriptive article that does not include that element. Future research can also involve theories of economics or management such as the competitiveness of the Porter theory.

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Human capital and economic growth – evidence from the Balkan region

This study empirically examines the relationship between human capital and economic growth in 8 Balkan countries over the period of 2000–2019. The study considers an array of statistical techniques such as the Generalized Linear Model (GLM) regression, the Dricroll–Kraray approach (D–K), and the System GMM (S-GMM) for data analysis. The study documents the positive and statistically significant impact of human capital on economic development. The analysis of the selected subsample of countries also established the positive role of human capital in shaping economic growth. The findings suggest that policymakers may design a comprehensive human development-related policy to achieve sustainable economic growth, at least in the Balkan region.

Keywords: economic growth, education, human capital

JEL classification: C23, J24, O47

Introduction

The consequences of rapid industrial growth in emerging and developing countries to increase the output without environmental protection have profound effects on human life, health, and environmental sustainability [Ahmed et al., 2021]. Consequently, the world faces critical social, environmental, and economic related issues, which further hinder sustainable economic development [Hunjra et al., 2022]. This situation warrants concentrated efforts to minimize the impact of these unwanted social and environmental-related challenges such as a weak governance mechanism, poverty, unemployment, heat waves, droughts, biodiversity and rising sea levels, and thereby the pursuit of economic growth which is compatible with environmental preservation and social sustainability [Ahmed et al., 2022]. Keeping in view the importance of economic growth in view of these challenges, several recent studies have remained focused on how to achieve economic growth through information communication technology (ICT), institutional quality, trade openness, foreign finance, financial development, and

financial inclusion [Acheampong et al., 2020; Appiah-Otoo, Song, 2021; Le et al., 2019; Ozturk, Ullah, 2022; Zakaria, Bibi, 2019].

Despite its importance, the previous literature has remained less focused on how to achieve economic growth through human development [Keji, 2021]. Human resource plays a critical role in driving economic development and technological progress. It is economic growth unsupported by adequate human capital, which leads to poor company performance, negligence of environmental and social impacts, poor decision-making, and other negative effects resulting from low skills and the lack of competences of employees both in private and public sectors.

Human capital describes growth in educational attainment or an improvement in human intellectual capacity. The investment in education leads to a more productive and innovative workforce, which in turn leads to the creation of new ways of doing things to achieve sustainable economic development. The existing literature established a bi-directional human capital and economic growth nexus [Han, Lee, 2020; Opoku et al., 2022]. For instance, human capital develops an efficient workforce, which further contributes to economic development. In turn, growth provides new opportunities to improve human capital [Okunade et al., 2022; Shidong et al., 2022]. Empirically, several studies such as Keji [2021], Siddiqui and Rehman [2017], and Ogundari and Awokuse [2018] supported the positive role of human capital in shaping economic growth. In contrast, Ma [2021], Benhabib and Spiegel [1994], and Filmer and Pritchett [1999] established an insignificant or negative human capital and economic growth relationship. Thus, the extant empirical research provides inconclusive results regarding human capital and economic growth. Eventually, this contradictory evidence creates a need to understand this relationship in-depth through more examples, preferably with data-based research and appropriate econometric techniques.

This study's contributions to the economic research are twofold. Firstly, this study contributes to investigating the relationship in the Balkan Region, since previous studies are conducted in an individual country or different regions. For instance, Ogundari and Awokuse [2018] focused on the human capital-economic growth nexus in Sub-Saharan African countries. Similarly, Teixeira and Queirós [2016] explain this phenomenon in the OECD region, and Siddiqui and Rehman [2017] in Asian countries. However, Balkan countries as a region are less focused on in the current literature. Therefore, this study considers Balkan countries as a sample region in order to fill this research gap. At the same time it is an interesting example due to the following reasons: (1) The rate of macroeconomic growth of Balkan countries' economies has been expected to increase at a higher pace than well-established economies due to their massive natural resources, largely not used during the past decade; (2) The World Bank reported a significant growth increase in the Balkan region in 2021 and observed future economic expansion. Hence, the GDP growth rate in the western Balkans reached 7.4% in 2021, compared to 3.2%

in 2020, a significant difference from other post-COVID-19 economies of the world. However, there is a need to bring structural reforms to improve productivity, the competitive environment, good governance, and human development strategies. Hence, in light of the above discussion, this study examines human development's impact on economic growth to provide better insights to policymakers. We propose the following research questions:

RQ1: Does human capital contribute significantly to economic growth in the Balkan region?

RQ2: Does the impact of human capital on economic growth vary across the listed Balkan countries?

Secondly, previous studies on human capital's relation to economic growth, such as those of Ogundari and Awokuse [2018] and Siddiqui and Rehman [2017] have largely ignored the issues of cross-sectional dependencies, serial correlation, and heteroscedasticity. Moreover, the application of different traditional econometric techniques for data analysis has also created challenges for comparing research completed by different scholars. It could be argued that the use of the traditional Maximum Likelihood (ML) method in those studies, which requires a complete specification of the model that is considered to be estimated, is not adequate for the Balkans. This is especially due to the fact that the probabilities of the distributions of variables of interest are not always fully known because of poor data reporting and quality. Therefore, this study applies generalized linear (GLM) regression and the Dricroll–Kraray approach (D–K) to address the issues of cross-sectional dependencies, serial correlation, and heteroscedasticity. Further, we applied system GMM for a robustness check to provide useful and robust insights into policymakers on this topic.

The rest of the paper is built as follows: the literature review and hypothesis development related discussion are provided in section 2. Sections 3 and 4 present the research methodology and analysis, respectively. Section 5 concludes the study.

1. Literature review

Human capital theory suggests that the role of human capital is essential for economic development [Wang et al., 2022]. Progress in the economy can only be sustained in the case where the human capital is continually built up [Aghion, Howitt, 1998]. Further, Paul Romer devised this growth model to give an endogenous explanation of the source of technological advancement, meaning that an economy that has more human capital would expand faster. Existing research has mainly focused on education that impacts economic growth [Appiah-Otoo, Song, 2021]. The literature strongly claims that the most efficient and productive people are likely to be highly educated [Han, Lee, 2020]. Moreover, to invest their services,

highly qualified personnel can come up with multiple creative ideas to achieve sustainable economic growth [Han, Lee, 2020]. Based on data from 132 countries with a research period of 15 years, Ali et al. [2018] suggested that human capital had the potential to have a positive impact on the GDP per capita, with economic prospects and high-quality legal systems having an additional positive influence on this effect. Deng and Long [2017] examined a panel data analysis for 30 provinces in eastern China and reported that innovative human capital influences economic growth through technological innovation. Reza and Widodo [2013] studied the impact of workers' average level of education on economic growth and found a positive and significant relationship between human capital and economic growth. Siddiqui and Rehman [2017] evaluate the effects of the skills and abilities of the workforce on economic growth. They concluded that greater reliance on primary and secondary education in East Asian countries, compared to the benefits of higher education in developing countries, is required to achieve a transformation in economic growth in these countries. In a study of Nigeria, Keji [2021] concluded that both the education and the health sectors had a positive impact on productivity. The study used the vector autoregressive and Johansen approaches to address this occurrence and found that human capital has a significant long-term impact on Nigeria's economic growth. In Pakistan, Abbas and Nasir [2001] concluded that secondary and tertiary education greatly influenced economic growth. According to Self and Grabowski [2004], the economy relies heavily on the quality of primary education in India. Likewise, Li and Liang [2010] suggested a link between a primary education system and a growing economy.

However, endogenous growth theory supports typically the two-way causal association of human capital with economic development. Empirically, Siddiqui [2006] concluded that human capital is a necessary component of the South Asian economic development. Likewise, Ogundari and Awokuse [2018] investigated the long-run dynamic relationship between human capital and economic progress in 35 Sub-Saharan African countries from 1980–2008. They used the system generalized method of moments (SGMM) and balanced panel data to observe the results and found a positive association between human capital and economic growth. Zhang and Zhuang [2011] examined this human capital and economic progress nexus in dynamic panel framework settings. They gathered data from 31 provinces of China from 1997–2006 and found that human capital efficiency can increase sustainable economic growth. Moreover, Wang et al. [2022] discovered that an efficient workforce has a major impact on economic growth in China. Another study by Teixeira and Queirós [2016] used panel data analysis to observe the dynamic relationship between these two variables in OECD countries and supported the positive relationship between economic growth and human capital.

Finally, the third strand of literature established either a negative or no relationship between human capital and economic growth. Benhabib and Spiegel [1994] found that there was no association between human capital development and GDP growth. Moreover, Filmer and Pritchett [1999] examined the sample data on the educational system and concluded that it had no impact on the economic progress. Ma [2021] explored this effect by looking at it in the context of the dynamics of human capital on economic progress and established the negligible role of human development on economic progress. Amassoma and Nwosa [2011] used techniques such as vector error correction and pairwise Granger causality and found an insignificant relationship between human capital and economic growth.

Hence, in light of the above somewhat contradictory theoretical and empirical studies, we will test the following hypothesis.

H1: Human capital is positively associated with the economic development of Balkan countries.

2. Literature gap

Human capital and economic growth are endogenous in nature. An efficient labour market enables sustainable economic growth, whereas the economic growth model brings new opportunities and chances to sustain human capital. Therefore, it is essential to synchronize these two variables and understand the nature of this relationship. While previous literature helps to understand the impact of human capital on economic growth, there is still a need to find significant factors that affect this relationship. Another reason to conduct the current study is to bridge the contextual gap because previous researchers who have developed results based on sample data primarily from large developing countries. The present study will focus on the Balkan region to investigate the relationship between human capital and economic growth in a number of significantly smaller economies with the goal of providing a better insight for policymakers on this topic.

3. Research methodology

This study examines the impact of human capital on economic development through an array of panel statistical techniques such as generalized linear regression in order to obtain consistent coefficients. Following Le et al. [2020], this study also applies the widely known technique of the Diskoray model and uses system GMM as a robustness check to produce consistent and reliable results even

in the presence of cross-sectional dependence and endogeneity. The baseline model of this study is as follows:

$$EG_{i,t} = \delta_0 + \delta_{i,t} HC_{i,t} + \sum_{t=1}^{t=n} \delta_{i,t} Controls_{i,t} + \varepsilon_{i,t} \quad (i)$$

where $EG_{i,t}$ stands for economic growth, $HC_{i,t}$ represents the human capital (I,t constructed via three dimensions: healthy life, access to knowledge and standard of living). The control variables include a set advocated by several previous studies [Opoku et al., 2022; Pradhan et al., 2013] and consisting of ICT (measured by number of mobile subscribers per 100 people), industry (industry value added as its share of GDP) and inflation (consumer prices annual percentage change). The selection of this set of control variables helps to examine the role of education against other significant factors which impact modern economic growth. While the selection of factors in economic growth models is a subject of fierce discussions in the economic community, the reason for following ICT, industry and inflation is supported by several recent empirical studies, which have advocated the substantial contribution of the aforementioned variables in shaping sustainable economic development in less complex economies [Nchofoung, Asongu, 2022; Le et al., 2020].

3.1. Research design

The study performed the data analysis in three steps. First, the study estimated the descriptive statistics. In the second step, the study produced a correlation matrix. In the third step, the study analysed the impact of human capital on economic growth via the GLM model. Further, the human capital and economic growth nexus was also examined via Diskoray and system GMM for further robustness [Le et al., 2020].

3.2. Sample details

The study collected the data from 2000 to 2019 on economic growth, human capital, and other macro-economic variables from the IMF and World Bank websites for 8 Balkan countries, namely Albania, Bulgaria, Croatia, Greece, Romania, Serbia, Slovenia, and Turkey.

4. Data analysis

4.1. Descriptive statistics

The summary statistics are reported in Table 1. The economic growth has a mean value of 10,405, which is greater than the mean reported values of a similar study of developing economies by Renzhi and Baek [2020]; the difference between

Table 1. Summary statistics

Variable	Symbol	Definition	Obs	Mean	SD	Min	Max	Reference
economic growth	EG	GDP per capita (constant 2010 USD)	160	10,405	6,373.69	1,960.88	24,073	Renzhi, Baek, 2020
human capital	HC	constructed via three dimensions: a healthy life, access to knowledge and standard of living	160	2.995	0.356	1.997	3.619	Opoku et al., 2022
information and communications technology	ICT	mobile subscribers (per 100 people)	156	92.096	32.073	0.952	146.997	Nchofoung, Asongu, 2022
industry	IND	industry (including construction), value added (% of GDP)	160	25.183	5.061	13.328	38.695	Le et al., 2019
inflation	INF	inflation, consumer prices (annual %)	160	6.806	12.327	−4.298	95.005	Pradhan et al., 2013

Source: Own elaboration.

mean values is attributed to the sample size of both studies. The human capital has a mean value of 2.995 which is lower than the reported mean value of Opoku et al. [2022], suggesting Balkan countries have lower human capital in comparison to other regions. This could be easily explained by the use of large countries in other studies. On the other hand, the development of the education system in the Balkans could be argued as being better than in large developing countries. As far as control variables are concerned, the ICT had the highest mean and standard deviation values (M = 92.096, SD = 32.073) among the control variables.

4.2. Correlation matrix

The correlation matrix is presented in Table 2. The positive coefficient values exist between human capital and ICT, which are also positively associated with economic development in Balkan countries. Furthermore, while ICT is positively correlated with economic development, industry and inflation are negatively correlated. These coefficients of control variables are statistically significant at 1.00%.

Table 2. Correlation matrix

	EG	HC	ICT	IND	INF
EG	1.00	–	–	–	–
HC	0.42***	1.00	–	–	–
ICT	0.32***	0.45***	1.00	–	–
IND	–0.26**	–0.08	–0.13	1.00	–
INF	–0.24**	–0.51***	–0.50***	0.28***	1.00

Notes: *** p<0.01, ** p<0.05, * p<0.1.

Source: Own elaboration.

4.3. Regression analysis

The research examines the effect of a predominant factor such as human capital on economic growth in the Balkan countries. Additionally, the study considered control variables such as ICT, industry, and inflation. The regression results of the GLM are reported Tn table 4. The regression results of the GLM, D–K and GMM are presented in Tables 3, 4 and 5, respectively. These results indicate that human capital has a statistically significant positive coefficient value. The beta value suggests that human capital has a positive ($ß_{HC}$ = 0.434, p<0.001) effect on economic progress in Balkan countries. Thus, the results reveal the presence of skilful labour positively contributes to economic development. Teixeira and Queirós [2016] also concluded the positive relationship of human capital with economic development. Likewise, Keji [2021] also established the long and short-run

Table 3. Impact of human capital on economic growth (GLM model)

	Full sample	Romania	Greece	Bulgaria	Croatia	Slovenia	Serbia	Albania	Turkey
	EG	EG	EG	EG	EG	EG	EG	EG	EG
HC	0.434***	4.751***	2.400***	–0.0631	1.283***	0.843**	0.697***	0.0538	0.812***
	(0.153)	(0.415)	(0.237)	(0.177)	(0.333)	(0.383)	(0.0826)	(0.293)	(0.0668)
ICT	0.00657***	0.000737	0.000889**	0.00472***	0.00150**	0.00370***	0.00214***	0.00685***	0.00148***
	(0.00170)	(0.000494)	(0.000437)	(0.00122)	(0.000629)	(0.00112)	(0.000715)	(0.00245)	(0.000526)
IND	–0.0207**	0.00258	0.00730	0.0330**	0.0660***	–0.0147**	0.00800	0.0223*	0.0347***
	(0.00956)	(0.00428)	(0.00911)	(0.0138)	(0.0248)	(0.00736)	(0.0108)	(0.0125)	(0.00471)
INF	0.00982	-0.00249	0.00802***	0.0278**	0.00641	–0.00211	0.00319	–0.000645	–0.00179***
	(0.00669)	(0.00358)	(0.00255)	(0.0108)	(0.00821)	(0.00177)	(0.00292)	(0.00885)	(0.000574)
Constant	7.634***	–5.789***	1.052	9.026***	3.992***	6.483***	5.913***	8.400***	6.270***
	(0.505)	(1.196)	(0.864)	(0.750)	(1.452)	(1.314)	(0.489)	(0.917)	(0.0954)
No. of countries	8.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Notes: Standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

Source: Own elaboration.

Table 4. Impact of human capital on economic development (Dricroll–Kraray approach)

	Full sample	Romania	Greece	Bulgaria	Croatia	Slovenia	Serbia	Albania	Turkey
	EG	EG	EG	EG	EG	EG	EG	EG	EG
HC	0.434***	4.751***	2.400***	–0.0631	1.283***	0.843**	0.697***	0.0538	0.812***
	(0.0507)	(0.322)	(0.215)	(0.209)	(0.434)	(0.401)	(0.0981)	(0.376)	(0.0524)
ICT	0.00657***	0.000737	0.000889**	0.00472***	0.00150*	0.00370***	0.00214**	0.00685**	0.00148***
	(0.00190)	(0.000463)	(0.000371)	(0.00148)	(0.000819)	(0.00124)	(0.000958)	(0.00321)	(0.000487)
IND	–0.0207***	0.00258	0.00730	0.0330***	0.0660**	–0.0147**	0.00800	0.0223	0.0347***
	(0.00637)	(0.00620)	(0.00609)	(0.00844)	(0.0267)	(0.00566)	(0.0113)	(0.0151)	(0.00481)
INF	0.00982***	–0.00249	0.00802***	0.0278***	0.00641	–0.00211	0.00319	–0.000645	–0.00179***
	(0.00255)	(0.00233)	(0.00268)	(0.00710)	(0.00985)	(0.00151)	(0.00328)	(0.00977)	(0.000494)
Constant	7.634***	–5.789***	1.052	9.026***	3.992**	6.483***	5.913***	8.400***	6.270***
	(0.218)	(0.989)	(0.733)	(0.671)	(1.779)	(1.281)	(0.412)	(1.006)	(0.0840)
R-squared	0.219	0.986	0.988	0.732	0.871	0.976	0.965	0.819	0.994
No. of groups	8.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Notes: Standard errors in parentheses,*** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: Own elaboration.

Table 5. Impact of human capital on economic growth (system GMM model)

	Full sample	Romania	Greece	Bulgaria	Croatia	Slovenia	Serbia	Albania	Turkey
	EG	EG	EG	EG	EG	EG	EG	EG	EG
L.l_gdp	0.967***	0.908***	0.677***	0.996***	0.809***	0.655***	0.891***	0.824***	–0.137
	(0.0104)	(0.0679)	(0.140)	(0.0860)	(0.164)	(0.231)	(0.209)	(0.114)	(0.132)
hc	0.0819***	0.549	0.826**	0.240***	0.405	0.00969	0.155	0.127	0.971***
	(0.0274)	(0.344)	(0.337)	(0.0598)	(0.254)	(0.372)	(0.135)	(0.203)	(0.128)
ict	0.000644***	0.000465***	–3.84e-05	–0.000365	0.000837*	0.00182	0.000285	0.00116	0.00194***
	(0.000103)	(0.000159)	(0.000251)	(0.000727)	(0.000491)	(0.00139)	(0.000584)	(0.00213)	(0.000607)
Industry	0.00135**	0.00211	–0.000439	0.0275***	0.0174	–0.0130**	0.0216***	0.0227***	0.0330***
	(0.000545)	(0.00152)	(0.00389)	(0.00514)	(0.0155)	(0.00648)	(0.00670)	(0.00586)	(0.00437)
Inflation	–1.38e-06	–0.000715	0.00659***	–0.00286	0.00282	0.000121	–0.000390	–0.00122	–0.00188***
	(0.000603)	(0.00104)	(0.00124)	(0.00427)	(0.00466)	(0.00208)	(0.00180)	(0.00404)	(0.000497)
Constant	0.111*	–0.817	0.302	–1.138	0.310	3.345**	–0.132	0.564	7.165***
	(0.0600)	(0.535)	(0.404)	(0.885)	(1.012)	(1.681)	(1.444)	(1.292)	(0.846)
Wald (p-value)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2) test	0.2970	0.4638	0.4294	0.8704	0.9056	0.6863	0.4265	0.2873	0.2661
Sargan Test	0.7987	0.7357	0.7932	0.7498	0.1497	0.7476	0.1861	0.9362	0.5043
No. of id	8.00	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Notes: Standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1.

Source: Own elaboration.

impact of human capital on economic progress. As far as the control variables are concerned, the results suggest a statistically significant positive impact of ICT and a negative effect of industry on economic progress. The relationship was also tested for each country separately and the results reveal that human capital is positively associated with economic development. However, the insignificant impact of human capital on economic progress in Bulgaria, Croatia and Albania are consistent with the observed lack of sufficient regulation of institutions in those countries. This in turn leads to suboptimal allocation of human resources, often to non-productive activities.

Empirically, the findings of Ma [2021], and Amassoma and Nwosa [2011] also suggest the insignificant impact of human capital on economic progress in Bulgaria, Croatia and Albania is consistent with the observed lack of sufficient regulation of institutions in those countries. This in turn leads to suboptimal allocation of human resources, often to non-productive activities.

4.4. Robustness check

Applying the Dricroll–Kraray approach following the procedures of Hoechle [2007] is justified by the need to obtain efficient and consistent results even in the presence of cross-sectional dependencies, serial correlation, and heteroscedasticity. Tables 4 and 5 report the estimated results of the D–K and system GMM as a robustness check. The findings confirm the positive impact of human capital on economic progress, which shows that an increase in human capital positively contributes toward economic progress. Further, the separate analysis of each country further validates our previous findings.

The overall study result on the regional level supports the widely known notion that human development plays a crucial role in economic development, validating this notion for the selected Balkan countries. This observations are in line with the general conclusions of two well established recent studies by Ziberi et al. [2022] and Teixeira and Queirós [2016]. At the same time, the detailed country analysis validates this claim for most countries with but a few exceptions.

Conclusions

This research revisited the question of whether human development plays a crucial role in shaping sustainable development, thereby examining the impact of human capital on economic progress. Unlike the majority of previous studies, this study employed panel estimation models to test the human capital and economic progress nexus covering the period 2000 to 2019 of 8 Balkan countries using estimation methods that help to reduce the problem of unobserved heterogeneity and endogeneity. According to our research findings, the human capital structure

in all eight Balkan countries is considerably contributing to the economy's expansion in the region, treated as a whole. Furthermore, this study also examined the effect of human capital on the economic growth in each country. On this level, while generally the notion of the positive impact of human capital on economic growth is confirmed, a few notable exceptions were identified.

The study has significant implications for development planning in countries or regions with similar characteristics as the Balkan region. The findings suggest that investment in education and the market-driven skills are essential for economic development. Yet other factors might have a more impactful role. The non-persistent impact of human capital on economic growth in the separate country analysis is consistent with the notion that institutional specifcities and overall governance have a substantial impact on human capital and the growth nexus. For instance, it could be hypothesised that the presence of a weak governance mechanism and underdeveloped institutions may compel the produced human capital to exhibit non-productive behaviour and engage in socially non-productive activities. Secondly, there might be less industry and more service sector impact on the economy in the Balkans. Thirdly, the difference in our findings observed on the country level suggests that the relationship might not be straightforward and further, more detailed, factor-analysis studies are required. Fourthly, the number of control variables used in this study was limited to a few well-recognized ones agreed upon in the existing literature. This set might be too limited while dealing with smaller economies. The relative impact of "big" factors like industrial output might be of less value in countries with poorer industrial bases or where the service sector contributes significantly more to the total GDP.

Nevertheless, the overall results support the positive role of human capital in shaping economic development in the Balkan region. Hence, a substantial increase in government spending on developing education is necessary to sustain the economic growth. Simultaneously, the findings of this research could be helpful for international bodies such as the World Bank and the International Monetary Fund to assist local governments in formulating and executing human development programmes specifically adapted to meet the requirements of various geographical areas. Apparently, the fact is that the non-availability of data after 2019 is a limitation of this study. Future studies may consider the latest available data and replicate the same methodology for individual countries and different regions to provide better insights for policymakers regarding the human capital and economic progress nexus.

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Impact of economic growth and inflation on the unemployment rate – evidence from the Balkan region

Research in the strand of unemployment has attracted much attention in the last two decades due to its close link with macroeconomic development as confirmed by many theoretical and empirical endeavours. However, in the context of the Balkan region, empirical investigations are rare, and this study strives to fill this gap. For this purpose, the research examines the impact of economic growth and inflation on the unemployment rate. Our evidence is based on a sample of 11 countries of the Balkan region over the period 2000–2021. Our robust panel regression analysis, using static models such as the Dricroll–Kraray standard errors approach, feasible generalized least square estimations, seemingly unrelated regression, and dynamic panel estimation models, reveals that economic development and inflation reduce the unemployment rate. Theoretically, the findings mainly support Okun's Law and the Phillips curve hypothesis. Our findings suggest that policymakers may design policies to ensure equitable and sustainable economic development and a balanced monetary policy to reduce the unemployment rate in the Balkan region.

Keywords: unemployment, inflation, economic growth, Balkan region, Okun's law, Phillips curve

JEL classification: M14, G31, C22, O43, E24

Introduction

The recent worldwide economic and financial challenges have caused unemployment and stagnant economic growth, becoming increasingly critical issues [Cacciatore, Ghironi, 2021]. A growing number of countries are experiencing a drastic rise in unemployment rates, which is a worrying trend even though unemployment is also a problem in developed economies [Ahiadorme, 2022; Wulandari et al., 2019]. This situation orders concentrated efforts to minimize the catastrophic impact of these unwanted unemployment-related challenges, thereby pursuing sustainable economic growth [Liu et al., 2022]. Keeping in view the harmful impact of unemployment, several recent studies remained focused on how to reduce

unemployment through education, the financial structure, information communication technology (ICT), institutional quality, trade openness, financial development, and public expenditure [Huang et al., 2022; Usman et al., 2022; Xu et al., 2021; Liu et al., 2022; Cacciatore, Ghironi, 2021; Czernich, 2014].

However, despite its importance, the existing literature remained less focused on how to minimize unemployment via economic growth [Rodríguez-Puello et al., 2022]. It is a widely accepted view in economics that higher economic development increases employment and reduces unemployment [Keji, 2021]. This proposition is reinforced by the theory of Okun [1962], which describes an inverse relationship between productivity and unemployment. Economic law illustrates that economic development reduces the unemployment rate. Empirically, the existing literature has also supported the positive role of economic development in reducing unemployment across individual countries and regions [Bergkvist, 2016; Oldekop et al., 2016]. Empirically, Abu [2017], Velnampy et al. [2013] and Habees and Rumman [2012] established the inverse relationship between economic growth and the employment rate. On the other hand, the studies of Kashem and Rahman [2020], Khaliq and Noy [2007], and Kreishan [2011] supported there being an insignificant or positive economic growth and unemployment relationship. However, the results of these empirical studies are inconsistent, highlighting the need for further research via sophisticated econometric methods to establish the connection between economic expansion and the unemployment rate.

On other hand, the extant literature has also supported the role of inflation in reducing unemployment with the help of the Phillips Curve hypothesis [Ahmed, Cassou, 2021; Bennani, 2022]. The Phillips curve hypothesis states an inverse relationship between the unemployment rate and an economy's inflation [Mumtaz, Theodoridis, 2020]. In other words, the lower the unemployment in an economy, the higher the rate of inflation. Empirically, few studies such as Reichel [2022], Islam et al. [2021], and Buttler et al. [2005] have supported the positive role of inflation in reducing unemployment. On the contrary, Wright [2012] and Berentsen et al. [2011] established an insignificant or positive inflation and unemployment relationship. The mixed evidence warrants a concentrated effort to revisit the impact of inflation on the unemployment rate.

We uniquely contribute to the existing literature by examining the impact of economic development and inflation on the unemployment rate in the Balkan Region, since previous studies are conducted from the perspective of individual countries or different regions. For instance, Ahiadorme [2022] focused on the relationship between inflation, economic growth, and unemployment in Sub- Saharan African countries. Bhattarai [2016] examines the inflation-unemployment nexus in OECD countries. Similarly, Wulandari et al. [2019] examine the inflation and unemployment nexus in Indonesia. Hjazeen et al. [2021] established the

growth-unemployment nexus in Jordan. However, Balkan countries as a region are less focused upon in the extant literature. This study considers Balkan countries as a sample region due to the following reasons. (1) Although the growth rate was stronger in 2018 as compared to 2017, the increase in workforce utility was at a slower pace in the Western Balkan countries in 2018 than in the previous year. (2) The youth unemployment rate increased and showed persistence in the Western Balkan regions. (3) Although the percentage of young people who are neither employed nor in school nor training has decreased since last year, it is still quite high in comparison to other European countries. Hence, there is a need to bring structural reforms to improve productivity, a competitive environment, a sound monetary system, and sustained development-related strategies to further reduce the unemployment rate. Hence, considering the above discussion, we revisited the impact of economic growth and inflation on the unemployment rate in the Balkan region through sophisticated econometric techniques to provide useful and robust insights for policymakers on this topic.

The remainder of the paper is structured as follows. The literature review and hypothesis development-related discussion are provided in section 1. Section 2 presents the research methodology and research steps taken, while section 3 discusses data sources and basic data analysis. Section 4 presents the main research results and discusses them. Section 5 concludes.

1. Economic growth, inflation and unemployment – review of literature

The extant literature comprehends the relationship between economic growth and the rate of unemployment [Billi, 2020]. Following the formulation of Okun's law by Okun [1962], it has been discovered theoretically that the unemployment rate and economic growth show an inverse relationship. His efforts to illustrate the reciprocal relationship between two variables were widely acknowledged [Rodríguez-Puello et al., 2022; Eichengreen, 1945].

Empirically, following Okun's law, several studies examined the link between unemployment and economic expansion. Chand et al. [2017] argued that increasing the economic rate and productive labour force supports enhancing the employability rate in a country. Habees and Rumman [2012] employed the simple model of Okun's law to observe the connection between employment and economic growth in Arab countries. Using statistical techniques such as ARDL, Abu [2017] analysed the productivity rate and its impact on job creation opportunities with the support of Okun's law in Nigeria and established the connection between economic growth and unemployment. Another study was conducted by

Soylu et al. [2018] in eastern European countries to examine the unemployment and economic development relationship based on a sample period of 1992–2014 and concluded that the relationship was an inverse one. Similarly, Nour [2013] supported the negative impact of the unemployment rate and economic growth relationship in Malaysia. The MENA region was explored by Al-Wadi [2017] to examine the connection between economic-related development in the unemployment rate from 1990 to 2016 and established a positive role of economic-related development in the reduction of unemployment.

On the other hand, several studies emphasized that there exists a positive or insignificant relationship between an idle workforce and economic-related development. Using 9 Arab countries from 1994 to 2010, Khaliq and Noy [2007] examined the relationship between economic-related development and job opportunities. The study suggested that economic productivity further deteriorates employment opportunities. Using data from 1970–2008 in Jordan, Krishan [2011] suggested an insignificant role of economic-related development in shaping the unemployment rate. Based on OECD countries, Kashem and Rahman [2020] observed an insignificant association between economic development and the unemployment rate. Likewise, using sample data from 2009–2016, Tamimi and Jaradat [2019] established the negligible role of economic development in reducing the unemployment rate. Therefore, based on the theoretical and empirical discussion covered in the literature review, our study developed the following hypothesis and made empirical testing to examine it:

H1: Economic growth has a negative impact on the unemployment rate.

Theoretically, the Phillips curve hypothesis supported the notion that there exists an inverse inflation and unemployment relationship. This hypothesis complements the idea that when the unemployment rate drops, the inflation rate would rise in tandem with it [Li et al., 2013].

The empirical studies of existing literature established the role of inflation and its effect on the rate of unemployment. According to the discussion of Ball and Mazumder [2019], the connectivity between inflation and unemployment drives an inverse relationship. Using cointegration techniques, Reichel [2022] observed an inverse inflation and unemployment relationship in advanced countries such as the US and Japan. Based on sample data from 1975–2004 in Malaysia, Fukuoka [2010] analysed that the unemployment ratio is affected by inflation and explored that this effect persists over the long term. A study by Islam et al. [2021] based on North Cyprus, explored the inflation and unemployment relationship given the Phillips hypothesis and supported the constructive role of inflation in reducing unemployment.

Additionally, this inverse connection is supported by studies to explore the correlation of unemployment with the change in inflation in the long term [Buttler et al., 2005; Schreiber, Wolters, 2007]. Moreover, a relationship with the reciprocal effect is discussed in different countries during different periods to examine the role of inflation on the unemployment rate. Similarly, determinants of unemployment were analysed by Eita and Ashipala [2010] in Namibia during the period from 1971 to 2007. The study followed the Philips curve to investigate the impact of inflation and economic growth on the nature of joblessness and delivered a negative correlation.

Nevertheless, a few studies have supported the positive influence of inflation on unemployment. However, it did not influence it in the long run. According to the findings of Wright [2012], this inflationary pressure and unemployment have a long-term positive effect on each other. Similarly, the arguments of Friedman [2021] further labelled that the inverse relationship between the rate of unemployment and the change in inflation exists. He further demonstrated that the negative sloping Phillips curve, which supports the trade-off between two variables, only occurs in the short term. On the other hand, Islam et al. [2021] investigated the unemployment and inflation using the sample data from 1950–1999 and concluded a weak link in the long run. Therefore, we empirically test the following hypothesis:

H2: The inflation rate is negatively associated with the unemployment rate.

Based on the preceding discussion, we can draw the following conclusions. Both the theoretical and empirical literature highlights the conflicting findings of many studies related to the impact of economic development and inflation on the unemployment rate, and there currently exists a need to give conclusive remarks that can be made about the problem as a whole. In addition, the results of the empirical studies varied among regions. Two limitations exist in contemporary literature. Firstly, researchers mainly focused on a small portion of the sample consisting of a cluster of economies or regions; however, the Balkan countries as a region are less focused. Secondly, it becomes challenging to conclude profound findings from the different studies delivered by scholars using versatile statistical methodologies and regional diversifications. Keeping in view, the above limitations, we considered 11 economies of the Balkan region to examine the impact of economic growth and inflation on unemployment using advanced panel estimation models such as the Dricroll–Kraray approach (D–K), the feasible generalized least square (FGLS), seeming unrelated regression (SUR), and system GMM to provide better insights for the policymakers.

2. Research methodology and design

This paper explores the rate of unemployment proportional to the change in inflation and economic growth through an array of advanced panel statistical techniques. Following Lee et al. [2020], this study also applied the widely known technique of Diskoray's Model to produce consistent and reliable results even in the presence of cross-sectional dependence. Further, FGLS, SUR, and system GMM are applied as a robustness check in order to obtain consistent coefficients. The baseline model of this study is as follows:

$$Unemp_{i,t} = \delta_0 + \delta_{i,t} EG_{i,t} + \delta_{i,t} INF_{i,t} + \sum_{t=1}^{t=n} \delta_{i,t} Controls_{i,t} + \varepsilon_{i,t} \quad (i)$$

where $Unemp_{i,t}$ stands for the unemployment rate.

We considered five proxies to measure unemployment such as total unemployment, unemployment of males, unemployment of females, and youth unemployment. The control variables include population growth, urban population, trade, and industry [Aluko, 1965; Nchofoung et al., 2022; Pradhan et al., 2018].

We performed the data analysis in four steps. Firstly, the study estimated the descriptive statistics. In the second step, the study produced a correlation matrix. In the third step, we checked the cross-sectional dependency diagnostic tests such as heteroskedasticity and serial correlation. In the fourth step, the study analysed the impact of economic-related development and inflation on the unemployment rate via the D–K model. Further, the relationship is evaluated via advanced statistical techniques such as FGLS, SUR, and system GMM for further robustness [Lee et al., 2020].

3. Data sources, data sample and descriptive statistics

The study collected data on economic growth, inflation, unemployment, and other macroeconomic variables from the IMF and World Bank websites for 11 Balkan countries in the period 2000–2021. The details of the countries are provided in Table 1.

The summary statistics results are reported in Table 2. Unemployment has a mean value of 15.298%, which is greater than the mean reported values of Kim et al. [2019] for OECD countries. The higher value indicates that the Balkan region has a greater unemployment rate vis-a-vis OECD countries. The economic growth has a mean value of 24.399 which is greater than the reported value of Hjazeen et al. [2021], which suggests that the Balkan region is enjoying greater economic development in comparison to Jordan. Further, the report's average value of inflation is lower than the average value in the report by Bitzenis et al. [2021], suggesting

that inflation is comparatively lower in the Balkan region as compared to Greece. As far as the control variables are concerned, the urban population had the highest mean and standard deviation values (M = 59.691, SD = 9.769) among the control variables.

Table 1. List of countries

No.	Country
1	Albania
2	Bosnia and Herzegovina
3	Bulgaria
4	Croatia
5	Greece
6	Montenegro
7	North Macedonia
8	Romania
9	Serbia
10	Slovenia
11	Turkey

Source: Own elaboration.

The correlation matrix is presented in Table 3. The results reveal that economic growth has a negative correlation coefficient, which is statistically significant at 1%. The negative coefficient value suggests that economic development is negatively associated with the unemployment rate in the Balkan countries. Further, the matrix also suggests that inflation is negatively associated with unemployment. Overall, the correlation coefficient values among the independent variable are lower than 0.80, suggesting no multicollinearity issue.

The results of Pesaran et al. [2004] for cross-dependency are reported in Table 4. The CD test analysis shows that the defined variables are statistically significant at 1.00%, which refused the Ho of cross-sectional independence. Therefore, the results are consistent with the cross-sectional dependency for all stated variables in the Balkan countries. Moreover, we applied two widely known techniques, namely the Wooldridge and Hickin [2002] test and the Modified Wald test by Greene and Haidt [2002], to test the two-regression assumptions of serial correlation and heteroscedasticity. The results of Wooldridge and Hickin's [2002] test revealed that the data is plagued with serial correlation. Furthermore, the Modified Wald confirms the existence of heteroscedasticity in the dataset. The results of both tests are reported in Table 5.

Table 2. Descriptive statistics

Variable	Symbol	Description	Obs	Mean	SD	Min	Max
unemployment	Unemp	unemployment, total (% of the total labour force)	242	15.298	8.175	3.91	37.25
female unemployment	unemp F	unemployment, female (% of the female labour force)	242	15.647	8.486	3.38	38.43
male unemployment	unemp M	unemployment, male (% of the male labour force)	242	14.497	7.814	3.51	36.963
youth unemployment	unemp Y	unemployment, youth total (% of total labour force aged 15–24)	242	32.381	14.460	8.16	65.828
economic growth	EG	GDP per capita (constant 2010 USD)	242	24.399	1.487	21.709	27.75
inflation	Infl	annual change in the consumer price index (CPI)	230	5.490	10.610	–1.736	95.005
urban population	pop ur	urban population (% of the total population)	242	59.691	9.769	41.741	80.038
trade openness	Trade	trade (% of GDP)	242	87.773	27	22.492	161.743
industry	Industry	industry (including construction), value added (% of GDP)	242	23.794	5.014	13.328	38.695

Source: Own elaboration.

Table 3. Correlation matrix

	unemp	unemp_F	unemp_M	unemp_Y	EG	infl	pop_ur	trade	industry
unemp	1.00	–	–	–	–	–	–	–	–
unemp_F	0.75***	1.00	–	–	–	–	–	–	–
unemp_M	0.99***	0.71***	1.00	–	–	–	–	–	–
unemp_Y	0.95***	0.73***	0.93***	1.00	–	–	–	–	–
EG	–0.52***	–0.43***	–0.57***	–0.48***	1.00	–	–	–	–
infl	–0.16*	–0.10	–0.16*	–0.19**	0.22***	1.00	–	–	–
pop_ur	–0.11	–0.04	–0.15*	–0.15*	0.49***	–0.01	1.00	–	–
trade	–0.06	–0.04	–0.02	–0.10	–0.43***	–0.38***	–0.18**	1.00	–
industry	–0.48***	–0.51***	–0.43***	–0.47***	0.28***	0.37***	–0.42***	0.02	1.00

Notes: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: Own elaboration.

Table 4. Results from cross-section independence tests

Unemployment	9.7***	0.000
Female unemployment	7.63***	0.000
Male unemployment	8.90***	0.000
Youth unemployment	2.01**	0.000
Economic growth	2.19**	0.000
Inflation	3.5***	0.000
Urban population	1.91**	0.000
Trade openness	2.12**	0.000

Notes: *** $p<0.01$, ** $p<0.05$.

Source: Own elaboration based on: [Pesaran, 2004].

Table 5. Results of diagnostic tests for heteroscedasticity and serial correlation

	Test statistic	p-value
Heteroscedasticity Modified Wald (χ^2) H	238.436***	0.000
Serial correlation Wooldridge Test (F-test)	164.61***	0.000

Notes: *** $p<0.01$.

Source: Own elaboration.

4. Research results and discussion

We examined the impact of economic growth and inflation on unemployment through advanced models such as Driscoll and Kraay's [1998] standard errors panel regression models, FGLS and SUR, and system GMM estimation models to produce efficient and consistent estimates due to the presence of cross-sectional dependency, serial correlation within panels and group-wise heteroskedasticity. The regression results are reported in Tables 4–6. Our findings reveal that the regression coefficients of economic growth are positive and statistically significant at 1.00% across the difference proxies of unemployment. This negative coefficient of economic development suggests that economic growth reduces unemployment in the Balkan countries. The results are consistent with the notion proposed by Okun [1962] in Okun's Law, as the study found that employment is inversely related to economic related development. Based on Okun's [1962] conception of the connection between unemployment and economic growth, the emphasis is given that a more skilled workforce with sustainable development is required to generate a significant production level. According to Okun [1962], the unemployment rate fell during times of high real growth and rose during times of low or negative real growth.

Similarly, concerning the impact of inflation on the unemployment rate, our findings reveal that the impact of inflation has negative and statistically significant

Table 6. Determinants of unemployment based on the Dricroll–Kraray model

Variables	l_unemp	l_unemp_F	l_unemp_M	l_unemp_Y
EG	–1.219***	0.137	–1.459***	–0.816***
	(0.154)	(0.145)	(0.178)	(0.123)
infl	–0.0111***	0.00443**	–0.0120***	–0.00983***
	(0.00250)	(0.00180)	(0.00251)	(0.00209)
pop_ur	0.0362***	0.000402	0.0471***	0.0326***
	(0.00367)	(0.00721)	(0.00442)	(0.00394)
trade	–0.000559	–0.00122	0.000453	–0.00221***
	(0.000822)	(0.00181)	(0.000922)	(0.000668)
industry	1.61e-05	–0.0272***	–0.0100	–0.00576
	(0.00717)	(0.00799)	(0.00707)	(0.00672)
constant	30.33***	–0.0127	35.67***	21.75***
	(3.847)	(3.175)	(4.367)	(3.104)
f-stats (p-value)	0.000	0.000	0.000	0.000
observations	242	242	242	242
no. of groups	11	11	11	11

Notes: Standard errors in parentheses, *** $p<0.01$, ** $p<0.05$.

Source: Own elaboration.

coefficient values, suggesting that inflation reduces the unemployment rate in the Balkan region. These findings are in line with the hypothesis of the Phillips curve, which expresses that the stated variables are inverse proportionally to each other. Further, this hypothesis demonstrates that an economy's inflation rate rises as unemployment falls.

Our results are in line with recent empirical studies such as those of Ball and Mazumder [2019], and Reichel [2022]. These studies also concluded the negative impact of inflation on the unemployment rate. On other hand, the finding is in contrast to Wright [2012], as this study suggested the positive impact of inflation in shaping unemployment.

We applied the FGLS, SUR, and System GMM models to obtain efficient and consistent results as a robustness check (Tables 7–9). The findings support the idea that the rate of unemployment and economic development are inversely related to each other. Further, the results also validate the previous findings that inflation is negatively associated with unemployment. This study shares common ground with empirical studies such as those of Soylu et al. [2018], Abu [2017], and Nour [2013] with regard to the impact of economic-related development on the unemployment rate in the Balkan region. Further, the findings are also consistent with Ball and Mazumder [2019], and Reichel [2022], whose studies also explored that inflation has an inverse relationship with unemployment.

Table 7. Determinants of unemployment based on the FGLS model

Variables	l_unemp	l_unemp_F	l_unemp_M	l_unemp_Y
EG	–0.202***	–0.116***	–0.242***	–0.132***
	(0.0285)	(0.0327)	(0.0293)	(0.0249)
infl	–0.00175	–0.00739**	–0.00268	–0.00477**
	(0.00274)	(0.00312)	(0.00282)	(0.00240)
pop_ur	0.00234	0.00799*	0.000100	0.00878**
	(0.00403)	(0.00464)	(0.00414)	(0.00352)
trade	–0.00748***	–0.00361***	–0.00762***	–0.00700***
	(0.00112)	(0.00128)	(0.00115)	(0.000976)
industry	–0.0385***	–0.0703***	–0.0255***	–0.0361***
	(0.00774)	(0.00882)	(0.00796)	(0.00676)
constant	9.230***	7.878***	9.706***	8.597***
	(0.530)	(0.616)	(0.546)	(0.464)
f-stats (p-value)	0.000	0.000	0.000	0.000
observations	242	242	242	242
no. of id	11	11	11	11

Notes: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Source: Own elaboration.

Table 8. Determinants of unemployment based on the SUR model

Variables	l_unemp	l_unemp_F	l_unemp_M	l_unemp_Y
EG	–0.202***	–0.116***	–0.242***	–0.132***
	(0.0285)	(0.0327)	(0.0293)	(0.0249)
infl	–0.00175	–0.00739**	–0.00268	–0.00477**
	(0.00274)	(0.00312)	(0.00282)	(0.00240)
pop_ur	0.00234	0.00799*	0.000100	0.00878**
	(0.00403)	(0.00464)	(0.00414)	(0.00352)
trade	–0.00748***	–0.00361***	–0.00762***	–0.00700***
	(0.00112)	(0.00128)	(0.00115)	(0.000976)
industry	–0.0385***	–0.0703***	–0.0255***	–0.0361***
	(0.00774)	(0.00882)	(0.00796)	(0.00676)
constant	9.230***	7.878***	9.706***	8.597***
	(0.530)	(0.616)	(0.546)	(0.464)
f-stats (p-value)	0.000	0.000	0.000	0.000
observations	242	242	242	242
R-squared	0.530	0.485	0.511	0.507

Notes: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Source: Own elaboration.

Table 9. Determinants of unemployment based on the dynamic panel data model estimated with system GMM

Variables	l_unemp	l_unemp_F	l_unemp_M	l_unemp_Y
L.l_unemp	–0.130	–	–	–
	(0.109)	–	–	–
L.l_unemp_F	–	0.941***	–	–
	–	(0.0432)	–	–
L.l_unemp_M	–	–	–0.146	–
	–	–	(0.107)	–
L.l_unemp_Y	–	–	–	–0.102
	–	–	–	(0.110)
EG	–0.272***	0.0389	–0.220**	–0.164**
	(0.0832)	(0.0291)	(0.0872)	(0.0693)
infl	–0.00555***	0.000626	–0.00478**	–0.00692***
	(0.00215)	(0.000892)	(0.00232)	(0.00184)
pop_ur	0.0195*	0.0122***	0.0132	0.0167**
	(0.0102)	(0.00423)	(0.0109)	(0.00842)

Table 9. cont.

Variables	l_unemp	l_unemp_F	l_unemp_M	l_unemp_Y
trade	–0.00786***	–0.000335	–0.00642***	–0.00659***
	(0.00134)	(0.000475)	(0.00141)	(0.00115)
industry	–0.0186	–0.0159***	–0.0239*	–0.0152
	(0.0121)	(0.00512)	(0.0131)	(0.0102)
constant	9.524***	0.330	8.615***	7.667***
	(1.977)	(0.562)	(2.042)	(1.700)
Wald test (p-value)	0.000	0.000	0.000	0.000
AR (1)	0.48308	0.58470	0.03446	0.36969
AR (2)	0.23465	0.17517	0.29369	0.31107
Hensen test	0.45885	0.51405	0.22010	0.44625
observations	242.000	242.000	242.000	242.000
no. of id	11.000	11.000	11.000	11.000

Notes: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Source: Own elaboration.

Conclusions

Different macroeconomic factors affect the ratio of unemployment. Hence, economic researchers have explored different macroeconomic determinants of unemployment. However, the theoretical and empirical endeavours remain inconclusive. This study contributes to the literature twofold. Firstly, this study contributes to investigating the relationship in the Balkan Region, as this region is less focused upon. Secondly, the extant literature has ignored the issues of cross-sectional dependencies, serial correlation, and heteroscedasticity. Moreover, the application of different traditional econometric techniques for data analysis has also created challenges in comparing research completed by different scholars. Therefore, this study applied an array of advanced statistical techniques such as the Dricroll–Kraray approach (D–K), the feasible generalized least square (FGLS), and seemingly unrelated regression (SUR) to address the issues of cross-sectional dependencies, serial correlation, and heteroscedasticity. Further, we applied system GMM for further robustness checks. Hence, this study revisited the relationship between unemployment, inflation, and economic development through an array of advanced statistical techniques based on 11 Balkan countries between 2000–2021.

Our study explored the rate of unemployment in the Balkan region by investigating the effect of inflation and economic development and our results revealed

a negative and significant association. This study concluded that economic development has a negative impact, following the hypothesis of Okun's law which demonstrates that there exists a reciprocal behaviour between economic development and unemployment. Similarly, the results' impact of inflation on unemployment is consistent with the notion of the Phillips curve hypothesis that supports the negative relationship between a monetary policy-related development and unemployment-related issues. Our findings are qualitatively robust across different econometric models such as the FGLS, SUR, and dynamic panel estimation models.

This study has far-reaching implications for the sustainable economic growth of Balkan countries. Over time, many countries have developed plans to better put their people to work, emphasizing expanding access to employment. The government is playing an important role in encouraging the private sector to expand job opportunities. To meet the growing industrial demands of the developing economies in the Balkan regions, the government must open up further chances for international investment to increase the employment rate, which would further reduce unemployment. This research also suggests that the government should lower the hurdle for new businesses to enter the market, giving them a better chance to expand and increase their market share. In addition, they should ease legal constraints on firms in the Balkans so that they could create additional employment opportunities. Furthermore, policymakers may also consider the monetary policy as an important tool to reduce the unemployment rate and hence design a comprehensive policy related to money supply management to provide job opportunities on an equity basis.

This study employed inflation and economic growth as significant factors to examine the Balkan region's unemployment rate. These economies are so diverse in terms of their politics, economy, culture, ethnicity, and religion that future research may also take these into account for individual countries as units of analysis. Secondly, future studies may replicate this methodology on a larger data sample. Likewise, future research endeavours may target other regions such as Africa, America, and Asia to extend the literature and provide better insights for policymakers, related to the topic. As with all research, the present analysis faces some limitations as well. The main limitations include the data sample and its granularity as well as the scope of variables tested in the estimated regressions – several additional dimensions could be potentially investigated. This will be covered in future research work.

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The application of survival analysis in the study of export and import duration – first insights from intermediaries in Poland

Identifying the duration of trade can be crucial to stabilize trade relations in a globalized world economy and common shocks of various types. We use non-parametric survival techniques (Kaplan Meier function) to analyse at the firm-level data from the trade relations between Polish intermediaries and their foreign partners from 2007 to 2015. In this paper, we also aim to fill a gap in the literature by analysing differences in survival curves for exporters and importers (which is far less common). Higher survival rates are common for intermediaries with high initial trade volumes, as well as firms trading with EU countries. The differences in duration curves for importers and exporters are statistically significant; import activities with higher trade volumes are marked by greater relationship stability. We also find that both product and geographic diversification increase the probability of survival in foreign markets. The trade duration is negatively affected by strong intermediary relationships with partners in CIS and NAFTA countries.

Keywords: firm survival, export and import duration, duration of trade relationships, intermediaries in foreign trade, Poland

JEL classification: F1, F14, F23, L81

Introduction

The survival of companies is often seen as crucial to economic growth [Giovannetti et al., 2011]. And activity in foreign markets is seen as adding value to activity in the domestic market, often being more competitive and therefore more profitable. Thus, the survival of companies operating in foreign markets is even more important for building market advantages. Although evidence on the patterns and determinants of the duration of companies activity in foreign markets is growing, it is still insufficient and yields inconclusive results [Martincus, Carballo, 2009]. Although Bernard and Jensen [1999] find that exporters are more likely to survive than non-exporters with similar characteristics, nevertheless, Giovannetti et al. [2011] reveals the opposite conclusion that internationalized firms show

higher failure risk. The reasons for such a state of affairs are probably to be found in a variety of conditions, both external and internal, which only confirms the need for a deeper exploration of export duration. And the question of the characteristics of both companies and the economic climate conducive to higher survival rates and trade duration still remains.

While there are numerous studies of enterprise survival in the Polish literature [Szymanski, 2011; Nehrebecka, Dzik, 2013; Markowicz, 2015; Zawadzka, Kurdyś-Kujawska, 2016], studies of trade duration are rare [e.g. Markowicz, Baran, 2022]. This strand of global literature is dominated, indeed, by works on exports [e.g. Martincus, Carballo, 2009; Fugazza, Molina, 2016], as well as manufacturing companies [e.g. Giovannettii et al., 2011; Fu, Wu, 2014]. Trading companies, however, provide a good benchmark against manufacturing companies because they do not make the scope of their activities in foreign markets dependent on the industry and its associated demand. Thus, analysis of the duration of export or import leads to conclusions that are less dependent on factors internal to the company. Moreover, by far the most common subject of survival analysis is the duration of active trade in foreign markets ("trade survival"), rather than whether the company itself trading with foreign partners continues its activities ("trading firm survival") [e.g. Dzhumashev et al., 2016].

The dominance of empirical considerations of export duration, exporting firms survival over the import side, has its justification in the policies of individual countries [e.g. Besedes, Prusa, 2006a, 2006b]. Export activity is an expression of having a competitive capacity in an open economy, and is often subject to state support as a result. This article aims to fill this gap in the empirical literature on trade, considering both directions of the commodity exchange. Specifically, using survival analysis methods (Kaplan–Meier function), we examine the duration of exports and imports using firm-level data for intermediaries in foreign trade in Poland from 2007 to 2015. Our contribution is innovative not only because of the inclusion of both directions of trade or the specificity of the group of firms included in the analysis, but also by including several groups of partner countries (significant to Polish trade in total) allows us to assess the impact of relations with them on trade duration.

The aim of the article is to determine the general patterns of the trade duration of Polish export and import intermediaries in foreign trade, in both ways: together and separately, exporters and importers. In addition, based on the identified differences in the length of trade relationships, we investigate a few factors favouring, or hindering, the establishment of stable trade relationships (such as product and geographic diversification, initial trade volumes).

We organized the manuscript as follows – Section 2 shortly reviews the literature on the export survival and its determinants of a firm's survival and

situation in intermediation of foreign trade firms. Statistical data and methods to verify them are described in Section 3. In Section 4 we present results on the export duration for intermediaries and briefly refer to the literature on the subject. Section 5 concludes.

1. Literature background

1.1. Trade duration and its determinants

As Fugazza and Molina [2016, p. 2] claim, there is no theoretical framework that directly analyses the duration of trade relationships. But according to Sabuhoro et al. [2006] a searching through search-cost theory [Rauch, Watson, 2003] or the sunk cost models [Roberts, Tybout, 1997] might provide some theoretical foundation for further consideration. Also the literature reports a close relationship between exporter exit from foreign markets and firm failure [Deng et al., 2014].

Esteve-Pérez et al. [2008] in their work for the first time grouped the determinants of firm failure as: (1) a firm-based risk, i.e. risk typical only of a given firm, theoretically controlled by it (concerns such characteristics as management skills, age size, structure, foreign capital participation); (2) an industry-based risk – risk associated with the industry in which an enterprise is operating (an assessment of the entire sector, on which the firm indirectly has influence); and finally (3) an economy-based risk (and we can also add here politics-based risk) – slightly dependent on the firm, derived from the state and its actions.

The growing literature which looks at the determinants of export survival and the duration of trade has largely the character of empirical studies. Their contribution is to determine the factors that affect the probability that a company will stop operating or leave a particular market (under the conditions analysed in the various studies); most often they concern a specific country, exceptionally countries grouped in some organization. Thus, these variables are often selective in nature.

Mostly, export duration increases with the level of economic development of the exporting country [Fugazza, Molina, 2016]. And prior export experience also plays an important role in increasing the stability of trade relations [Albornoz et al., 2012].

Foreign trade firms are more strongly exposed to rapid changes in the political or economic situation of their key trading partners [Martincus, Carballo, 2009; Sui, 2010]. Dependence on one trading partner (including its business cycle) reduces the chances of survival in foreign markets. The probability of exit decreases with the number of markets served [Bernard, Jensen, 2007]. Likewise, the impact of exporting different products (product diversification) is analogous to geographic diversification.

The literature on firm survival has found a positive relationship between size and survival [Esteve-Pérez et al., 2008], taking into account the initial or current size of the trade volume.

Several authors have noted that the determinants of survival or exit may differ between retail (and wholesale) and manufacturing companies. Thus, the impact of international competition on their activity is less obvious than its impact on manufacturers [Feinberg, 2010]; here the additional factor – producers' pressure on intermediaries' margins is also essential.

As can be seen from this review, studies of trade duration most often analyse the impact of factors directly related to the activity of a given firm; evidence of a relation to factors of a sectoral or economy-wide nature, or related to location, is definitely missing.

1.2. Specifics of intermediation in foreign trade

Export/import and forms of the internationalization of companies have often been considered from the point of view of manufacturing companies and the analysis of their internal situation and external conditions. Among the factors underlying the choice of the form of internationalization are the relationship between a company's possible capital commitment in a given foreign market, the desired level of control and the accepted level of risk, where export and import are among the low values of risk and control [Bradley, 2005], or factors related to the attractiveness of the foreign market and the company's competitive position in that market, where indirect export is the form chosen due to the weak position of the manufacturing company [Sznajder, 1995].

As indicated by Schröder et al. [2003], a number of theoretical models, such as innovation adoption, organizational learning and relationship marketing, have been adapted to provide a conceptual basis for existing research on export development. In contrast, theoretical efforts to explain the development of export intermediaries as an organizational form or to understand why some intermediaries succeed and others fail have been largely ad hoc, with little connection to the broader literature on management, marketing and international business.

Although the phenomenon of trade intermediation is well known to specialists, and foreign trade intermediation is an important topic in trade transactions, it has only recently come into the spotlight of the economic literature. The few theoretical contributions that there are [Ahn et al., 2010; Blum et al., 2010; Akerman, 2018] focus on the foundation for the existence of wholesalers, the differences between manufacturing firms and intermediaries, and are mainly used to motivate empirical analysis [Petropoulou, 2011, p. 2; Akerman, 2018, p. 156]. The work of Rauch et al. [2004] as well as Petropoulou [2011] model intermediaries as

agents who facilitate the match between exporters and foreign buyers [Blum et al., 2010, p. 419].

Matching buyers and sellers, intermediaries are of key importance in economic world systems. Therefore, intermediaries in foreign trade often specialize in markets with relatively higher entry costs. In the US, 11% and 24% of exports and imports, respectively, are the trade of wholesalers and retailers [Bernard et al., 2007]. On the other hand, some markets are characterized by a high share of intermediated rather than directly traded goods, such as Hong Kong [Schröder et al., 2003]. In Poland, the intermediary sector accounts for less than 15% of the foreign trade volume [Szejgiec-Kolenda, 2022] and has a decidedly uneven spatial distribution. It is relatively easier to perform this kind of foreign trade in economically weaker areas (lower initial costs).

In general, export-import intermediaries are characterized by a high flexibility of their activities, responding to market demand by adjusting their assortment and trading partners. In Polish conditions, this is reflected in the activity of companies in markets related to the CIS countries (a shift toward imports, instead of the earlier export specialization in Poland). In addition, intermediaries are characterized by high volatility in terms of entering and ceasing operations. These companies are also inclined to change their business profile, especially when it comes to operating in more demanding markets, such as the Far East. The number of foreign trade intermediaries is steadily growing, but the intermediary market is highly dispersed [Szejgiec-Kolenda, 2022].

2. Materials and methods

2.1. Data on intermediaries

The studies on the activity of intermediaries in foreign trade clearly show [e.g. Akerman, 2010; Bernard et al., 2010; Ahn et al., 2011] that adopted definitions of the term intermediary in foreign trade are not exactly the same. It follows from the fact that there is difficulty in gaining access to data. Trading firms are probably the best known group within the trade intermediaries. However, foreign trade can also be intermediated by wholesale firms, retail firms, or chains of supermarkets [Schröder et al., 2003]. In the present paper, an intermediary in foreign trade is considered to be a trade enterprise (wholesale or retail trade) dealing with transactions in foreign trade (export or import), located in Poland. The data include the export and import of goods in terms of value-based data – i.e. activity carried out by intermediary companies in international trade, which are engaged exclusively or in a prevailing part in the purchasing of goods with a view to

selling them, acting on their own behalf, at their own account and risk, that is, belonging to section G of NACE: Wholesale and retail trade; repair of motor vehicles, excluding motorcycles.

Data on exporters and importers come from information collected on the borders (EXTRASTAT – system that uses data registered on customs declaration and refers to Polish trade turnover with EU non-member countries) or under the framework of EU reporting (INTRASTAT – system that refers only to Polish intra-EU trade) gathered by the National Revenue Administration (Krajowa Administracja Skarbowa, KAS) [cf. Umiński, 2021]. Generally, firms for which the value of the trade turnover with member states either in the year preceding a given reference year or in a given reference year has exceeded the value of an accordingly established basic threshold are liable to reporting this obligation in INTRASTAT.

As a result, the complete, anonymized database contains annual transactions of intermediaries exporting or importing goods by firm, destination, product, its localization and the value of trade (in euro) realized between 2007 and 2015; in total, this means more than 37,000 exporters and 22,000 importers. For the survival analysis, only a database of 26,889 firms that traded in 2007 was used (Table 1), with almost twice more importers than exporters. It provides 9 years to be taken into account.

On average, Polish importers serve more than 13 markets, while exporters serve seven. The product diversification of exporters is also lower than that of importers. The directional division of trade was based on the most important groupings of countries in terms of volume. In Poland, the largest trade partners (especially in exports) are Germany and other European Union countries (EU; 28 countries including the UK); from non-European countries, China and the Far East are very important importers [cf. Drelich-Skulska et al., 2020; Szejgiec-Kolenda, Duma, 2020]. Also, due to some historical linkages the traditional direction of trade – Eastern countries (before 1989 – Commonwealth of Independent States – CIS countries) has been analysed, as well as NAFTA countries (North American Free Trade Agreement). In order to assess product structures, the study used the standard classification of international trade – the Combined Nomenclature (CN) – used for statistics on foreign trade in goods, dividing the total volume of exports or imports into 21 sections.

2.2. Kaplan–Meier survival functions

In survival analysis, we study the time it takes for a certain event to occur. In economic research, the most natural direction of research is the so-called business demography [cf. Markowicz, 2017]. This time is then called the firm survival time, understood as the period of time which elapses from the beginning of the study until the company ceases operations. Currently, the development of survival

Table 1. Descriptive statistics on exporting and importing intermediaries in Poland in 2007

	No. of firms	Average vol. of trade (million euro)	Average no. of markets	Average no. of CN sections	Average vols. of trade with (1,000 euro)			
					EU28	CIS	NAFTA	Far East
Exporters	9,472	1.3	7.0	2.6	917.2	257.2	19.5	23.6
Importers	17,417	2.2	13.5	3.5	1,468.4	129.4	50.6	396.3
Total	26,889	1.9	11.2	3.2	1,274.3	174.4	39.6	265.0

Source: Own calculations.

analysis in economic research, particularly in international business, increasingly includes issues related to "export survival time", known as export duration [cf. Fu, Wu, 2014]. Therefore, also for the purpose of this study, we adopted the survival analysis to search for patterns in the trade duration of intermediaries.

Generally, we used the Kaplan–Meier estimator to model the trade duration and to find differences in the trade duration of intermediaries, based on the adopted criteria. The Kaplan–Meier estimator is a non-parametric method used to estimate survival functions. This estimator incorporates information from all of the observations available, both uncensored and censored, by considering survival at any point in time as a series of steps defined by the observed survival and censored times [Sabuhoro et al., 2006, p. 50].

To verify the similarity of the survival function for intermediaries, log-rank tests were used (at a significance level of 0.05), where H0 means that the survival curves are the same, versus H1 – not all survival curves are the same. In the study of differences in trade duration, criteria directly related to the export or import activities of intermediaries were considered (without taking into account factors related to the external environment or structural characteristics of the companies): (1) the form of activity in foreign markets (export or import), (2) the volume of annual trade turnover, (3) the number of markets served, (4) the number of products offered (CN sections), and (5) the main directions of trade activity (divided into main 4: EU28, NAFTA, Far East and CIS).

All calculations were made in the PQStat software.

3. Results and discussion

On average, intermediaries in foreign trade actively operate for 5 years (median survival time). Such a duration of trade is common for developed countries, which, through experience (known in literature as "learning by exporting", but in the case of this research the term "learning by trading" is more appropriate), are more likely to maintain partners abroad and compete in the global market. This gives a much higher result than, for example, that obtained from the example of Peruvian export firms, for which the median duration is only one year [Martincus, Carballo, 2009]. As claimed by Besedeš and Prusa [2006], trade relationships face a high hazard in the initial years; this is in line with intermediaries duration of trade, whose estimated survival function records the highest declines in the first two years of their trade performance.

The analysis showed that the degree of survival (duration of activity in foreign markets) of Polish foreign trade intermediary companies is strongly related to the type of activity, as importers have been operating relatively longer than exporters.

An unreported log-rank test shows that the functions are significantly different, indicating that survival is significantly higher for importers than for exporters. On average, export intermediaries operated for 3 years during the study period, while importers lasted twice as long (Figure 1). These results are contrary to the research of Markowicz and Baran [2022] on trade among the intra-community market, which shows that when it comes to trade in vehicles and automotive parts export relationships tend to last longer than import relationships (but this may be due to the specifics of the industry itself). In addition, the export business is more risky than the import business, which may be partly due to the scale of importers' operations, where larger players dominate (see Table 1). This thesis, that larger companies are more likely to remain active in international markets, is supported by the findings of Martincus and Carballo [2009]. Moreover, Esteve-Pérez et al. [2008] found that larger Portuguese firms experience a lower risk of failure. Among Polish export intermediaries, there are definitely more of those with smaller turnovers, hence they are more vulnerable to international competition [Feinberg, 2010].

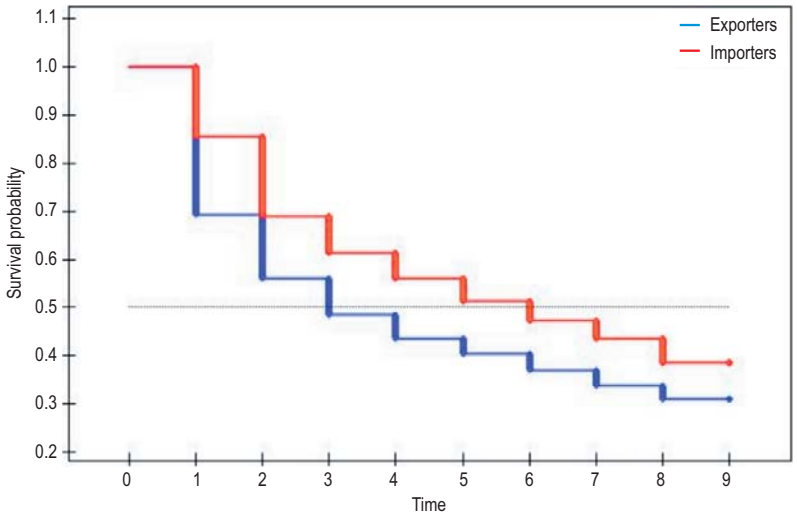

Figure 1. Kaplan–Meier survival functions: Exporters vs importers

Source: Own calculations.

The trade value (with foreign markets) is a variable that differentiates the probability of survival. In line with conjecture, by far the companies with the smallest annual turnover (up to 50,000 euros) were the shortest active in foreign markets, with their median survival time being only 2 years (Figure 2). Also Besedes and Prusa [2006b] prove that firms beginning with small trade value are at greatest risk, and the survival functions for such companies radically fall already in the first

year of their trading activity. For Polish intermediaries hazard rates decline very rapidly, by 45% (!), not found in any other curve analysed.

In this case, one can speak of a trend, namely, as turnover increases, the probability of lasting longer in foreign markets increases (it also applies to groups of exporters and importers separately). With a turnover of 50–500,000 euros, the median survival time doubles to 4 years. Kaplan–Meier curves for a turnover of more than 500,000 euros show that the median survival of companies exceeds the time of analysis, which is 9 years. Thus, the size of a company's turnover in the first year of analysis determines its survival strength, and large market players are more stable. Trade duration models developed for many other countries are consistent with the results for Polish firms and generate a positive relationship between initial trade values and the length of the trade relationship [cf. Feinberg, 2010; Lejour, 2013; Fugazza, Molina, 2016]; less frequently this involves final trade values.

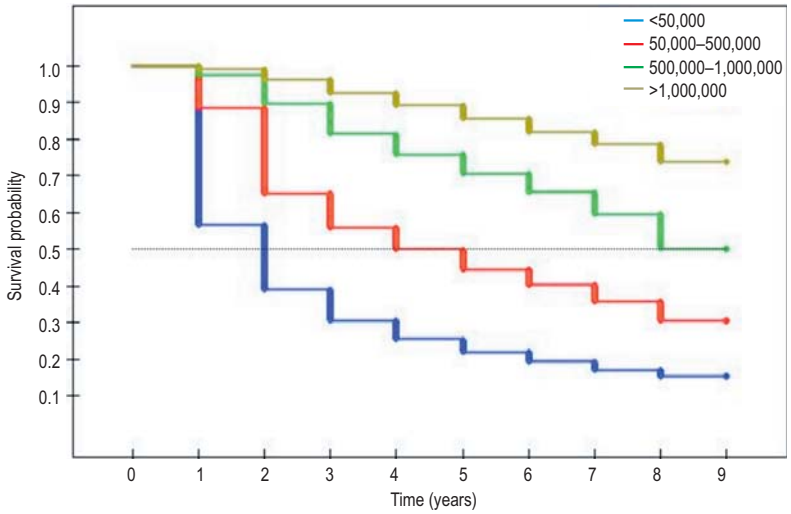

Figure 2. Kaplan–Meier survival functions: Trade values

Source: Own calculations.

In the study population, there is a trend in the position of Kaplan–Meier curves, according to the differentiation of the type of activity, in favour of multi-section enterprises. A narrow range of activities also means a lower median duration time. For a specialized intermediary, trade within 1 commodity group (CN section) is only 2 years median duration time, while for 4 sections (out of 21 possible) – it is already 8 years (Figure 3). Multi-section at the level of 5 or more sections significantly extends the duration of trade, with a median survival time of more than 9 years. For homogeneous goods, the median survival time is consistent with the results for the United States obtained by Besedes and Prusa [2006b]. But already

for differentiated products the advantage in duration of trade is gained by Polish intermediaries (compared to 5 years from the US market).

Moreover, while in the Polish market hazard rates decline very rapidly for homogenous products in the first two years, the US market turns out to be more complex with a much higher risk (45% decline) already in the first year of trade for homogenous goods [Besedes, Prusa, 2006a]. This situation may be indirectly due to the environment in which Polish companies operate, in particular the benefits associated with the functioning of the economic union (more on the impact of geographic differentiation on duration of trade is shown further in the Results section). Namely, the current trade linkages with the EU favour the relationships of subcontractors located in Poland with parent companies (headquarters) located in other EU countries (this also applies to wholesalers), hence the possible greater stability of relationships for homogeneous products. Moreover, as Fugazza and Molina [2016] demonstrate, the relationship between trade duration and the type of product, portrays the degree of competition patterns characterizing traded products, and thus the commodity structure of Polish foreign trade might be more competitive in this case (even if only in terms of price).

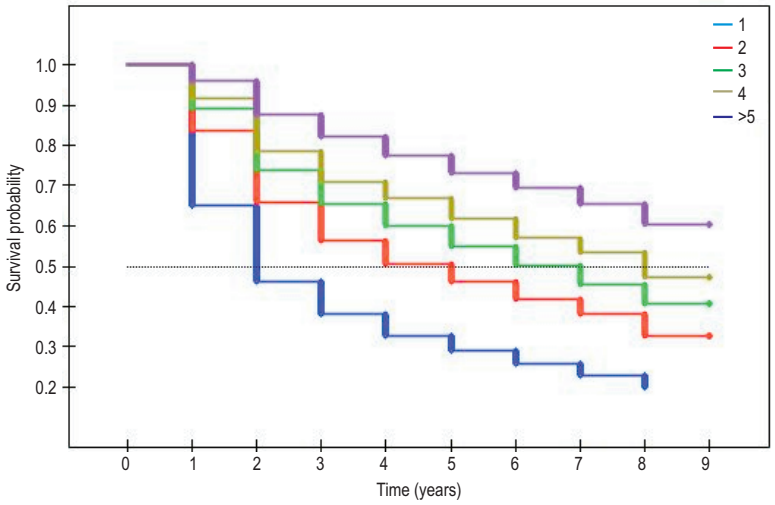

Figure 3. Kaplan–Meier survival functions: Number of CN sections

Source: Own calculations.

It turns out that not only product diversification affects the duration of trade, geographic diversification also matters. Geographic diversification increases the chances of survival in foreign markets. Moreover, Martincus and Carballo [2009] showed, based on Peruvian companies, that geographical diversification increases the probability of survival in export markets more than product diversification.

In Polish conditions, as the scope of presence in many foreign markets expands, the probability of long-term export or import increases (Figure 4). Indeed, it turns out that already for companies active in 20 or more markets, their median survival time exceeds 9 years. This is also partly related to the scale of operations. As can be observed from the figures, the survival curves are statistically significantly different from one another (except for the curves for the number of markets 30–39 and 40 or more countries). The median survival time of intermediaries in foreign trade operating in fewer than 10 markets is the smallest – at 3 years, while expanding operations to 10–19 markets definitely increases the probability of trade duration (the median is then 5 years). Thus, it appears that trading with more countries is associated with a greater reduction in the risk of failure abroad [Martincus, Carballo, 2009]. As indicated by the declining slopes of the estimated survival functions, hazard rates decline very rapidly in the first year: 35% for intermediaries trading with less than 10 countries but "only" a 15% drop for intermediaries trading with 10–19 countries.

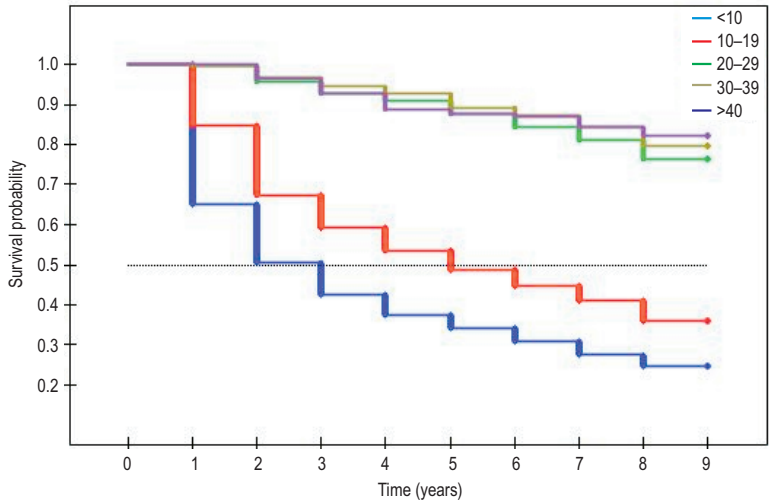

Figure 4. Kaplan–Meier survival functions: Number of markets

Source: Own calculations.

In a survival analysis considering their participation in different markets, it is characteristic that companies with an average (not extreme) share of these markets in trade volumes (20–80%) have the highest chance of survival (mostly exceeding the time of analysis). This confirms earlier conclusions about the positive effect of geographic diversification on hazard rates.

For the EU countries, the 3 curves with a moderate market share in intermediaries' yearly turnover are located at the highest level; thus EU markets guarantee

greater stability of trading activity. This also indicates that geographic diversification is one of the factors that increases the survival of companies. Both the strong dependence on activity in EU markets and the relatively insignificant activity in these markets definitely reduce the chances of long-term activity, compared to companies with moderate values of participation in this market (20–80%). With a share of turnover with EU countries below 20%, the median survival time is 3 years, and above 80% – already 7 years (Figure 5). It is consistent with the claim that intensification of trade relations is facilitated by linkages within formal or informal (historical) groups of countries [Szejgiec-Kolenda, Duma, 2020] and also Markowicz and Baran [2022], based on the automotive industry, with the claim that the most durable relationships of Polish enterprises are with the EU countries. In addition, the share of long-term trade relationships tends to be highest for relationships with developed countries [Fugazza, Molina, 2016].

Similar conclusions can be reached by analysing the data for activity in Far East markets. However, in this case, the median survival time for companies with little activity as well as those strongly dependent on a presence in the Far East was the same over the period analysed (5 years). Interestingly, hazard rates decline the least for any relationship with the Far East countries. Even for companies with the highest share of trade in the Far East, the decline in the first year (20%) is smaller than for EU countries (this is partly due to the higher frequency of such relationships specific to importers, which, as mentioned earlier, operate on a larger scale and with less risk than exporters).

Conducting trade in Eastern markets, as well as in NAFTA countries, significantly increases the risk of the rapid exit from trade. Specifically, companies whose share of CIS countries in trade exceeds 80% are characterized by the lowest median survival time (2 years). For NAFTA countries, it is only 1 year more. Moreover, hazard rates decline very rapidly in the first year (the highest drop among all groups of countries). It exceeds 30% both for intermediaries dependent on the Eastern countries' market and the distant US market (NAFTA). Also in both cases, a small share of turnover (less than 20%) paradoxically means a higher median survival time (5 years). This is because eastern markets are more sensitive to the current economic climate, as well as the political situation, and thus considerably at greater risk [Komornicki et al., 2005]. On the other hand, the risks in trade with NAFTA countries stem from, on the one hand, the need for deeper market insights, as well as distance itself, which automatically reduces the competitiveness of comparable goods from Europe in favour of closer markets [Esteve-Pérez et al., 2008].

It also turns out that the introduction of an additional variable into the study of market share – trade volume – leads to additional conclusions. In the case of EU markets, the regularities presented so far in Figure 5 do not apply to companies

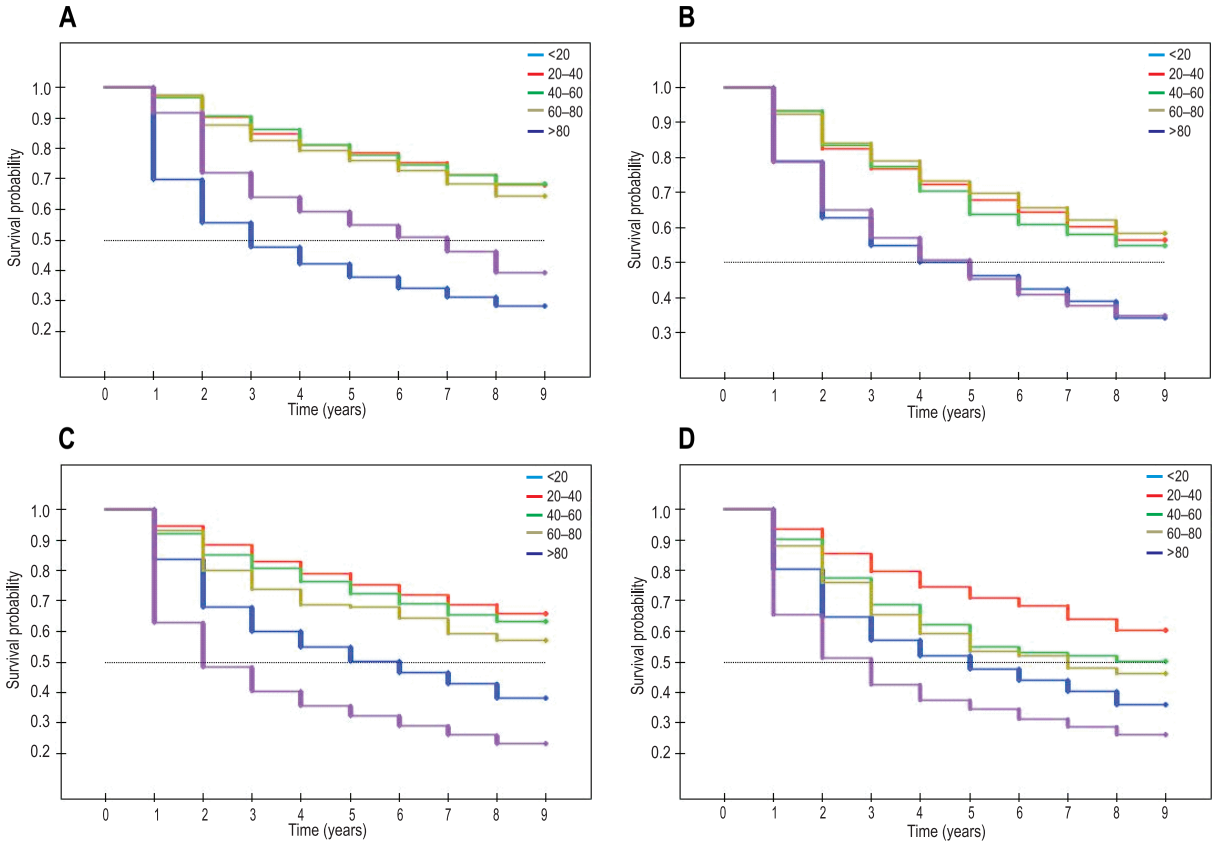

Figure 5. Kaplan–Meier survival functions: Market share

Notes: A – EU28; B – Far East; C – CIS; D – NAFTA.

Source: Own calculations.

with the smallest turnovers (less than 500,000 euros), for which the median survival time is in this case similar. In general, with low trade volume it is more challenging to have any sort of diversification. Therefore, only the larger scale of operations supports the thesis of the need to diversify sales markets to increase the probability of survival. For the other directions (CIS, Far East, NAFTA) no such regularities were observed.

Conclusions

This paper provides empirical evidence on the pattern of export and import duration and its determinants for Polish foreign trade intermediaries. We do so by focusing on several aspects related to trade activity, i.e. the form of activity in foreign markets; the trade volume; the number of markets served; the number of products offered, and some of the geographical directions of trade.

The main results are as follows. Polish foreign trade intermediaries, similarly to companies located in developed countries, are active for an average of 5 years. In the initial years, these trade relationships are of high risk, with export relationships being twice as risky as import relationships in the first year of activity. The difference between the export and import relationships is significant for the entire period analysed. For the following variables, both export and import duration separately show the same direction of influence. The value of trade is a variable that differentiates the probability of survival; the intermediaries with the lowest annual trade value in their first year have the lowest duration of trade. Moreover, a trend can be observed in the position of the Kaplan–Meier curves according to the differentiation of the product range, in favour of multi-section enterprises. The hazard ratios fall very quickly for homogeneous products in the first two years of activity. Geographic diversification increases the chances of survival in foreign markets. In the Polish conditions, as the scope of presence in many foreign markets expands, the likelihood of long-term exports or imports increases. But both a strong dependence on activity in EU markets and relatively low activity in these markets definitely reduce the chances of long-term business compared to companies with moderate values of participation in this market. Interestingly, the hazard rates decrease the least for any trade relations with the Far East. Trading in Eastern markets, as well as in NAFTA countries, significantly increases the risk of a quick exit. Specifically, companies whose share of CIS countries in trade is the highest, have the lowest median survival time.

The results confirm some popular conclusions from studies of various companies and markets. At the same time, while some of the patterns are more general (such as those regarding the sensitivity of the first trading year or initial trade

value to survival rates), some are specific to the world region from which the studied firms originate (such as the median length of export duration or relations with developed countries), and a few are exclusive to the population of intermediaries in foreign trade itself (such as broad product diversification). The findings on export and import survival determinants raise important implications for policy-makers as well as entrepreneurs. They are even more important in times of economic and political instability – indeed, as economic policy should foster improved access to foreign markets, find opportunities to explore new markets and provide support to remain in foreign markets.

Further research could explore different lines: (1) a more product or market oriented one, which could take up the issues of deepening the analysis over the competitiveness of specific types of products or trade directions, thus giving policy-makers more tools for creating the economic strategies of countries, including support for the emergence and survival of new firms; (2) drawing on the diversity of firms' experiences in conducting foreign trade, focusing on different models of export or import entries (born global vs non-born globals, small vs. large companies); (3) focus on the external environment of companies' operations, taking into account the mapping of local socio-economic factors that can foster the creation of long lasting trade relations and strengthening of trade companies' branding (also as support for local authorities in carrying out various activities); and finally (4) a focus on geographical aspects, answering the question to what extent the geographical aspects of localization (e.g. agglomeration, transportation corridors or functioning of borders) have an impact on the duration of trade relationships among intermediaries.

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