

Is Transportation the Most Stable Sector within the Czech Tourism Industry?

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RESEARCH ARTICLE

Received 03 February 2016; accepted 22 March 2016

Abstract

The Czech Republic is a small landlocked country in the middle of Europe with a relatively high standard of living. The economy is characterized as being open with no large stocks of raw materials or natural resources and heavily dependent on foreign trade. Industrial output is therefore the dominating force in terms of generating gross domestic product. The transportation of raw materials, semi-finished products, and people therefore plays an important role within the economy. The steady increase in tourism has also seen an increasingly stronger relationship develop between the transport and tourism sectors. This article deals with the general standards of transport for tourism as a fundamental element of the tourism industry, which connects the market with destinations. An analysis is made of the transportation sector in the tourism industry and the importance thereof.

Keywords

boxplot, Czech Republic, economy, gross domestic product, transport, tourism

1 Introduction

Tourism is about being elsewhere (Cooper, 2012; Fletcher et al., 2014). To aid this process, relationships need to be developed between the tourism and transport sectors. These developments have often been viewed as a ‘chicken and egg’ situation (Cooper et al., 1998). The relationship between the transport and tourism sectors is more complex than just the simple link between the development of transport systems and the evolution of destinations (Candela and Figini, 2012). Prideaux (2004) claims, that the relationship is bilateral. This implies that demand from tourists is essential for the long-term financial viability of transport operators, and that the appropriate transportation infrastructure is a crucial element in the development of tourist destinations in developing regions. Maráková (2015) underlines this point by stressing that external and internal accessibility is a precondition for the further development of a tourist destination according to the Tourism Area Life Cycle model which was introduced by Butler in the 1980’s.

There is also a close, almost symbiotic, relationship between the transport sector and the economy. The transport sector affects the economy, and vice versa the economy influences transport at various levels. Nowadays, economic growth is related to transport demand, which in turn impacts on transport safety. If there are higher volumes of traffic on the roads then there is an increased probability that accident levels will be higher too (Török, 2015). In spite of the positive road safety developments across EU member states, road users are still facing a higher risk of being involved in road accidents. On the basis of long-term international comparisons it would appear that the Czech Republic is one of the countries with the poorest road safety performance levels in the entire EU (Pokorný and Lipl, 2014).

Cooper maintains (2012) that, even though there are a lot of operations within the transport sector that are not related in any way to tourism e.g. freight transport, the tourism and transport sectors cannot be disconnected from each other. An example of this is the ferries that sail between the islands of Croatia which are used by residents and tourists alike.

The major purpose of transport as a part of the whole tourism industry is to overcome the gap between those regions that

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generate travellers and the tourist destinations (Leiper, 1990). More specifically, the transport sector plays an essential role in the arrangement and structure of the tourism product (Candel and Figini, 2012).

Fletcher (2004) states that tourism has been developed in areas with large transportation networks that are capable of dealing with high levels of unpredictable tourism related demand. In contrast, tourism demand has encouraged the fast development of transportation links. As the number of tourists increased, the transportation industry has had to adapt in order to satisfy their needs.

Cooper (2012) also indicates that transport networks have a crucial role to play in a destinations' development, particularly with regards to the availability and ability to be connected to markets. He further states that it is necessary to consider transport in connection with tourism because of the following reasons:

- from a historical perspective, transport has developed simultaneously with tourism;
- transport can become a tourism attraction in itself e.g. heritage railways or cruises - this shows that transport is seen as secondary to tourism, whereas it would be more appropriate to see transport as being unified with the product;
- the construction of new transport links can generate new demand for tourism - transport and transport links simplify tourism and opens up new markets to tourism;
- transport and tourism companies are more and more often pooling their resources to provide tourists with a smooth "integrated" experience.

Maráková et al. (2015) explore the issue of destination governance and suggest that the establishment of co-operative networks beyond the boundaries of the tourism industry is inevitable if tourist destinations are to achieve higher levels of competitiveness.

Duval (2007) presents a study on how transport networks are essential for tourism. He makes three points:

- transport networks define flows - the arrangement of a network has an effect on its operation, pricing and on transport demand;
- models and intensities of flows determine the functionality of transport networks;
- regulation adjusts transport network operations - state policies can affect the operational characteristics of a transport network via pricing and demand for the most popular services.

A complex transport network has its subsystems. One of these subsystems is urban transport, which plays a key role in moving goods and people within and between destinations. Transport systems are crucial especially in urban areas, so consequently their sustainability is essential in managing global urban sustainability (Buzási and Csete, 2015).

According to Cooper (2012) every transport network consists of sequences of links and nodes. Ullman (1980) demonstrates that in a transport system there are three factors required for there to be flow between such nodes:

1. Complementarity – this signifies that in one destination there is the need to travel and that another has the capability to fulfil that need.
2. Intervening opportunities – this signifies that there are other nodes between a traveller's origin and their destination.
3. Friction of distance – this relates to the cost of travelling between two destinations.

In 1985, Mill and Morrison examined the history of tourism from another point of view - from the interdisciplinary perspective whereby transport is only one of many other components which combined generate a tourism system (Williams, 2004). The idea behind Mill and Morrison's transport mode selection model, which summarizes a process of tourist decision making (see Fig. 1), is quite similar to that of Leiper's model. The only marked difference is the addition of a mode called 'Mode marketing' whose role is to persuade tourists to travel to a specific destination. According to Duval (2007), the importance of this model is that it "suggests that existing studies into tourist's motivations for visiting destinations need to be taken into consideration when establishing the role of transport in a wider tourism system."

He goes on to state that "the only thing that is missing from the model is the feedback mechanism whereby deficiencies in one variable can be compensated for by another" (Duval, 2007, p. 17). An analysis of this model can begin at any one of its boxes.

2 Methodology

As a means of generally describing tourism transport and the importance thereof, an in-depth visual analysis follows based on descriptive statistics. This is due to the character of the secondary data that is available. The secondary data for the period 2008 - 2013 were retrieved from the Czech Statistical Office and Tourism Satellite Account (TSA).

The sample variables that were used in this survey consisted of attributes concerning the demand and supply side of the tourism industry. According to Tourism Satellite Account, the supply side is connected with affiliated tourism products such as accommodation services, food and beverages, passenger transport services, travel agency and tour operator services, cultural services, recreational services and other entertainment and other tourism services (Czech Statistical Office, 2015). On the demand side, consumption is stated to be the most relevant variable.

For this research the word "transportation" is used within the definition set by Tourism Satellite Account. "Transport" within this context is therefore understood to encapsulate the services of passenger transport, railway transport, road traffic,

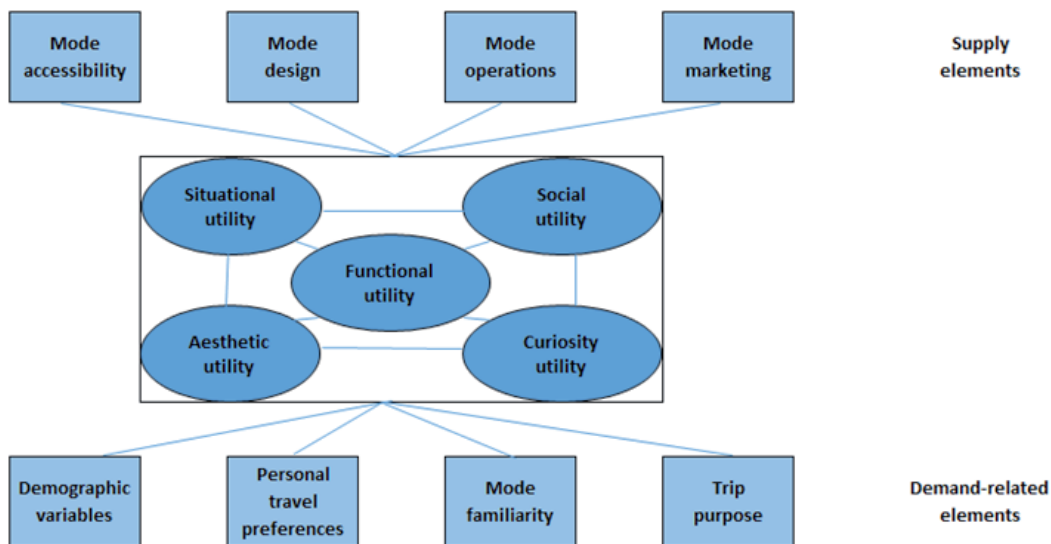


Fig. 1 Transport mode selection model. Source: Author (according to Mill and Morrison in Williams, 2004)

shipping, air transport, complementary services relating to passenger transport, rentals of transport means and janitorial and repair services (Czech Statistical Office, 2015).

For this paper, the values of two variables, the consumption of internal tourism and selected affiliated tourism sub-sectors, will be related to their contributions to the gross domestic product (GDP) of tourism. In Tourism Satellite Account (TSA), it states that the consumption of outbound, inbound, domestic and national tourism contributes to the GDP of tourism. This suggests that expenditures on internal tourism i.e. inbound and domestic tourism, are a subset of tourism's contribution to GDP. It can therefore be assumed that certain correlations exist between them. On the basis of such a relationship, descriptive statistics could be used to present results and findings. Prior to using descriptive statistics to express the relationship between GDP and expenditure on internal tourism, it is essential to describe the consumption of domestic and inbound tourism in the Czech Republic. According to TSA, the consumption of inbound tourism includes all direct expenditures of non-residents in the Czech Republic, as well as that part of expenditures in a home country which are directed towards the Czech Republic in the form of payments for tourism services such as accommodation, food, etc. At the same time, the consumption of domestic tourism includes all expenditures of Czech resident's on tourism services, including expenditures on internal travel and domestic expenditures on travel arrangements abroad. (Czech Statistical Office, 2015)

Boxplots were used to graphically present the dispersion of the selected data for the individual years so as to determine the normality or skewed character of the data sample. According to Sirakaya-Turk (2011), a boxplot represents three basic statistics:

- “the smallest and the largest observation” which is presented on the graph as the minimum and maximum whiskers

- “the median” represented by a thick horizontal line in the middle
- “the lower quartile, the upper quartile and the interquartile range”
- All these properties can be seen in Fig. 2.

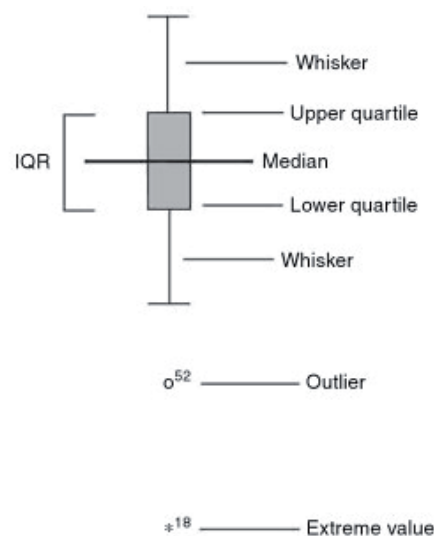


Fig. 2 A scheme of a boxplot. Source: Sirakaya-Turk, 2011.

Box plots describe the distribution of data through a set of five characteristics (Siegel, 2012):

- Median – the middle value
- 1st quartile – 25th percentile
- 3rd quartile - 75th percentile
- maximum
- minimum

The upper boundary usually represents the 75th percentile and the lower boundary the 25th percentile. The middle line, median, indicates the symmetry of the data distribution. The

median divides the statistical set into two parts with a relative frequency of 50%. The median divides those variables with values lower than the median from those variables with values equal to, or higher than, the median. This means that in the box, 50% of all values are distributed. According to Bakker, Biehler and Konold (2004, p.162), such data analysis is a powerful tool due to its “compact view of where the data are centred and how they are distributed over the range of the variable”.

3 Results

Transportation is a highly important sector within the tourism industry. The data presented in Table 1 show how important.

Table 1 Key economic indicators of transport in European Union EU-28, 2012. Source: Eurostat, 2012.

	Number of enterprise (1)	Turnover (million EUR)	Value added at factor cost (million EUR)	Number of persons employed)
Transport related (total)	343 288	247 813	86 927	1 997 000

The literature review shows that transportation and the development thereof throughout the years have resulted in a growth in tourism. In order to establish the importance of the transportation sector to the Czech tourism industry it is important to first consider the expenditures on transportation as a result of internal tourism i.e. by domestic and inbound tourists. This is graphically demonstrated in the vertical boxplot in Fig. 3.

Figure 3 indicates the distribution of expenditure on transportation in the Czech Republic throughout the 6-year period for which data was available. The maximum value indicated by the upper whisker corresponds to the data in Table 1 (CZK 44,018,000). The bottom whisker shows the minimum value of CZK 40,816,000. The average expenditure on transportation with respect to internal tourism is CZK 42,063,820 which is more than the average expenditure in the accommodation sector (CZK 39,251,030) but less than in the food and beverages sector (CZK 42,334,040). The distribution of the data set swings and is slightly skewed to the right.

Table 2 GDP of tourism and expenditures on the four identified sub-sectors within internal tourism (in mil. CZK). Source: Authors (based on data from Czech Statistical Office, 2008-2013)

	GDP	Accommodation	Food and beverage	Transportation	Travel ag. and tour op.
2008	103 451	39 469	45 399	43 461	7 749
2009	104 293	36 921	43 825	40 959	6 795
2010	100 253	38 917	39 614	42 045	6 554
2011	102 275	37 266	39 828	40 816	5 619
2012	111 399	39 471	40 920	41 084	6 054
2013	117 932	43 462	44 479	44 018	6 321

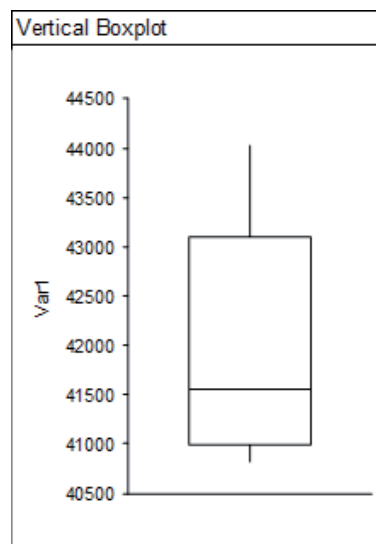


Fig. 3 Distribution of expenditures on transportation as a result of internal tourism using a boxplot.

Source: Authors (based on data from Czech Statistical Office, 2008-2013)

In addition to the above, it is interesting to compare the transportation sector with that of other significant sub-sectors within the tourism industry, namely accommodation, food and beverages, and travel agencies and tour operators, and the expenditures on them within internal tourism. Table 2 indicates the values for each of the identified sub-sectors and their contribution to the GDP of tourism. These figures serve as the basis for the boxplots that are constructed below.

The data in Table 2 show that the transportation sector is one of the most stable and crucial sectors within the tourist industry in terms of expenditures and economic activity. This is proven by the dispersion of data in the transportation column. A deeper analysis of the relationships of all transportation sectors is described below through the use of boxplots.

In addition to the graphical distribution of expenditure for the transportation sector (as seen in Fig. 3), boxplots were generated whereby the expenditures on the four sub-sectors of internal tourism were compared to their contributions to the GDP of tourism. The boxplots in Fig. 4 indicate the relationship between the two variables for each of the sub-sectors. It

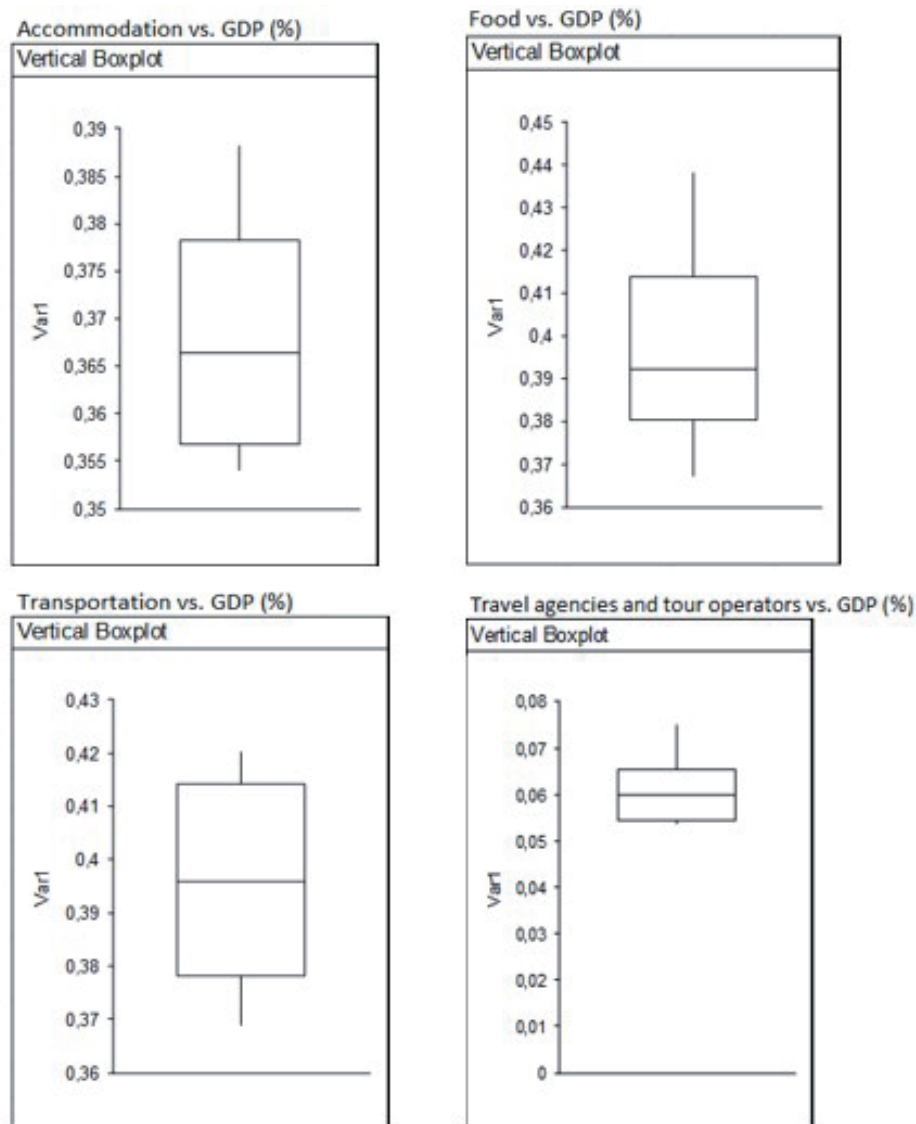


Fig. 4 Boxplots for the four identified sub-sectors (according to CZ NACE) compared to the GDP of tourism
Source: Authors (based on data from Czech Statistical Office, 2008-2013)

graphically shows the disposition of two values, namely the GDP of tourism and its relationship to expenditures on internal tourism. In order to compare the distribution in transport, three other significant tourism sub-sectors were chosen for deeper analysis i.e. accommodation, food and beverages, and tour operators (see Fig. 4).

Based on this comparison, the transportation sector can be considered to be the most stable sector in relation to GDP. There are several reasons that may explain this stability. Modern technologies within the transportation sector have reduced fuel consumption, and even though the price of fuel oscillates, tourists still spend a certain part of their incomes on transportation regardless. Another reason may be the increased level of competition in the transport sector. As new transporters come onto the market, the transportation sector and the prices it charges are becoming more sustainable for future tourists, once again regardless of the price of fuel. This can be observed in the boxplots which show

the graphical distribution of the relationship between GDP and expenditures on internal tourism. The median value for transportation, the middle value of the GDP of tourism, and the expenditures on internal tourism are all very closely related to the average relative frequency which is 39.5561%.

The sector's stability may also be down to the fact that investment in transport infrastructure is considered to generate economic growth in a region. According to Banister and Berechman (2000), this is a common argument used for the allocation of large parts of funding to the transport sector. The reasons given usually relate to reducing congestion or efforts to stimulate GDP growth. In certain cases, investments in transport in combination with a selection of appropriate policies may result in the further development of a centre or a region. This fact has been most effectively demonstrated in developing countries where investment in transport infrastructure has stimulated regional development. However, this relationship

is significantly less clear in developed nations where similar investments have not contributed to significant economic growth but only changed the business and tourist infrastructure of a region. This is the case in the Czech Republic.

Also worthy of note is the fact that the quality of transport services influences the satisfaction of tourists. In recent years, technological progress allows vehicles to be customized more readily to the needs of tourists, with increased comfort and safety levels.

The median for transportation is estimated to be 39.5906129%, whereby 50% of the data is greater than the median value. This means that the data are distributed normally and does not skew right or left. This does not apply for example to the case for the food and beverages sector vs. GDP of tourism. The box in this case is not divided into two identical parts, the median line is not in the centre, and the distribution of the data is skewed as indicated by the fact that the whisker is longer on the upper side. The ends of both whiskers indicate the minimum and maximum data values (Sirakaya-Turk et al., 2011).

The observation that the transportation sector is stable with regards to the expenditures of non-residents and domestic tourists in the Czech Republic can be seen in Fig. 5 below.

Whereas the values for the other tourism industry sub-sectors considerably oscillate over the period studied, transportation expenditures, represented by the blue dashed line, seem to behave normally without any sharp deviations. Before the economic crisis in 2007, the expenditure on tourism transportation amounted to CZK 44,214,000. After a period of adjustment, expenditures only returned to similar levels in 2013.

Changes in transportation such as free movement of people, developed infrastructure, speed, comfort, low costs or internet and online processes have opened up new possibilities for the transportation sector, which in turn has stimulated demand from tourists. The higher demand is reflected in a positive correlation with the state of the national economy.

4 Conclusion

This article has introduced the transport sector as being a key part of the tourism industry, connecting tourism markets and destinations. Tourism and transport have developed concurrently. Improvements in the transport sector have been beneficial for tourism. Transport can be presented as a formation of transport networks with nodes as terminals and links as routes. Due to this, we are now able to analyse the efficiencies of transport systems and compare their development (Cooper, 2012).

As Fletcher states (2013), as tourism demand grows, the importance of the transportation infrastructure also grows. The introduction of new technologies will also be influential on future developments within the sector. These developments include ticketless travel and smart card technologies for payment purposes, as well as possible for visa and passport applications in certain countries.

However, the transport industry as a sub-sector of the tourism industry has many issues it must face. With increasing numbers of tourists worldwide the issue of environmental damage looms more heavily over the industry. It is feasible that some forms of transport will never be able to develop absolutely environmentally friendly policies. Airplanes will still burn kerosene and create noise. Trains will either rely on electricity generated through nuclear power, or burn fossil fuels like cars, buses and seaborne craft. It remains to be seen whether any limitations put on operators that pollute the environment will affect the prices or availability of transport for tourism (Fletcher et al., 2013).

This article has identified the reasons why the transport sector within the Czech tourism industry is relatively stable in comparison to other sub-sectors. These facts were subsequently verified and supported with statistical data and evaluated using the box plot method.

The findings are the result of a detailed analysis of data that proved that the transport sector in the Czech Republic is

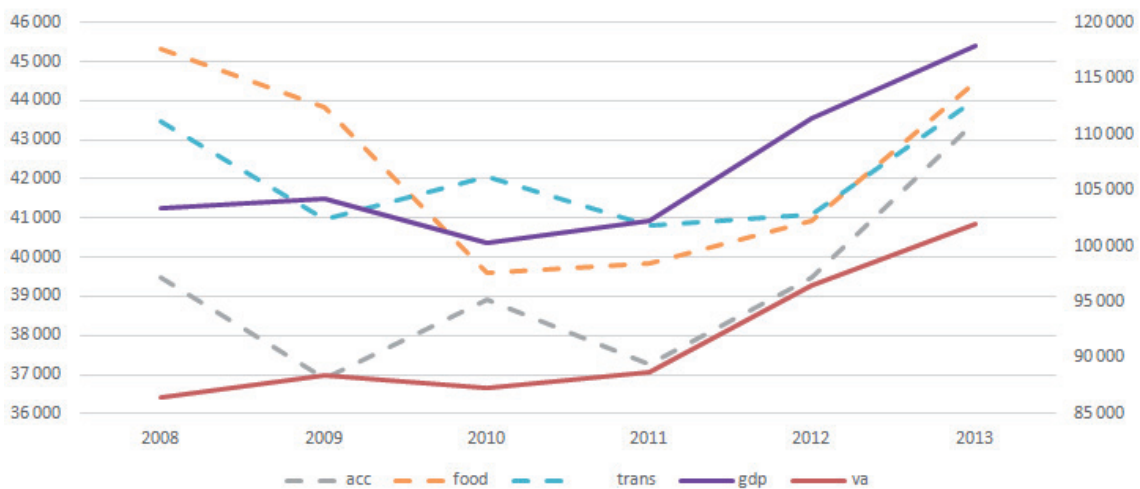


Fig. 5 Expenditures spent on internal tourism in the Czech Republic. Source: Authors (based on data from Czech Statistical Office, 2008-2013)

very stable. This is in part due to the introduction of modern technologies, the high level of competitiveness and to a lesser extent to investments in transport infrastructure for the development of its regions.

Acknowledgement

Authors are thankful to the Internal Grant Agency of FaME TBU No. IGA/FaME/2015/035 Economic sustainability of tourism companies for financial support to carry out this research.

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