CHARLES UNIVERSITY IN PRAGUE
FACULTY OF SOCIAL SCIENCES
Institute of Economic Studies

Michaela Halásová

Economic Analysis of Organizing Ice Hockey World Championship 2015 in Ostrava and Prague

Bachelor thesis

Prague 2016

Author: Michaela Halásová
Supervisor: PhDr. Jan Soudek

Academic Year: 2015/2016

Bibliographic note

Halásová, Michaela. (2016). *Economic Analysis of Organizing Ice Hockey World Championship 2015 in Ostrava and Prague.* 43 p. Bachelor thesis. Charles University, Faculty of Social Sciences, Institute of Economic Studies. Supervisor PhDr. Jan Soudek

Abstract

In many cases the organization of major sport events brings various benefits to hosting economies, especially those resulting from encouraged tourism. However, these events carry extensive costs coming mostly from public resources which could be used for other purposes, e.g. healthcare. The main goal of this thesis is to analyze the socioeconomic impact of the Ice Hockey World Championship 2015 on Prague and the Moravian-Silesian Region using a Cost-Benefit Analysis in which costs and benefits are summed up and benefit-cost ratio calculated. In our analysis we conclude that the event was beneficial not only for the Czech Ice Hockey Association; the hosting organization reporting profit of 450 million CZK before taxes but also for the regions with a benefit-cost ratio of 5.53, meaning that the benefit created equals 5.53 times the amount the regions invested into the event. Moreover, in this analysis we confirm an overall positive effect of the championship on tourism.

Abstrakt

Organizace velkých sportovních akcí je pro hostující ekonomiky v mnohých případech velkým přínosem zejména díky nárůstu cestovního ruchu v regionu. Kromě toho si však tyto události vyžadují i rozsáhlé investice pocházející převážně z veřejných zdrojů, které by jinak mohly být využity pro jiné účely, např. na zlepšení systému zdravotní péče. Hlavním cílem této práce je analyzovat sociálně-ekonomický dopad Mistrovství světa v ledním hokeji 2015 na Hlavní město Prahu a Moravskoslezský kraj použitím analýzy nákladů a výnosů, jejíž výsledný výpočet určuje poměr přínosů vůči nákladům. Zjistili jsme, že tato akce byla prospěšná nejen pro Český svaz ledního hokeje, jehož zisk dosáhl 450 miliónů korun před zdaněním, ale i pro regiony, jejichž poměr přínosů vůči nákladům byl roven 5,53. Z této hodnoty vyplývá, že vytvořené přínosy odpovídaly 5,53 násobku sumy, kterou regiony do akce investovaly. Kromě tohoto se nám podařilo prokázat, že hostování šampionátu má pozitivní vliv na oblast cestovního ruchu v těchto regionech.

Klíčová slova

Cost-benefit analýza, Mistrovství světa v hokeji 2015, Praha, Ostrava, Moravskoslezský kraj, ekonomický dopad, velké sportovní události, turizmus

Keywords

cost-benefit analysis, Ice Hockey World Championship 2015, Prague, Ostrava, Moravian-Silesian Region, economic impact, major sport events, tourism

Range of thesis: 89 818 symbols

Declaration of Authorship

1. The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

2. The author hereby declares that all the sources and literature used have been properly cited.

3. The author hereby declares that the thesis has not been used to obtain a different or the same degree.

Prague 13.5.2016 Michaela Halásová

Acknowledgments

The author is grateful especially to the supervisor of this thesis PhDr. Jan Soudek for his valuable comments which helped to find and mitigate shortcomings of this thesis, his time he dedicated to supervising the thesis as well as his willingness to supervise it.

Furthermore, the author is grateful to the CIHA, especially Jan Brabenec, for smooth cooperation, providing the data needed, and answering all her inquiries.

Moreover, the author is thankful for huge support from her parents, Erika and Teodor, and the rest of the family without which it would be more difficult if not impossible to study at the Charles University in Prague.

Last but not least, the author would like to thank to her soulmate, Martin, for his support and help throughout her whole bachelor studies.

Institute of Economic Studies

Bachelor Thesis Proposal

Description:
Organizing a worldwide event such as Ice Hockey World Championship (WM) is a demanding activity. On one hand it means extra expenses from public and private resources to be spend on improving technical and touristic infrastructure in hosting cities. On the other hand, influx of tourists who spend their money during their visit leads into an increase of revenues of hotels, bars etc. and thus influence a local economy. The main purpose of this thesis is to measure an economic impact of organizing WM 2015 in the Czech Republic. The data for the research will be gathered from the Czech Ice Hockey Association and the Czech Statistical Office.

Research Questions:
1. Is it profitable for the Czech Ice Hockey Association to host games in the Czech Republic?
2. Is the economic effect on the cities positive or negative?
3. What is the impact on tourism in Prague and Ostrava?

Outline:
1. Introduction
2. Theoretical part
    i. Review of other research related to the topic
    ii. The role of big sport events in economy
3. Empirical part
    i. Data description, methods used
    ii. Cost-benefit analysis of organizing WM 2015
    iii. Economic impact analysis – tourism, rate of unemployment etc.
4. Conclusion

References:

1. Šebová, M., Džupka, P. (2011). Štúdia k Majstrovstvám sveta v hokeji 2011 v Košiciach. Košice: Technická univerzita v Košiciach, Ekonomická fakulta.
2. Matheson, V. (2006). Mega-events: The effect of the world's biggest sporting events on local, regional, and national economies. Worcester (MA). College of the Holy Cross, Department of Economics, Faculty research series, Paper No. 06-10/2006. 30 s.
3. Malfas, M., Theodoraki, E. & Houlihan, B. (2004). Impacts of the Olympic Games as mega-events. Municipal Engineer 157 (ME3): 209–220. (available at http://www.extenza-eps.com/TELF/doi/pdf/10.1680/muen.157.3.209.49461).
4. Brunet, F. (1995). An economic analysis of the Barcelona '92 Olympic Games: resources, financing, and impact. Centre d'Estudis Olimpics i de l'Esport, Barcelona: Universitat Autònoma de Barcelona. (available at http://olympicstudies.uab.es/pdf/od006_eng.pdf)
5. Gruber, J. (2012) Public finance and public policy. 4th ed. New York: Worth Publishers, 771 pp

Contents

1. Introduction

Every year cities and countries worldwide strive to win competitions for organizing large cultural, commercial, or sport events in the belief that holding these events will bring new impulses to local economies. Another driving factor for competing candidates is that they see hosting mega-events as a prestigious opportunity for global recognition (Pellegrino & Hancock, 2010). Mega-events are "large-scale cultural (including commercial and sport) events which have a dramatic character, mass popular appeal and international significance" (Roche, 2000). Among the most famous and frequently analyzed sport mega-events belong the Olympic Games, football FIFA World Cup, and Super Bowl in American football. Another study defines mega-events as "ambulatory occasions of a fixed duration that attract a large number of visitors, have a large mediated reach, come with large costs and have large impacts on the built environment and the population" (Müller, 2015).

In this *ex-post* analysis, we focus on the biggest annual global winter sport event (Infront Sports and Media, 2015a); the Ice Hockey World Championship 2015 (WM)[1]. WM 2015 was hosted in the Czech Republic, in the capital city of Prague and the capital of the Moravian-Silesian Region, Ostrava, and took place from the 1st to 17th May, 2015. Hosting of WM is important for every host, especially for the Czech Ice Hockey Association (CIHA) because it is one of few opportunities how it can gain more money. Organizing a major or mega-event is a challenging task and if not planned precisely it can lead to a financial loss of an ice hockey association as it was the case in Sweden in 2013 (Pålsson, 2013). Therefore, in our first research question we examine if the organization of the event was profitable overall for the CIHA.

Even though the CIHA operates the budget, the event is financed mainly from public resources such as the city of Prague, city of Ostrava, the Moravian-Silesian Region, and the Ministry of Education Youth and Sport. This money used comes mostly from taxes paid by local citizens and therefore should be used for maintaining the economy and creating benefits for local people. Because of that, we found it important to analyze the positive and negative effects of this public investment. Therefore, the

[1] WM refers to Men's Ice Hockey World Championship 2015. A shortcut WC is also used frequently but since on IIHF websites and in reports from CIHA is used WM, we decided to keep this one, too, in order to avoid discrepancies

main aim of this thesis is to measure the economic impact of WM 2015 using cost-benefit analysis methodology on both local cities, Prague and Ostrava and its regions.

Finally, the last research question deals with the topic of tourism in Prague and Ostrava. Ice Hockey is a popular sport in many countries and because of the Ice Hockey World Championship's international character and importance, the event attracts an abundant amount of tourists. While staying in the Czech Republic, they spend money, which has an influence on local economies. Thus, in this last research question our goal is to measure this impact as well as find out whether WM had a positive or negative effect on tourism.

The thesis is structured as follows: Chapter 2 covers key literature of event management and description of methods frequently used for analyzing impacts of large sport events. Chapter 3 provides principles necessary when performing cost-benefit analysis, the method we decided to implement. Moreover, key terminology is explained and Ice Hockey World Championship 2015 is allocated into a ranking of other sport events of international significance based on size, visitor attractiveness and other factors. Chapter 4 describes our dataset and shows the basic figures of WM 2015. Furthermore, this chapter interconnects data about tourism in the Prague and Moravian-Silesian Regions with visitors to the championship. This also provides an answer to the question about the impact of WM on tourism in these two regions. Chapter 5 includes the economic results, costs and revenues from organizing WM 2015, as provided by the CIHA. In addition, all of the relevant information related to organizing the event from the CIHA's point of view is described here. Chapter 6 covers effects of WM on the Prague and Moravian-Silesian regions that are included in the cost-benefit analysis. Results of the analysis as well as its shortcomings and possible extensions are discussed afterwards. Furthermore, contribution of the thesis to the field of similar studies is emphasized here. Chapter 7 recaps our findings and provides clear answers to the research questions.

2. Literature Review

Organizing sport major or mega-events means large public investment. To justify this spending and characterize effects of the events more and more economists started to be interested in studying the question of immediate and long-term consequences sport events have on local and national economies. These effects include not only economic but also socio-cultural, political, physical, and environmental. A review of positive and negative impact usually found in studies is summarized in the Appendix 1.

Scholars have examined the topic of event management for several decades but most of them focused on Olympics or Football World Cup where total costs exceed the one of Ice Hockey World Championship (WM) extensively. In comparison organizing Olympics Summer Games 2012 in London cost 14 billion USD, Football World Cup 2010 in the South Africa 5.5 billion USD but Ice Hockey World Championship 2015 in the Czech Republic required total costs of approximately 26.2 million USD. Without a doubt, economic impact of these events is bigger than the one of WM and attracts more researchers.

Two of them are Cashman & Hughes (1999) who provide analysis of Olympics in stages, from its beginning up to end and beyond, after the event is finished, with reference to real Olympic Games. The unique feature of this book is that it describes the process of organizing Sydney Games in 2000 not after the event is finished but during it is happening. For our use, the most important chapters are number 16: Legacy and 17: Cost and Benefits. In the latter one, authors suggest that cost should be measured together with benefits not separately as it is done in several other studies.

Several studies have showed what a positive windfall sport events of international interest can bring to cities or countries hosting them. One of these studies was done by Yuan & Chong (2007) who discuss positive as well as negative impacts on cities. At the end of the research they conclude that most of the time benefits overweight costs and thus suggest that holding events such as the Olympics Games or World Expo is an effective tool for strengthening image of the hosting cities.

Positive effects are usually measured as change in GDP (Blake, 2005), increase of employment in the area (Brunet, 1995) or welfare gains from visitors' spending (Li, Blake & Thomas, 2013). On the other side, negative effects are demonstrated for

example on decreasing values of output in several industries which were crowded out because of booming tourism industry (Li, Blake & Thomas, 2013).

Li (2013) in her other paper concentrates on expenditure connecting with infrastructure, buildings and facilities what after the end of an event remain and can be longer used, so-called physical legacies. Although Ray Nagin, the mayor of New Orleans, claimed that organizing NFL Super Bowl in 2006 helped to boost the economy of the city, many studies found no correlation between economic growth and the new sport facilities (Matheson, 2006).

While some researchers studied legacies, others focus on financial benefits brought to the hosting countries through tourists spending (e.g. Lee & Taylor, 2005). Tourists represent a considerable source of potential benefits because without revenue from ticket sales, hardly any sport event of this extent could have been successful. Apart from other expenditures, we also think that tourism has been influenced by organizing a large sport event and therefore we dedicate a full chapter to analyzing it.

However, building of new huge stadia and infrastructure because of mega-event bear an opportunity cost on countries (French & Disher, 1997), meaning that money could have been spent on schooling or healthcare what might bring more benefits for population in long-term. Moreover, maintenance of the venues requires additional cost in the following years and may be therefore burden for responsible authorities (Maennig & Plessis, 2007)

Ice Hockey World Championship was studied for example by Šebová & Džupka (2013) who measured economic and financial impact of WM 2011 on the city of Košice and by the Economic University in Bratislava (EUBA, 2011) who studied the same championship but on the city of Bratislava. They quantified the effect as very positive not only in economic terms (income 7.5 mil. EUR for the economy of Bratislava, improvement of services provided) but also in marketing terms (improvement of the city's image as a tourist destination).

WM 2015 has already been analyzed by the consulting company KPMG (2015) who concentrated on positive effects. Since no negative effects are considered, it may be misleading for executive public authorities, if this analysis is the only source helping them to decide how much money from public resources should be donated for possible organizing of the event again in the future. Therefore, we decided to conduct cost-benefit analysis which includes all effects what could have been found and calculates whether the net benefit was positive or negative.

Several researchers dealt with the question how to provide more accurate results of economic impact studies of sport events. One is Matheson (2006) who placed under scrutiny *ex-ante* and *ex-post* studies of mega-events and pointed out some of their pitfalls. In *ex-ante* studies he described problems such as overestimating number of guests, mentioning intangible benefits but not costs (riots connected with sport event may deteriorate a public city image). Moreover, he claimed these theoretical flaws why analyses may be biased: the substitution effect, crowding out, and leakages. In *ex-post* studies what we are going to perform, to avoid biases he suggested for example to use, if possible, monthly rather than annual data.

2.1. Methodology used in other related literature

To assess the economic impact from organizing events various methods are used. According to what effect of large sport events want to be gauged, Šebová & Džupka (2013) determined in literature two main approaches in literature:

1. Application of classical methods of financial analysis
    a. Cost-benefit analysis (CBA) which distinguishes benefits for local economy and costs generated by money flow
    b. Classical financial analysis which compares expenditures and revenues
2. Economic impact analysis (EIA)
    a. Computable General Equilibrium (CGE) framework (e.g. Li, 2013)
    b. Input-output (I-O) model (e.g. Lee & Taylor, 2005)
    c. Multipliers of sales, income and employment (Crompton, 1995)

Because the above-mentioned methods are significant in the field of economic studies of sport events we will now describe them in more detail.

The first method is cost-benefit analysis (CBA) which is based on welfare economics principles (Taks et al., 2011) and defined as "the examination of a decision in terms of its consequences or costs and benefits" (Dréze & Stern, 1987, p.911). Its goal is to determine the cost-benefit ratio or net present value of a project, in our case a large sport event. The results from CBA can be interpreted as a difference of two hypothetical worlds – the first with the event occurring and the second without it (Cambell & Brown, 2003). With CBA, responsible authorities can better imagine the expected impact of the event and thus more easily decide whether host it or not.

Another classical method is the financial analysis aiming to evaluate a project to which an investor wants to invest. It uses indicators such as net present value, internal rate of return, and break-even points. Equally important in financial analysis are ratios, e.g. price/earnings ratio (Harrison & Horngren, 2008). This method is in event evaluation used only sporadically.

Regarding economic impact analysis, the first methodology we discuss is Computable General Equilibrium (CGE) models. Their usage in EIA is pretty recent; originally they were used in other economic field e.g. international trade, economic development and environmental policy, and agricultural policy (Blake, 2005). Using an equation that includes consumption, trade, account production, private and public sectors, it tries to depict real economy (Jiménez-Naranjo et al., 2015). CGE models assume perfect competition what is a simplification of reality and may produce imprecise results. For a study using imperfect competition see for example the case study of the 2008 Beijing Olympics conducted by (Li, Blake & Thomas, 2013).

Next, input-output (I-O) models have the form of tables where information about a sport event are inserted and the impact on total Gross Value Added (GVA), industries' GVA, imports and employment, and GDP in final demand expenditure is calculated (Blake, 2005). An interested reader can look for more information in Lee & Taylor (2005) or Bess & Ambargis (2011).

The last tools used in EIA are multipliers of sales, income and employment described and compared in Crompton (1995). In this paper he discusses discrepancies of their usage as well as other mistakes researchers frequently do while conducting EIA of sport events.

Further information about EIA provides Késenne (2005) who describes two ways of economic impact approach. The first one measures flow of money into economy from foreign visitors only. It disregards spending of locals assuming that their saving rate is independent of the event happening. In other words, it is assumed that local people would have spent this money on something else and thus the effect of locals is the same if the event is happening or not. The second one calculates the income generated by the sport event considering also the government tax return and job creation. In this paper he also compares cost-benefit analysis and economic impact study of a sport event. A more objective tool which helps governments decide whether host the event or not is cost-benefit analysis. Another supporter of cost-benefit analysis over economic impact one is for example Van Puffelen (1996).

Besides, frequently used for analyzing impacts of large events are satellite accounts (SA), contingent valuation method (CVM) and regional and sectorial analysis. SA calculates economic indication with help of statistical tables made according to National Accounting System (Jiménez-Naranjo et al., 2015), CVM what uses "*willingness to pay responses to hypothetical situations to estimate benefits*" (Whitehead et al., 2013, p. 1014). Regional and sectoral analysis sometimes use various methods for example European Commission (2012) used I-O tables in their analysis.

Concluding from different methods used in various studies in this field, opinions on what methodology is the best vary. A comparison of CBA and EIA is summarized in the Appendix 2. After considering all of advantages and disadvantages we decided to implement cost-benefit analysis to measure economic impact of Ice Hockey World Championship 2015 in Prague and Ostrava. Our methodology is explained carefully in the following chapter.

However, one should not forget that the CBA is only a decision-making *tool* which should help authorities responsible for the event but since it tries to quantify intangible effects such as prestige, the results may be slightly imprecise. Therefore, we encourage readers to think critically and do not take the results only from one source. If the net benefit in our study will be negative it does not necessarily mean that WM in the following years should not be supported and organized and vice versa.

3. Methodology and Explanation of Key Terms

This chapter describes the concept and methodology of cost-benefit analysis in a deeper way than in the previous section and provide challenges we and other authors have noticed. Moreover, for better understanding of the thesis Ice Hockey World Championship is defined.

3.1. Principles of cost-benefit analysis

The goal of cost-benefit analysis (CBA) is to depict and calculate what net benefits a large sport event can bring into hosting cities or country as well as what are the costs fundamental for organizing the event.

For calculating net benefits, it is important to determine correctly all costs and all benefits. Afterwards, the comparison of these two parts should be conducted and a Benefit Cost Ratio (BCR) calculated (Késenne, 2005; Jimenéz-Naranjo et al., 2015). Except in BCR, results of CBA are commonly presented in form of Net Present Value (NPV).

$$BCR = \frac{\sum PV\ (benefits)}{\sum PV\ (costs)}$$

$$NPV = \sum PV\ (benefits) - \sum PV\ (costs)$$

In addition, since some events may need larger investment, for instance a new stadium has to be built, net benefit may be negative in the first year when the event occurred but may become positive in the following years. To calculate CBA including this future benefits and cost, researchers can use discount rate or horizon values in calculation of NPV. However, the size of this discount rate may not be always appropriately chosen and thus one can perform a sensitivity analysis to test this concern. Present Values (PV) are in the equation of NPV using discounting/compounding calculated as:

$$PV = \frac{FV}{(1+r)^n}$$

Where, *FV* equals future values of cost or benefit in monetary terms, *r* is a discount rate and *n* indicates number of periods under consideration (e.g. years) (Brealey, Myers & Allen, 2011).

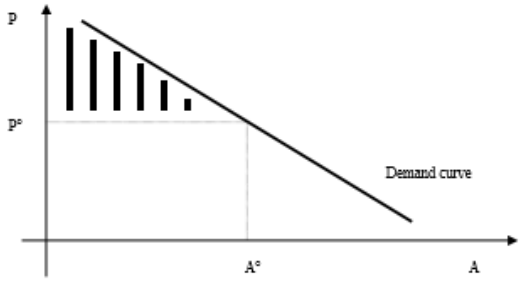
Cost-benefit analysis can be helpful in estimating socio-economic impacts of large events what may be problematic using different methods. One advantage of CBA

is that it provides tools with what we can create economic indicators such as internal rate of return and net present value of cost and benefits (Jimenéz-Naranjo et. al, 2015) what can be used to better assess this socio-economic impact.

Many times it happens that a cost or benefit is intangible and therefore problematic to implement in quantitative analysis, such is CBA. However, if we want to perform a full analysis these should not be omitted. There are two ways how we can include intangibles into CBA. The first option is to determine the sign of an impact of each of them is and then add to an executive table as a positive or negative non-monetized item (e.g. de Nooij et al., 2010). The second option is to assign them some numerical value. For this purpose, a concept of shadow pricing was developed, serving as a proxy variable for intangibles. Moreover, "the shadow price of a good measures the net impact on social welfare of a unit increase in the supply of that good by the public sector" (Dréze & Stern, 1987, p.911). Although this concept can be found in textbooks about CBA, it is used only sporadically or not at all in the case of sport events. This is probably because shadow prices are guess-estimated, hard to proof and may then results in distortion of monetized item in the analysis.

On the side of benefits, one of the most fundamental items is the consumer surplus. The consumer surplus is an economic measure calculated as the difference between what consumer is willing to pay for a good or service and what he or she actually pays for it. The consumer surplus exists, only if a result of the difference is positive. If the consumer surplus occurs, for example during ticket sales, we can talk about benefits for local population. While what consumers paid for goods is computable, it is challenging to measure consumers' willingness to pay, and thus the consumer surplus. One way how we can do it is to construct an aggregate demand curve which is in practice demanding as well. In the Figure 1 we can demonstrate how consumer surplus is usually shown in theory. On the horizontal axis attendance is displayed and on the vertical axis the ticket price. Point P^o and A^o indicate how many tickets are people willing to buy (A^o) at price (P^o). From the graph we can read that everybody depicted on the left from A^o is willing to pay more and therefore the shaded area define consumer surplus.

Figure 1. Consumer Surplus



Source: Késenne (2005)

To calculate it in practice, Falconieri and Palomino (2004) suggest that under assumptions, such as linear demand curve and optimal price setting, we can estimate the consumer surplus as a half of the price ticket. However, these assumptions may be easily violated. For example, in order to attract as many spectators as possible to the arenas, a hosting organization may sell tickets for less money than optimal or they may give some tickets for free, e.g. in radio competition. As a result, consumer surplus will be underestimated. De Nooij (2014) suggests to calculate consumer surplus not from value paid for tickets but from expenditures in total.

Another important point is that only consumer surplus of people who inhabit the area where the event is happening and actually go and spend some money there, should be taken into account since taxes of these people are spent in organization of the event (Mules & Dwyer, 2005). Since we assess it only for locals, it is essential to recognize in advance, on what part we want to focus, if it is a city, a district or a whole country. As a relevant geographical area in this thesis we chose regions Prague and Moravian-Silesian Region not the whole Czech Republic.

Other benefits what should be included in CBA are the non-local visitor spending, the revenue of the Committee organizing the event, and the value of public good of the sport event for people living in the area which is examined (Taks et al., 2011).

On the side of costs, one of the most crucial elements is the opportunity cost and not real financial costs (Késenne, 2005). Assuming an economy of two goods A and B only, the opportunity cost is considered as the true economic cost of the good A, a consumer gives up when decides to increase a consumption of the good B (Varian, 2010). To give a more realistic example we can illustrate the concept of opportunity cost on government spending. Suppose that the Ministry of Sport in the Czech Republic

provides 100 million for organizing an international competition in hockey, gaining revenues of 120 million, resulting in the net benefit of 20 million. However, these 100 million could have been spent on other events or support for young people to encourage them to do more sport activities. The total benefit from these other activities can bring more than the 120 million gained from hockey tournament, for example 150 million, what is the value of opportunity cost of organizing the hockey competition.

While this may be a good example for some countries that probably would not have capacities for organizing two or more major or mega-events in one year, it is presumably not the case for the Czech Republic and other countries having sufficient capacities for organizing more events or this extent. Moreover, the Czech Republic does not have budget constraints because it has a relatively low deficit and debt. Therefore, if a country finds a project that can bring more value than the one originally intended, it can always borrow money for realizing both of them. As a result, in this scenario opportunity costs equal real financial costs with a discount factor relevant for a particular government borrowing.

As in the case with consumer surplus, it is also problematic to measure because it is not possible to determine all foregone opportunities of investment. In theory, the opportunity cost is calculated from a slope of consumer's budget line (Varian, 2010) which is hardly computable in reality. Fortunately, we can estimate it, and thus this concept is still applicable in CBA. For example, if a new hockey stadium is built, it can be very costly but if it gives jobs to unemployed people, the alternative of not building equals zero opportunity cost of labor. Therefore, it might happen that the opportunity cost of organizing this sport event is negative (it is a benefit). Furthermore, the money saved from not having to pay unemployment allowances can be spent on something else what provide more benefits to local residents. On contrary, if people who already had a job are hired, crowding-out effect occur and opportunity cost is positive (Taks et al., 2011).

When we determine all benefits and costs, we subtract costs from benefits and get results of net benefit it is time to interpret the results. It is important to point out that this should not be the only argument according which the governments make a decision because while organizing committee may earn substantial profits, the taxpayer may not get enough. Therefore, it should be identified how much the participating entities earn and lose respectively (Taks et al., 2011).

3.2. Key terminology

In impact studies of events various terms are used for classifying an event. Two of them are major and mega-events which are most frequently found in relevant literature. Except these also hallmark events (Hall, 1989) or special events (Dimanche, 2002; Getz, 1989) can be found.

While it is obvious that events such as Olympic Games are mega-events because of its size, it is not clear at the first glance in the case of Ice Hockey World Championship. This classification based on Müller (2015) is processed in the Appendix 4. Moreover, in this subchapter we at first rank sport events first according to several characteristics and the same size indicator as used in a definition of WM, and then place WM into the ranking created.

3.3.1. Ice Hockey World Championship 2015 defined

According to four characteristics serving as a size indicator, particularly visitor attractiveness, mediated reach, total costs, and transformation costs Müller (2015) developed a scoring matrix (Appendix 4) where major-, mega-, and giga-events events are differentiated. Using this matrix, he examines nine international large sport and cultural events what were organized between years 2010 - 2013. Five of them along with our WM 2015 are ranked in the Table 1. inserted at the end of this subchapter.

With 8.2 million tickets sold Summer Olympic Games 2012 in London are the most recent largest sport event. Comparing to the second largest recent event Football World Cup 2010 in South Africa this is 5.1 million tickets more. Visitor attractiveness of Olympic Winter Games 2010 in Vancouver is comparable to European Football Championship 2012 in Ukraine/Poland. From the events studied Pan American Games 2011 in Guadalajara is the most similar to a size of Ice Hockey World Championship 2015 in the Czech Republic.

Mediated reach measured in a value of broadcast rights of a particular event is another factor how we can determine size of any sport event. Among the events with the most expensive broadcast rights belong Olympic Games and Football World Cup. Unfortunately, broadcast rights of the WM 2015 are owned by Infront Sports and Media and because of non-disclosure agreements with broadcast partners the value of the contract is not publicly available. Because of that we cannot use this characteristic for comparison with other major and mega sport event.

The last factor refers to costs of the events. Unexpectedly, the highest total costs reached European Football Championship 2012 in Ukraine/Poland even though its visitor attractiveness is three times smaller than the one of Olympic Summer Games organized in the same year. As we can notice from the table, almost the whole amount was spent on capital investment such as transportation improvements (Matlack, 2012) and stadiums in order to meet technical requirements of the Union of European Football Associations (UEFA) for organizing it (Humphreys & Prokopowicz, 2007). On contrary, the smallest total and capital costs were needed to host WM 2015. This results from the fact that the stadiums had already been built when the Czech Republic held the championship in 2004. Total amount of 1 045 million CZK (43.74 million USD[2]) means financial costs for the country including the CIHA, the Czech Police, and private subjects. This part is further described in subchapters 5.3. and 6.1.

To conclude the chapter, we would like to point out that even though the event does not have a big extent and therefore an impact on economies as Olympic Games or Football World Cup have, it is an internationally known event of high significance for many countries, including the Czech Republic.

Table 1. Ranking of large sport events

Event	Tickets sold (million)	Broadcast rights (USD million)	Total costs (USD billion)	Capital investment
Olympic Summer Games 2012 in London	8.2	2569	14	66.4%
Football World Cup in South Africa 2010	3.1	2408	5.5	90.1%
Olympic Winter Games 2010 in Vancouver	1.5	1280	7.5	57.1%
European Football Championship 2012 in Ukraine/Poland	1.4	1076	48	98.6%
Pan American Games 2011 in Guadalajara	0.6	<45	1.3	88.8%
Ice Hockey World Championship 2015 in the Czech Republic	0.7	-	0.04	33.5%

Source: Adapted from Müller (2015). Information about WM provided the CIHA (2015b) ČTK&iDnes.cz (2015a); Štalmach (2014); Ostrava (2012).

[2] Exchange rate from 26.4.2016: 1USD = 23.89 CZK

4. Dataset and Overview of WM 2015

4.1. Data

Regarding the data, all of them used in our analysis are provided by the Czech Ice Hockey Association (CIHA) or the Czech Statistical Office (CZSO). This case study is written barely a year after the WM 2015 finished and unfortunately some data from the CIHA are still not completely finalized. Therefore, the results may be slightly different and rounded. However, an economic department of the CIHA which provided us with the data said that difference between the preliminary dataset we had obtained and the final data would not be significant and thus would not change the results of our study remarkably.

4.2. Attendance

For ten years, with a number of 552 097 visitors, the 2004 World Championship in the Czech Republic held the first place in a list of the most attended IIHF World Championships. However, in 2014 Belarus overcame this record by 97 947 people when its WM 2014 in Minsk achieved 640 044 attendees (Tuniz, 2014). Only one year after the Belarusian WM 2014 the Czech Republic hosted WM again and took its first place back. During WM 2015 the last record was surpassed by remarkable 101 646 people, ending up at 741 690 visitors. In percentage points, the amount equals 86.7% of maximum capacity of both stadiums throughout the championship (855 382). This amount is the biggest out of 79 WM already played in various cities and represents the total number of people in both sporting halls including spectators with valid accreditation for entrance such as journalists, people who paid for tickets, and fans with "free" ticket such as young hockey teams or schools. To support young players 35 000 tickets were given to schools and 10 000 to youth ice hockey clubs. KPMG (2015) claims that during the championship O2 Arena in Prague visited total number of 507 200 people and ČEZ Arena in Ostrava visited 234 490 people. The calculated total capacity for one game was 17 383 people for O2 Arena and 8 812 for ČEZ Arena. Apart from people who entered the stadiums, further 250 000 spectators (Infront Sports and Media, 2015a) seized the opportunity to watch games on big screens in fan zones located in the vicinity of the areas.

In addition, thank to this most recent championship, the Czech Republic holds not only the record in the most attended WM but also the record for the biggest average

attendance per game. In total of 64 games from which 34 were played in Prague and 30 in Ostrava, the average attendance per game was 11 589 visitors. Divided into arenas in O2 Arena it was 14 918 (85.8%) attendees while in ČEZ Arena it reached 7 816 (88.7%) fans.

4.3. Characteristic of visitors

Because tickets were available online, the CIHA was not able to determine nationality of visitors and no additional research about nationality of visitors is available. Since we do not have information about how many people of what nation attended WM we try to estimate it from the data about tourism in May 2015 in the Prague and Moravian-Silesian Regions published by CZSO.

CZSO issues quarterly a report about tourism in every region of the Czech Republic. These reports from 2014 and 2015 together with the data from the public database of CZSO serve us as a main source of information fundamental for the next two sections where we interconnect data from CZSO with information about popularity of ice hockey in a particular countries and number of games the national team of the country played in Prague and Ostrava. These numbers and countries are given in the Appendix 4. The main goal of these subchapters is to demonstrate the impact of WM on tourism in Moravian-Silesian Region and Prague. The main focus is put on the second quarter of year 2015 and May 2015 which is the period when WM 2015 took place in the Czech Republic. On one hand quarterly data allow us to create a better image of an overall effect on tourism in longer time period as monthly data do. On the other hand, the change in number of incoming tourists according to their nationality is more visible in monthly data.

4.3.1. Moravian-Silesian Region

In the second quarter of 2015 the number of people who arrived to collective accommodation facilities[3] located in the Moravian-Silesian Region achieved 200 249 (CZSO, 2015). In comparison with the same period in the previous year this means an increase of 15 525 people (8.4%). 55 998 out of total people accommodated in the region were foreigners which is a boost by 29.2% compared to Q2 2014.

[3] For the definition see https://www.czso.cz/csu/czso/methodology_time_series_tourism

In the report called "Tourism in the Moravian-Silesian Region in the Second Quarter of 2015" CZSO compares the structure of visitors and states the difference to the previous year:

"The most foreign guests arrived in the second quarter of 2015 to the Moravian-Silesian Region from Slovakia (13 900), Poland (more than 7 900) and from Germany (more than 5 600). Share of these three countries comprise 49% from all foreign visitors. In case of these countries a significant increase between 2014 and 2015 was recorded. Regarding Slovak tourists, whose hockey team played the Preliminary Round in Ostrava, the increase was 70% while regarding guests from Poland and Germany whose hockey team did not play in Ostrava, the difference was plus 8.8% and 1.2%, respectively."

In May 2015 more than twice as many Slovaks arrived to the region, most likely because of the championship. In Slovakia ice hockey is a very popular sport. It belongs to the most watched sports, to justify it, we can stress out that matches of the Slovak ice hockey team in WM 2015 were watched by more than a million people[4] (Krasko, 2015). Moreover, the record number of viewers in Radio and Television of Slovakia (RTVS) from 2012 was overcome when almost 1.39 million people watched the match Slovakia against Belarus in WM 2015 (Krasko, 2015). As of 31th December 2014 Slovakia had 5.4 million inhabitants, out of which 4.7 million were more than 12 years old (Statistical Office of the SR, 2015). Thus, we can estimate that almost every fourth person in the Slovak Republic was watching WM at that time. As the quote above states, many Slovaks caught the opportunity to visit WM in person. KPMG (2015) even states that the most visitors from abroad arrived from Slovakia which confirms our statement about the popularity of ice hockey in the country. This is not only because of the popularity of this sport but maybe also thanks to easy accessibility by car or train and no language barrier which may be two discouraging factors in case WM is hosted in another country.

According to IIHF, Slovak Republic has only 11 518 registered players (3 285 men players) but it is ranked as of 8th best ice hockey team in the world. In comparison the Czech Republic has 109 103 registered players (79 838 men players) and its ranking is only two place higher.

[4] Target group was +12 year old

"In the next group are newly-appeared guests from Finland (more than 3 600) what is 5.5 times more than a year ago." However, this jump is even more observable if we examine the data from May 2015 and 2014. Compared to May 2014, in 2015 almost 10 times more Finns arrived. It is no surprise that so many Finns arrived into the region, most likely because of the Ice Hockey World Championship. The Finnish Ice Hockey Association, a member of International Ice Hockey Federation (IIHF) stated that as of 16.6.2014 ice hockey is the most popular sport and hobby for more than 195 000 Finns, it has registered 72 176 registered players, approximately 40 000 games in one season played on 260 ice rinks and ice halls, while a population of Finns is almost 5.5 million which is almost the same as Slovaks.

A Significant rise in the May 2015 is noticeable also in the case of other Nordic countries. In comparison with the same period a year before people from Norway came to the Moravian-Silesian Region 3.75 times more and from Denmark 2.59 times more.

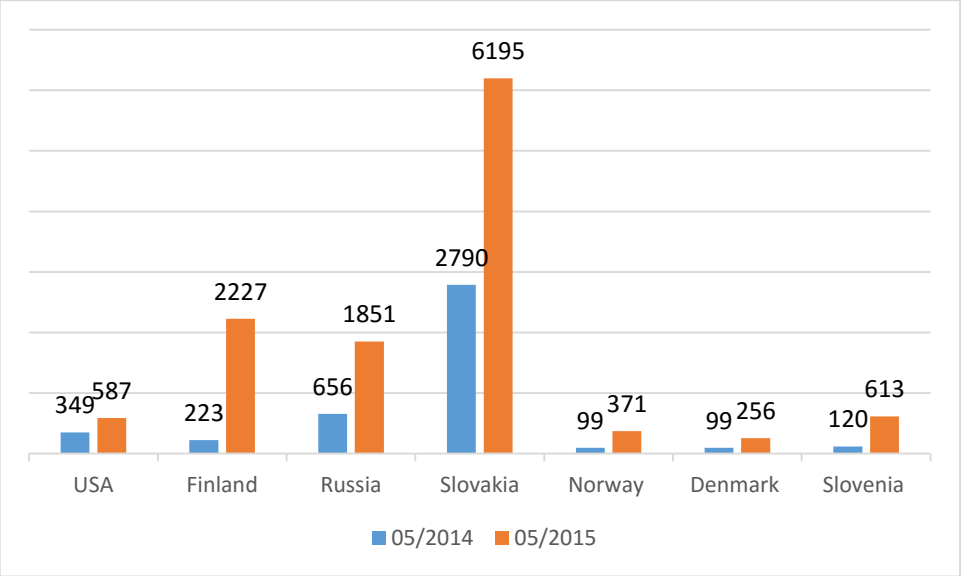
Besides, *"a drop WM in arrivals of guest from the Russian Federation did not continue contrary to a trend in several previous quarter years. In the region more than 3 000 were accommodated that is 40% increase."* In the May 2015 1851 Russians visited the region which corresponds to 61.2% from the total amount in that quarter of 2015. Comparing to May 2014, an increase was 2.8 times.

"More than thousand guest arrived from the South Korea (1 566), USA (1 470), Italy (1 370), Austria (1 368), Great Britain (1 320), France (1 191) and from Slovenia (1 066)." In May 2015 more than a half of all Slovenians in the second quarter of 2015 came and the change comparing with May 2014 was 5.1 times.

Regarding over-night stays obviously, a significant rise occurred, too. In total CZSO states 545 000 nights what is, compared to the same period a year ago, an increase of 16.5%. People from the Czech Republic spent about 10% nights more while people from abroad spent more than 40% more than in the previous year. This difference was the biggest out of all regions in the Czech Republic most likely due to hosting the WM 2015.

On average, tourists in the Moravian-Silesian Region spent in this time period 2.7 nights per guest which is 0.1 more than in the previous year as well as the average in the whole Czech Republic in the 2nd quarter of 2015.

Figure 2. Change in number of tourists whose teams played in WM 2015 in Ostrava



Source: CZSO

Note: Belarus was included in "other European countries" and therefore is not specified in the graph.

4.3.2. Prague Region

Prague region, especially the capital city of Prague is in long term one of the most popular touristic destinations. Every year several million people from all over the world travel to spend their time in the city. In 2014, Prague for the first time overcame the edge of 6 million when 6 116 015 visitors visited it (Prague City Tourism, 2015). Last year it was more than 6 573 000 people (Prague City Tourism, 2016).

In the second quarter of 2015, the period when WM 2015 was held in the region, 1 795 105 tourists arrived to Prague which is 11.4% more than in the previous year. However, the ratio of residents to people from abroad stayed almost unchanged; around 87% for non-residents and the rest for residents.

According to CZSO, the three most numerous foreign groups include Germany, The United States of America, and the United Kingdom. The increase compared to the same time in the previous year was 10.6%, 13.8%, and 9.9% respectively.

For the capital city, Prague, we found the division of tourists by their nationality not only for quarter year but also for separate months, so we can also compare May 2015 to May 2014 as well as several previous and following months.

In total, the number of Slovak tourists in the second quarter of 2015 increased from 52 729 to 58 922 which is 11.7%. In monthly comparison, a slight increase

occurred during all the months available. Moreover, as have already been written in the part 4.3.1. all matches of the Slovak national team were held in Ostrava, and therefore, in May 2015 Slovak hockey fans were attracted into Ostrava more than to Prague. The only opportunity for the Slovak hockey team to play in Prague was to succeed in the preliminary rounds and get into the quarterfinals, and gradually the final round which were planned in the capital city. However, this did not happen, and thus we can expect a decrease of attractiveness of visiting the final rounds in person for Slovaks.

As written in the section about Moravian-Silesian Region, most of the foreign visitors of WM 2015 arrived from Slovakia. According to the KPMG study, the second were the fans from Germany whose national team played seven games in Ostrava. Overall in the second quarter of year 2015 there were 44 069 Germans more in Prague than in the same period a year before. In April and June approximately 4 000 more people arrived but in May when WM 2015 occurred there was an increase of more than 12 000, which represent an increase of 17%.

Surprisingly, the highest jump was recorded among tourist from Asian countries, such as India and the Republic of Korea (South) by 74.2% and 63.5% gradually in all months of the second quarter of 2015. This is probably not connected to WM since no Asian team was involved.

Another significant increase can be observed among the tourists from Lithuania and Latvia. The most significant peak occurred particularly between May 2014 and 2015, while in May 2014 only 796 people from Lithuania visited Prague, in May 2015 it was 2 066 was remarkable 260 %. Likewise, in May 2014 only 941 Latvians came to Prague, a year later, the month when WM were happening, the number of Latvian visitors more than doubled to 2 634. This jump in a number of Latvian tourists may be connected with WM since Latvian national ice hockey team participated in the championships and played 7 games in the preliminary round in O2 Arena in Prague.

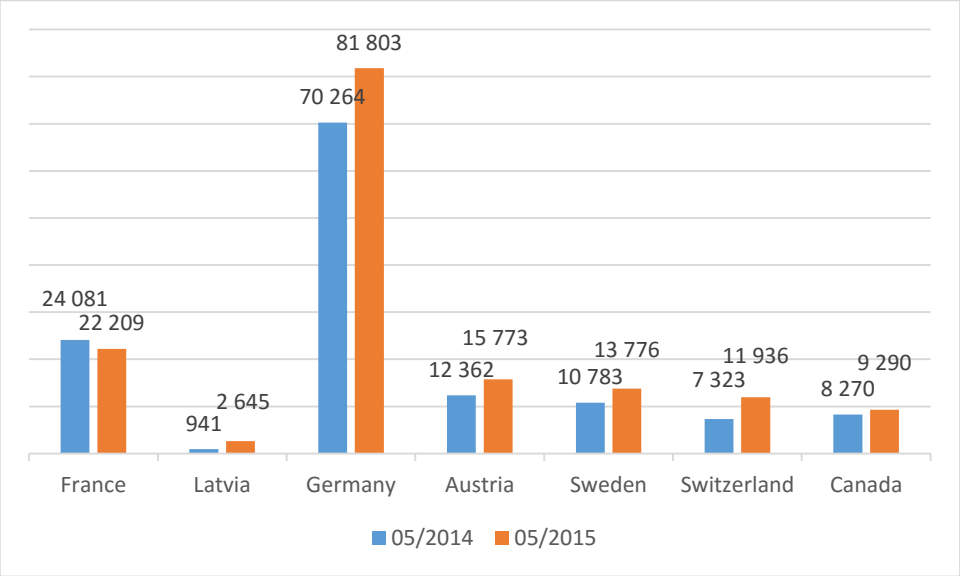
The influx of tourists from Finland was only slightly higher, the number of them increased by 9.6% overall, but in May by 14.6%. In each month of the second quarter 2014 and 2015 around 5 500 Finns arrived to Prague. As mentioned in the previous part, the Finnish team played mostly in Ostrava not in Prague[5] and therefore we did not expect a bigger increase here.

[5] Only one match in semifinals Finns played in Prague what does not have a significant influence on overall numbers.

Other numerous groups include tourists from Russia (80 247) of which 41 156 less arrived to Prague in comparison with the same period in 2014, China (56 739), Poland (58 716) and Austria (39 835). The decrease of the Russian tourists was caused presumably by the worsened exchange rate of the Ruble to the Czech crown, and overall economic situation in Russia plus the fact that Russian team played only 2 games in Prague - one in semifinals and one in finals where it won the silver medal. The Chinese and Polish teams did not play any match in WM but the Austrian team was qualified as in the preliminary group B played in Prague. The high number can be, therefore, associated with WM. According to the KPMG study (2015) Austrians were the third most numerous visitors from abroad. In May 2015 3 408 more Austrians arrived to Prague compared to May 2014.

In conclusion, from Figure 2. and 3. we can observe that the impact of WM on Prague was not so significant as it was on Moravian-Silesian Region.

Figure 3. Change in number of tourists whose teams played in WM 2015 in Prague



Source: CZSO

Note: Only foreigners are taken into account; the Czech tourists are not included in the figure.

5. CIHA as an Organizing Committee – Financial View

This chapter examines if it was profitable for the CIHA to host WM 2015 in the Czech Republic. Since we are interested in the financial results of the association related to WM 2015, namely whether a loss or profit was generated, it is not necessary to provide CBA but look into financial reports of the CIHA. All available information about financing of the championship and to its organization by the CIHA is provided in the following subchapters.

5.1. Public resources

Although it takes a lot of time and money to host WM 2015, it is highly desirable and lucrative activity for the CIHA. The main reason is that it is one of a few options how it can gain money used for maintaining the CIHA's operation. Moreover, the opportunity to host WM comes approximately once in ten years,[6] and therefore it is important for the CIHA not to miss it.

Firstly, a country places a bid and if it succeeds in the bid, it gets a nomination. This is generally several years before the championship is planned and thus a winning organization has enough time for organization. The WM 2015 were assigned to the Czech Republic 5 years before the start on 21. May 2010. (ČTK & iDNES.cz, 2010). However, the preliminary budget was already set in 2009 because the CIHA had to provide for the WM bid. Eventually it was finalized in June 2014 (CIHA, 2015a).

Before the event, the CIHA gained financial support from public resources which are specified in the Table 2. The City of Ostrava and the Moravian-Silesian Region committed to provide full amount gradually from 2013 until 2015, as signed in the contract from 20 December 2012 (Ostrava, 2012).

Table 2. Finance from public resources

Institution	Amount (CZK)
Ministry of Education Youth and Sports	68 million
City Prague	30 million
City Ostrava	30 million
Moravian-Silesian Region	30 million
Total	158 million

Source: KPMG, CIHA

[6] Czech Republic hosted WM in years 2004 and 2015, before that it was held in the Czechoslovakia in years 1933, 1938, 1947, 1959, 1972, 1978, 1985, and 1992.

The received public resources with some expenditures of the CIHA were distributed into organizing this major event follows:

- 2013 – 5% of total resources
- 2014 – 20% of total resources
- 2015 – 75% of total resources

The preliminary division of the revenues and costs is depicted in two pie charts in the Appendices 5A and 5B. The description and further information about the charts follows.

5.2. Revenues

The biggest part of all revenues was gained from selling tickets, 73.8% which is almost three quarters of all the earnings. The revenue from ticket sales reached almost 797 million CZK. The right price setting is the key activity for final financial success and maximizing profits as it is the main source of income for the hosting organization. It is a complex process operated by a ticketing department and is based on strategies from previous WMs. However, since WM 2013 in Sweden generated a loss due to suboptimal setting of the ticket prices (Český rozhlas Radio Praha, 2015) it was especially demanding for the CIHA to analyze and choose the right pricing strategy. Because it was a difficult and time-consuming process the particular team started with the preparations already in October 2013 (KPMG, 2015).

First of all, the top and low teams were and assigned their price level. Furthermore, ticketing department created percentage sales plans which were taken into account during the price setting for each match. The Czech together with Slovak matches were assessed as the most attractive for local people and thus the highest price was allocated to them (1690 CZK in a group stage). As in WM 2004, Czech team played in O2 Arena in Prague and Slovak team in ČEZ Arena in Ostrava.

Prices of tickets together with the game schedule and the official WM 2015 web site were made public on 19 August 2014. The prices ranged from 190 CZK to 1 690 CZK per match in the preliminary round. For quarterfinal matches prices were raised to 2 390 CZK and 2 990 CZK, semifinal ones to 4 690 CZK and 5 790 CZK. For the bronze medal match ticket prices were slightly lower, 4 290 CZK and 5 390 CZK. The most important golden-medal match for the title of Ice Hockey World Champion of the year 2015 was the most expensive reaching the price of 7 190 CZK or 8 990 CZK (CIHA, 2014). The cheaper one was for the second category and the more expensive

one for the first category seating. The division of seats into categories as well as full price lists are demonstrated in Appendices 6-7.

There were two phases when the tickets were being sold (CIHA, 2014):

1. Bundled tickets – daily tickets for two or three matches, the sale started on 4 December 2014 with prices from 980 CZK to 3 470 CZK per day
2. Separate tickets – individual-match tickets for matches not sold out in the first phase, the sale started on 12 February 2015 with prices such as given in the previous paragraph

The second biggest sources of money were grants from private and public resources, such as state subsidy as stated in the previous section. The grants formed 15.5% out of total 1 080 million CZK.

Furthermore, 4.3% and 4.1% were received from VIP Catering Department and Marketing Department respectively. Media Department represented only 0.5%, including revenues from providing services to media organizations, e.g. internet, electricity, and rent of some inventory. This value is small because the marketing and broadcasting rights are owned and managed by Infront Sports and Media which is a partner organization of the International Ice Hockey Federation (IIHF), the governing body of the international ice hockey and inline hockey. WM 2015 was broadcast in 160 countries and territories via more than 100 television channels (IIHF, 2015). In the Czech Republic the only television with the exclusive broadcast rights, bought from Infront Sport and Media, was Czech Television which could also provide exclusive news on its website. Except for that the Czech Radio bought rights for audio commentaries of matches and the websites iDNES.cz and Hokej.cz had the official license for news[7] (Infront Sports and Media, 2015b). The value of the broadcast rights is a subject of mutual contracts and is not publicly available (Uher & Kohutová, 2015).

5.3. Costs

IIHF has prepared a number of regulations which had to be fulfilled for hosting of WM, including IIHF Insurance Guidelines 2014 and 2010 IIHF Championship Regulations valid when a contract for organizing WM 2015 was signed. The host therefore did not have much freedom in dividing their finances in cost sectors.

---

[7] For a full list of IIHF Ice Hockey World Championship 2015 broadcast partners see http://www.infrontsports.com/media/1656752/bp-list-2015-iihf-wm-final.pdf.

Expenses connected with tickets represented the biggest part, 16.5% from 630 million CZK spent on the championship which equals 103.95 million CZK. Originally the share of the total budget was set to be around 10% consisting mostly of fees CIHA had to pay per ticket sold the partner contracted to sell the tickets. This share was exceeded because of higher amount of tickets sold than predicted (CIHA, 2015a).

Only one percentage point less was spent by the Arena Department which includes the rent and rent-related services. O2 Arena in Prague was opened in 2004 when WM 2004 were held in the Czech Republic, ČEZ Arena in Ostrava was built in 1986 and was widely reconstructed in 2004. After accounting for inflation, the costs in this department were comparable for both championships. The only difference was that in 2004 the O2 Arena, originally SAZKA Arena, was not completely finished and CIHA had to complete it using their own resources, for example they financed covering of floors in some part of the arena. Meanwhile, in 2015 the arenas had to be adapted to fulfill the changed stricter IIHF requirements.

Similar amount was spent on accommodation of guests (12%) and in the Organization Department (10.7%). 8.7% was spent on taxes and fees. CIHA as a non-profit organization was exempted from paying VAT but due to the exceeded turnover it has become a tax payer since January 2015. Before that, CIHA used its subsidiary Pro-Hockey for VAT payments from all its commercial activities.

The VIP and Events Department represents 6.5% and catering associated with its events represents 4% of total costs. The costs related to media were 1.9% which was 0.4% more than what was spent on security. Security is one of the most important items even though only 1.5% from all the costs was spent on it. CIHA has set three key priorities in this field (CIHA, 2015):

1. Protect health and lives of the visitors, players and staff members
2. Ensure problem-free continuous live TV coverage
3. Ensure smooth progress of all operations related to the organization of the WM 2015

Fortunately, neither serious injuries occurred nor an anonymous bomb threat was reported. There were only 5 complaints about the conduct of staff security agencies and the CIHA in cooperation with the Czech Police detected 53 cases of illegal ticket reselling (CIHA, 2015a). Other expenses related to security are listed in the Table 3.

Table 3. Security

	Total	Prague	Ostrava
Total number of Security guards involved	1,415	895	520
Total number of Policemen involved – daily average	790	490	300
Total number of "security" volunteers called "STEWARD"	154	89	65
Total number of Security agencies involved	10	7	3
Total number of members of the public treated by medical emergency.[8]	233	164	69
Total number of bags stored in deposits	9 026	4 236	4 790
Average bags per day	N/A	282	368

Source: CIHA (2015b)

5.4. Ultimate financial result

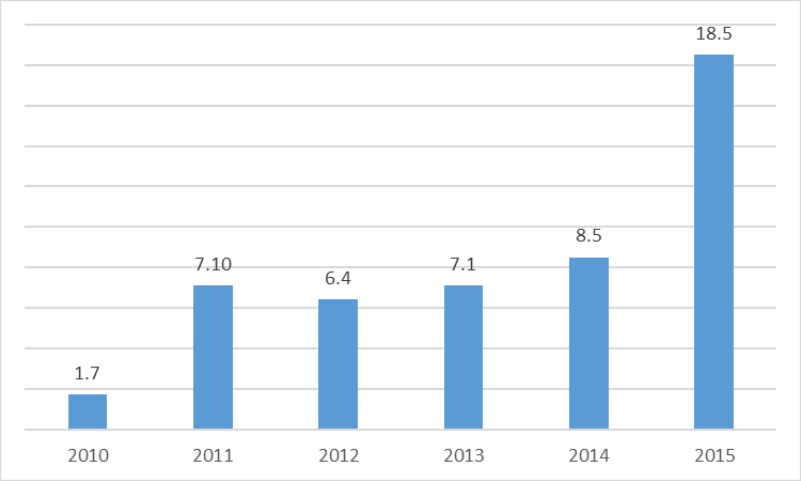
In 2012 the CIHA had to resolve a strategic question whether to establish a new subsidiary only for WM. The aim would be to eliminate the risk of harm to the CIHA in case a big financial loss occurs due to unsuccessful organization of WM 2015. However, because of several reasons such as complicated process if transferring profit from the new subsidiary back to the CIHA, the host decided to establish a new department right under the CIHA but not a new company.

As a result, since the CIHA reported a profit of 450 million CZK before taxes it turned out to be a good decision. This profit will be used gradually for support of ice hockey up until 2022. In 2023 it is expected that the championship will be held in the Czech Republic again (Šenk, 2015). Approximately 70 million from the profits will be paid in taxes and 335 million will used for trainers' wages, new sport equipment, and development of hockey clubs, mostly those with a developed youth programs. 151 hockey clubs will receive 60 million CZK, the ones from the top league 1.5 million CZK. The general secretary of the CIHA Milan Urban said: *"This amount is the biggest because these hockey clubs have team ranging for all age categories"*. Moreover, 76 million CZK will be spent for new hockey equipment and 101 million will be granted to the CIHA youth academy. According to the CIHA the most important for development and preservation of the Czech ice hockey among top teams in the world is the support of

[8] Kinds of medical treatment: pain, nausea, leg sprains, collapse, drunkenness

high quality trainers, especially the regional and professional ones in smaller clubs. Therefore, this sector of the Czech ice hockey was supported extensively, as we can see also in Figure 4. The extra subsidy has helped several smaller club, for instance the "Hockey Club SKLH Žďár nad Sázavou" received 418 000 CZK thank to which they could manage to finance their operation without financial problems (Hokejzr.cz, 2015).

Figure 4. Subsidy to Czech ice hockey clubs with youngest players in years 2010-2015



Source: CIHA (2015b)

Altogether 98 million CZK will be spent for this purpose gradually within years 2015 up to 2020. So far the CIHA have been paying 21 regional and 39 professional trainers in 13 academies. In this and following years, the number of professional trainers will increase by 54. The chief coach of the CIHA Slavomír Lener pointed out that in small clubs the goal is to achieve 100 trainers. Furthermore, the CIHA has the ambition to increase the number of players by 20 to 30 percent (iSport.cz & ČTK, 2015).

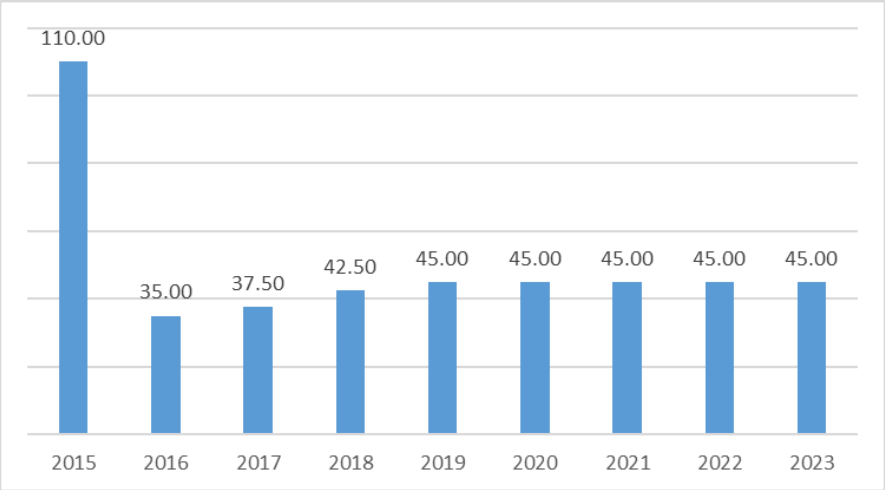
The sectors on which the CIHA wants to focus along with the division of the profit in the following years are shown in the Table 4 and Figure 5.

Table 4. Division of financial resources according to priority

1	Professional trainers of the CIHA
2	Regional trainers of the CIHA
3	Long-term program of junior representation of the Czech Republic 16-20
4	Youth competitions and juniors in professional competitions for adults
5	Ice hockey centers for youth - academy
6	Development training program for youth
7	Hockey for everybody, professional trainers for small clubs - recruitment of new players
8	Education of trainers
9	Exchange programs abroad
10	Ice hockey promotion - web of the CIHA, publications, media, Hall of Fame

Source: KPMG (2015), CIHA

Figure 5. Division of profit over time (million CZK)



Source: KPMG (2015), CIHA

335 million CZK is a significant amount of money which can help to improve the Czech ice hockey, moreover other subsidies are provided by the Ministry of Education Youth and Sports (MEYS). Sport organizations, associations, clubs etc. can request them in ten programs (MŠMT, 2016), namely:

I. Sport Representation
II. Talented Sport Youth
III. Operation of sport organizations
IV. Maintenance and operation of sport facilities
V. Operation of sport associations
VI. Important sport events
VII. Disabled athletes
VIII. Organization of sport in sport clubs
IX. Organization of sport in schools
X. Sport projects for public

Ice hockey is represented in each of them. For example, in Program V. CIHA will obtain 34 086 303 CZK this year, 12 911 600 for the national team, and 17 927 600 for talented youth. Apart from that, 52 hockey clubs will receive subsidies ranging from 40 000 CZK to 536 000 CZK in total value of 7 850 000 CZK from Program VIII.

Due to complexity and unavailability of some older data published by MEYS it is very complicated to quantify all subsidies between 2004 and 2015, and therefore we do include only programs as stated above and subsidies for WM 2015 as demonstrated in a section 5.1.

6. Cost-Benefit Analysis and Discussion of the Results

First of all, it is necessary to determine the area we want to examine. One of the reasons for this is that to study an economic effect of WM 2015 on cities, districts and the whole country would go beyond the scope of the thesis. Since most of the data provided by the Czech Statistical Office cover districts Prague and Moravian-Silesian Region and only rarely the information is solely about the capital of Moravian-Silesian Region, Ostrava, we decided to focus on these two regions. If possible, we will present more detailed data and briefly discuss an effect also on the city of Ostrava. Furthermore, if some impact can be applicable for the whole Czech Republic not only districts, we will specify it, too. However, the full and complex CBA will be conducted solely for the regions Prague and Moravian-Silesian.

There is not one single way how CBA should be conducted because every project varies in many characteristics, so do the decision-making context and analytical framework (Campbell & Brown, 2003). We will base the structure of our analysis on approach of de Nooij et al. (2010) who provided an *ex-ante* social CBA of the planned World Cup 2018 bid in the Netherlands.

6.1. Costs

6.1.1. Investment in stadiums and infrastructure

WM requires high quality stadiums that have to fulfill standards set by IIHF for smooth running of the whole championship. Because of that both arenas had to be reconstructed.

O2 Arena in Prague, originally called Sazka Arena, is one of the most modern multifunctional sport halls in Europe and was built in 2004. It was supposed to be finished in 2003 but because of its problematic construction it was officially opened just one week before the first match of WM 2004 (Mikolášová, 2015). The reconstructions necessary for WM 2015 started in the summer 2014 and were the biggest since its opening (Sušovský, 2014). The amount spent equaled to approximately 150 million CZK and was invested by Bestsport, the owner and operator of O2 Arena (ČTK & iDNES.cz, 2015a). The main work was done on stands for spectators that had to be revised and consequently reinforced in order to withstand possible full occupancy. Because of IIHF standards the ice rink had to be enlarged from 60 x 28 m to 60 x 30 m. Furthermore, the security control and tickets checks were modernized for a faster and

smoother process of entering the arena. As a result, it took to only 1 hour and 8 minutes fill arenas to its full capacity (17 500 people) on average (CIHA, 2015a). The big reconstruction also involved skybox zone in the arena where some of the skyboxes were replaced by a new restaurant. Moreover, Bestsport improved the sound and light equipment and renovated the operation of the multimedia cube (Sušovský, 2014). Since the repairs of O2 Arena in the value of 150 million CZK were financed from private resources it is not a cost for any of our two examined region and therefore it is not included in our analysis.

ČEZ Arena in Ostrava, originally called Vítkovice Arena and nowadays temporarily renamed to Ostrava Arena[9] is owned by the company Vítkovice Aréna whose largest stakeholder is the city of Ostrava (Lesková, 2015a). It was built in 1986 and widely reconstructed in 2004. While the costs for repairs in 2004 almost doubled from 400 to 700 million CZK, it probably happened because of imprecise and low quality reconstruction. In 2014 this amount was significantly less and equaled to approximately 30 million CZK provided by the city of Ostrava (Štalmach, 2014). In 2012 almost all technical and esthetical discrepancies were removed which cost 170 million CZK. From that amount 150 million was provided from the budget of the city of Ostrava and used for more comfortable seats for visitors and an increase of capacity to 10 000 (Ostrava, 2012). Because of this no extensive work had to be done in the arena closely before the WM. In 2014 ČEZ Arena underwent similar reconstructions as O2 Arena, including renovation of the skyboxes for VIP guests. Particularly, 4 new ones were built and elevators added because the previous number of them was not sufficient for the championship. Multimedia cubes have started to be an unofficial standard of IIHF. While it was not possible to install it into the arena's roof in 2004 because of its weight, it is not a problem now since the cube is technically more enhanced and lighter. Related to this is the need to change the lighting systems for more economical ones in order to make the cube more visible for visitors (Štalmach, 2014). According to Martin Štepánek, the deputy mayor of Ostrava, the acquisition costs for the cube usually reaches around 15 million CZK (Ostrava, 2012).

Summing up the repairs on the areas, the amount provided by public authorities altogether is around 180 million CZK. The study from KPMG (2015) claims that 210

[9] From 1.7.2015 it has a new name since a company ČEZ has quit its 10-year sponsorship due to retrenchment. The arena is currently looking for a new long-term sponsor.

million CZK was invested into repairs of arenas but did not provide any additional information. The difference is presumably caused by rounding in articles we gained the information from and that KPMG probably included also the finances from private sources.

Regarding the investment into infrastructure around stadiums we do not have any information. The CIHA confirmed that it did not spend any money on its repairs neither in Ostrava nor Prague. If any improvements of infrastructure because of WM 2015 occurred, since there are not any articles in public, they were presumably only minor and not of high significance. Therefore, we do not take them into account in our CBA.

Table 5. Investment in stadiums

	Amount (mil. CZK)	Provided by	Period
O2 Arena	150	Bestsport	2013-2015
ČEZ Arena	20	Private investor	2012
	150	Ostrava city	2012
	30	Ostrava city	2014
Total	350		
Public resources	180		
Private resources	170		

Sources: ČTK&iDnes.cz (2015); Štalmach (2014); Ostrava (2012)

6.1.2. Costs for the government: Security

As is true for every sport event, it is important to provide adequate security in stadiums as well as their surroundings. Inside the arenas and fan villages it was the main responsibility of the CIHA to ensure a secure environment and be prepared to intervene in case of a threat. However, in the surroundings of the arenas protection remained responsibility of the local police. In this chapter we examine expenses of the Czech government spent on the reinforced security during the WM 2015.

WM 2015 is an international significant sport event that requires increased security arrangements. The CIHA as the host in the Czech Republic acted well in advance and together with the Ministry of Interior headed by Milan Chovanec, the president of Czech police Tomáš Tuhý and the CEO of Fire Department Drahoslav Ryba drew up a memorandum about mutual cooperation during the championship which was signed on February 5, 2015.

Although according to Tuhý WMs are usually not risky, it is necessary to be aware of a possible terroristic attack, be prepared to act, and do not underestimate the

event of such an extent (ČT sport & ČTK, 2015). To minimize this risk police of the Czech Republic cooperated with a team from Interpol Major Events Support Teams (IMEST) that could quickly transfer information across all relevant countries and connect with other members of Interpol (Macalíková, 2015). In addition, the police president Tuhý claimed that "*during the championship there will be hundreds of policemen operating in both cities and traffic police, criminal police, pyrotechnics, air service, and international policemen will be also available*" (Musil, 2015). CIHA in its final report specifies the number of policemen in the streets during WM: in Prague the daily average achieved 490 policemen involved while in Ostrava it was 300 policemen. In total during the WM 11 000 policemen were involved (Perdoch, 2015). All expenditures provided for the event represented approximately 65 million CZK which the police presidency required from the government and the Ministry of Finance of the Czech Republic (Musil, 2015). This amount includes mostly wages of policemen whose numbers had to be increased during WM, fuel, and other expendable supplies (Macalíková, 2015).

Among the most important tasks of the Czech police during WM belong ensuring of security at Václav Havel Airport Prague and Leoš Janáček Airport Ostrava, and on the travels of the national teams and referees during their transport to the arenas as well as ensure public order and security in cities Prague and Ostrava, as well as in public places near areas which are not in charge of CIHA (Macalíková, 2015). Furthermore, police assured pyrotechnic controls were placed whenever it was necessary and organized precautious measures in public transport (Macalíková, 2015).

6.1.3. Social and cultural costs

Hooliganism and vandalism: Neither the CIHA nor the Czech police did publicly report any damage in the cities which could be related to WM. The CIHA mentioned that there were a few problems resulting from alcohol consumption of some fans but not there were not numerous (CIHA, 2015a). Some problems only occurred during the match between Germany and Sweden in Prague when seven people had to leave the arena because of their inappropriate behavior (Perdoch, 2015). We did not find any messages about serious riots or damages in the recent WM which supports the claim that hooliganism and vandalism are not common at Ice Hockey World Championship contrary to football FIFA World Cup (ČT sport & ČTK, 2015). Perdoch (2015) in his article even claimed that criminality during the championship decreased by one fifth in

both cities. Because of that we decided to assign a zero value in this section and do not include it in the final CBA table.

City pollution: While no news informed about worsened pollution in streets of Prague, there were some problems in Ostrava. The increased amount of garbage in the streets was not good for the promotion of the city. However, Ostrava arranged organizational changes in cleaning city's cleaning service which improved the situation but increased the costs spent on the championship. The director of "Technické služby Moravské Ostravy" said: "*Cleaning of Stodolní street costs the district a million CZK per year. During every weekend ten people clean the street and one self-loading machine. Now we add two more people and one machine. We will reinforce cleaning of the city center, too*" (Lesková, 2015b). According to this statement this increase corresponds to approximately 73 900 CZK.

Disruption to lifestyle of local people: Czech Tourism made a questionnaire to find out the opinion of the local people on tourism during 2015. Generally, the Czechs welcome tourists from abroad as well as those from the Czech Republic. As the most disruptive they consider overcrowding and problems with transportation. According to the residents, another problem is inappropriate behavior of tourists. However, most of the local people appreciate benefits resulting from tourism such as economic development of cities (Vogelová, 2016). This item is negative non-monetized in our CBA.

Traffic congestion: Even though traffic was expected to be problematic, police organized it well, for example public transportation was reinforced in the surrounding of the arenas as well as train connection between Prague and Ostrava (ČTK & iDNES.cz, 2015b). Not only more trains were in operation but also the Czech national railways "České dráhy" provided a free return journey to everybody who attended WM 2015 and stamped their tickets in one of the fans zones. Regarding transport in Prague, during the championship some streets around O2 Arena were closed for cars other than those of the residents and those who are in some way related to WM, e.g. media (Exner, 2015). The bus station near an underground station "Českomoravská" in front of O2 Arena was temporary relocated for all buses and one exit closed for easier orientation of ice hockey fans. In Ostrava the important crossroads were organized by local police in order to ensure a fluent traffic in the city. The traffic situation was controlled not only from

ground but also from air, using a police helicopter (Štětínská, 2015). All costs related to traffic, such as increased number of policemen in the streets are included in 65 million, the amount spent in total by the Czech police. Traffic congestion is one of unpleasant disruptions to standard lifestyle of the local residents and is therefore included as a negative non-monetized item.

Environmental effects: No huge infrastructure had to be built in relation to the championship. Therefore, we do not think that this effect is significant in our case study. As a result, this effect is left from the final CBA table.

6.2. Benefits

6.2.1. Increased tourism

The fact that WM attracts tourists into cities and regions where it is held is one of the most fundamental effects for the host economy. Tourists through their expenditures ranging from tickets to accommodation, refreshment, transport, and merchandise support money inflow into these regions. This helps to boost the economies of these particular regions, for example support local businesses.

KPMG (2015) states in their analysis that consumption of the foreign and local spectators reached 1 468 million CZK and 326 million CZK, respectively. The way KPMG calculated this numbers is know-how of the company. However, CIHA disclosed that it is based on a model of average fan's consumption developed from long-lasting statistic research. This part is very important because consumption of fans represents almost a half of the total consumption created in relation to the WM. In this section we would like to reproduce these numbers using the data published by CZSO and study by STEM/MARK (2015).

As mentioned in the subchapter 4.2. The total attendance of 741 690 people visited the arenas during WM. Since we assume people visited more than one match, this number as an indicator of the total number of unique visitors during WM is overestimated. The average number of ticket sold per person was studied by neither CIHA nor KPMG but a study about WM 2011 in Slovakia specifies an average to be 2.55 matches per visitor (Šebová et al., 2011). As a result, the number of unique visitors of the arenas could be 290 859. This number also corresponds to the data gained from CZSO in the following way: in May 2015 the total number of foreigners whose team was participating at WM 2015 reached 157 259 in Prague and 12 100 in Ostrava;

regarding residents the total number equaled 81 085 in Prague and 47 779 in Ostrava. Therefore, summing the numbers we obtain 298 223 which is similar to our estimate.

Spending by residents:

According to the data from CZSO and Rehák & Štofko (2011) we calculated total expenditure of residents in the May 2015 as 378 million CZK which is 52 million more than KPMG (2015) reported. In our calculation we included the number of Czech visitors (residents) in May 2015 in Prague and Moravian-Silesian Region respectively, average number of nights in that month and average spending per person per day during WM. This last item was derived from Rehák & Štofko (2011) in this way:

Because Slovakia and the Czech Republic are very similar countries economically, we assume that their expenditures during the championship are comparable. From spending of Slovak fans as specified in Rehák & Štofko (2011) we calculated the spendings of residents to be 50.1 € (1 354 CZK)[10]. This number does not include transport to and from the regions.

Table 6. Spending by residents

	May 2015	Average number of nights	Average spending (CZK)	Total spending (CZK)
Prague	81 085	1.8	1 354	197 620 362
Moravian-Silesian Region	47 779	2.8	1 354	181 139 744
Total spending				378 760 106

Source: CZSO; Rehák & Štofko (2011)

Spending by foreigners:

Using the data from CZSO and STEM/MARK we summarized the information about the visitors whose national team participated in WM (Table 7.) and calculated total expenditure spent by foreign tourists, resulting in approximately 1 108 million CZK. However, this number includes transportation costs to and from the regions which do not create benefit in the location of our interest. If we subtract transport from our result, we obtain 876.5 million CZK. In order to compare it to the results of KPMG (2015) we have to adjust it in the same way. Since we do not have an exact information about what part is formed by transport, we subtract 22% what is an average reported by

[10] Exchange rate as of 4.5.2016: 1 EUR = 27.031 CZK

STEM/MARK (2015). This gives us 1 145 which is approximately 268 million CZK more in comparison to our results. The difference is probably caused by using different steps in calculation and/or data quality.

Regarding the structure of total expenditure in the second quarter of 2015, the most relevant items include transport which formed 24%, accommodation 18%, food and beverages 16%, and goods 12%. The total revenues of restaurants, bars and collective accommodation facilities from the championship are not known but economists estimated this amount to be more than 750 million CZK (Beneš & Kottová, 2015). Hotels in Ostrava such as Park Inn or Clarion were sold out a year before championship and it was similar with all accommodation in the city and its surroundings (Koziolová & Vežranovský, 2015).

Table 7. Spending by foreign tourists

Prague	May 2015	Average number of nights	Average spending in 2Q 2015 (CZK)	Net Average spending [11] (CZK)	Total net spending (CZK)
Canada	9 290	2.7	3 941	2 483	62 276 824
Sweden	13 776	2.9	3 500	2 695	107 666 328
Switzerland	11 936	2.8	3 259	2 509	83 867 158
Germany	81 803	2.4	1 769	1 574	309 099 507
France	22 209	2.7	2 871	2 096	125 674 979
Latvia	2 645	3.1	3 259	2 509	20 576 071
Austria	15 773	2.2	3 259	2 509	87 078 727
Total	157 432	2.69	21 858		796 239 595
Moravian-Silesian Region					
USA	587	4.1	4 726	3 261	7 848 104
Finland	2 227	4.5	3 500	2 695	27 007 943
Russia	1 851	2.7	3 941	3 389	16 938 505
Belarus[12]	451	3.3	3 259	2 509	3 734 785
Slovakia	6 195	1.9	916	834	9 811 418
Norway	371	4.6	3 500	2 695	4 599 287
Denmark	256	6.6	3 500	2 695	4 553 472
Slovenia	613	3.8	3 259	2 509	5 845 466
Total	12 551	3.35	26 601		80 338 979
Total	169 983		48 459		876 578 574

Source: CZSO, STEM/MARK (2015), ČTK (2015)

Notes: Countries whose average spending is the same were grouped: Denmark, Norway,

[11] Without transport

[12] In a public database of CZSO Belarus in not specified, therefore we use „Other European Countries "

Finland, and Sweden are “Nordic Countries”; Switzerland, Latvia, Austria, Belarus, Slovenia are “Other European Countries”.

6.2.2. Spending by media

In order to provide up to date information from the Ice Hockey World Championship 2015 it was necessary for media representatives to be present in the arenas. For this purpose, the CIHA reserved media tribune as depicted in the Appendix 7.

First of all, we should calculate the total number of media representatives. There were two press centers in each stadium, in Prague it was in main arena and practice arena, in Ostrava main press center was located in Clarion Hotel as well as the game press center designed for photographers. The number of ice-rink level photographers was 45, particularly 25 in Prague and 20 in Ostrava. In each venue there were 4 television studios for 90 commentators, 50 in Prague and 40 in Ostrava (CIHA, 2015a). Including 501 seats for writing press. In total the number of media representatives reporting from WM reached this number 636 people. Assuming the same number for every team we calculate with an average of 40 people per nation playing in WM.

Compared to tourists, media representatives stay longer in the regions so their expenditures on accommodation are higher. Because of that we assume that they spend on average 20% more than tourists do which equals on average 3 240 CZK per day. Multiplying this amount by the number of reporters and days stayed we obtained 35 030 880 CZK. KPMG (2015) reports 33 million CZK, the difference may be caused by inaccuracies in our estimates resulting from insufficient data.

6.2.3. Spending by ice hockey national teams

In WM 2015 in Prague and Ostrava 16 national teams played. We do not have any information about the spending of the ice hockey national teams; no calculation was done by the CIHA, therefore, we use 18 million CZK as estimated by KPMG (2015).

6.2.4. Other benefits

Employment: According to the final report of the CIHA (2015b), 2 636 people were involved in the organization of WM, from which 560 were volunteers, mostly students. These volunteers were recruited for assistance with organization of the championship and contribution of their work was visible for example through several interviews they provided for local media. Although the CIHA had some expenses connected with

volunteers, such as catering and uniforms, their work contributed to the smooth organization of WM. Opinions on whether include employment effect or not varies. As mentioned in the section 3.1. only the people who were unemployed should be taken into account, otherwise crowding-out occurs. Furthermore, wages do not serve as a precise benefit indicator because they do not cover opportunity costs of getting a longer lasting employment contract in another field. Because of these reasons we decided not to include this item in the CBA.

National pride and happiness: Ice hockey is a very popular sport in the Czech Republic and if successful, it tightens national pride and makes citizens happy about their country. It is difficult or even impossible to quantify these impacts and therefore we include them in our CBA as a positive non-monetized item.

Encouraging of sport activity: Organizing WM does not necessarily mean an increase in sport activity of citizens. The CIHA supported young ice hockey players whom it gave free tickets. Furthermore, because of a positive profit, CIHA can support ice hockey in the Czech Republic even more. Some programs have been already developed and implemented before WM and this support may help to achieve the goals faster. This idea is just an estimate because the results of the financial support will only be observable in its full range after several years. CIHA claimed that 335 million CZK will be provided for ice hockey support. If we suppose even distribution among all 14 regions of the Czech Republic, Prague and Moravian-Silesian Region will gain 47.86 million CZK in the following years.

Perception of the Czech Republic abroad: MF DNES, the Czech journal surveyed fans in Ostrava whose opinion on the city was positive. Only drawback they mentioned was the lack of entertainment facilities in the city center (Bartíková, 2015). We did not find any survey about Prague. Because the event was attended by a record number of people, the event can be seen as a very successful. IIHF President, René Fasel (2015), in the hockey journal *"Ice Times"* also evaluated the host country very positively. Consequently, this success may increase a chance of winning the organization rights again in the future.

6.3. Discussion of the results

The economic impacts along with non-monetized social and cultural effects are summarized in the Table 8. The total costs reached the value of 245 073 900 CZK and total benefits of holding the Ice Hockey World Championship 2015 in Prague and Ostrava equaled 1348 million CZK. It is important to emphasize here that these numbers correspond only to Prague and Moravian-Silesian Region and not to the whole Czech Republic where they might be different. The benefit/cost ratio equals 5.53 which means that every CZK invested in the event by public organizations brought a benefit of 5.53 CZK. If we aim to determine the contribution of spending by public resources multiplying the benefit/cost ratio by the data from the Table 2 we can conclude that investing 60 million CZK by Ostrava City and Moravian-Silesian Region generated a benefit of 330 million CZK. City Prague invested 30 million CZK which brought a benefit of 165 million CZK. Last but not least, the investment of 68 million CZK by Ministry of Education Youth and Sports produced 374 million CZK.

In the calculation of benefit/cost ratio only monetized items are included and economic impact is determined. However, equally important are various social and cultural effects which are not expressed in a monetary form because of their abstract character. Since they have been discussed in the previous subchapters we do not explain them in more detail here.

Although the CBA is preferred by sport economists (Taks et al., 2011), the economic impact analysis is more often conducted. Therefore, if we would like to compare the results with other sport events, only a limited amount of events can serve for this purpose. Nevertheless, Jimenéz-Naranjo et al. (2015) investigated World Paddle Tour 2015, an international paddle tournament held in Spain and reported a benefit/cost ratio 13.85€ (374.36 CZK). Possible reasons why our result is much smaller are specified in the next section 6.4. Regarding WM, Šebová et al. (2011) examined the economic effect of WM 2011 on city Košice but oriented only on benefits from incoming tourists.

Consequently, the CBA we conducted summarizes not only the positive impacts as done in KPMG (2015) but also all the costs and benefits, and can, therefore, help in decision-making process of hosts of WM in the future. For instance, in 2023 when the Czech Republic plans to apply for bid again. In addition, we provide a new input among other sport impact studies, particularly into otherwise limited major sport event studies

since mostly only mega-events such as Olympics or Football World Championship are studied.

Table 8. Cost-Benefit Analysis

Costs	CZK
Investment in adaptation of stadiums	180 000 000
Security in the cities	65 000 000
City pollution	73 900
Disruption to lifestyle of residents and traffic congestion	-(n.m.)
Total costs	245 073 900
Benefits	CZK
Expenditure by tourists	1 255 338 680
Spending by media	35 000 000
Spending by hockey teams	18 000 000
National pride and happiness	+(n.m.)
Encouraging of sport activity	47 000 000
Perception of the Czech Rep. abroad	+(n.m.)
Total benefits	1 355 338 680
Benefit/Cost ratio	5.53

Source: Own collaboration.
Note: n.m. refers to a non-monetized item

6.4. Shortcomings and possible extensions

In this subchapter we discuss the shortcomings of the Cost-Benefit Analysis and describe suggestions how the thesis could be extended and improved.

Firstly, we perform this *ex-post* analysis merely a year after the event was held in the Czech Republic, and therefore some data are still not completely finalized and are rounded or approximated. Moreover, the legacy of the event resulting from the arenas' adaptations as well as increased financial support of ice hockey from the event earnings is not currently observable and it will lake several years until we can quantify the effect more precisely.

Secondly, tourists' expenditure as the biggest benefit for the local economies probably requires more attention. One of the shortcomings is that there was no available research examining solely the visitors of WM. Because of that we had to use the data provided by CZSO and STEM/MARK aggregated for the second quarter of 2015 and May 2015, if applicable. Apart from that we used average spending in these periods

which does not reflect only the spending during the WM but in the Czech Republic in general. Therefore, the results we have obtained are presumably lower than in reality. A possible solution could be to create a survey questioning attendees and draw conclusions upon the resulting data as done in e.g. Rehák & Štofko (2011).

Last but not least, to provide a full and complex CBA taking into account all costs and all benefits generated requires including intangible effects, such as happiness and national pride which are problematic to quantify.

In the future research it would be beneficial to examine other sport and cultural events in Prague and Moravian-Silesian Region using CBA or other similar method and compare them to the results of WM 2015. Colors of Ostrava, a unique international music festival organized every year, and UEFA European Under-21 Championship 2015 held for the first time in the Czech Republic, in Prague, Olomouc, and Uherské Hradiště, belong among the biggest events worth analyzing.

7. Conclusion

In this thesis we studied the effects of Ice Hockey World Championship 2015 (WM) held in the Czech Republic in the Prague and Moravian-Silesian Regions using a cost-benefit analysis (CBA). Three research questions as stated in the thesis proposal were examined and answered to the extent it was possible with the data available.

As the first topic in the empirical part we discuss economic results of the hosting organization, the Czech Ice Hockey Association (CIHA) who reported costs of 630 million CZK and revenues of 1 080 million CZK. As a result, profit achieved was 450 million CZK before taxes, which is a great success for the CIHA. Almost three quarters of revenues were gained from ticket sales, with a new record in attendance, 471 690 people achieved. This is mostly a result of an appropriate price setting strategy developed by the CIHA based on the previous experience of other Ice Hockey World Championships. Regarding costs, there was no highly dominating item as in the case of revenues but the most important were those related to ticketing, arena, and marketing. Profit gained from the organization of the event will be spent mostly on support of ice hockey in the Czech Republic the CIHA claimed that 335 million will be used for this purpose. Division of profit is depicted in Table 4 and Figure 4.

The second research question is the main one and examines the impacts of WM 2015 on the hosting regions using the CBA as stated in the first paragraph of this chapter. In total we calculated the costs for the regions to be 245 073 900 CZK. The main costs include adaptations of stadiums before the event and ensuring of security in the cities. Another cost is the disruption of lifestyle of residents and traffic congestion but this item is not expressed in monetary terms because of its intangible character. Total benefits generated for the regions reached 1 348 million CZK, while the most significant part came from tourism. Other economic benefits include consumption by media and national hockey teams and the amount provided by the CIHA for encouraging sport activity. Furthermore, WM is an international competition and therefore it has an influence on how the Czech Republic is perceived abroad. Moreover, WM supports national pride and the happiness of the Czech Republic because it connects fans. Because of that, we think organizing WM also has a social benefit. These two last benefits are included in the CBA as non-monetized items. In the end, the benefit/cost ratio is calculated reaching 5.53. This means that 1 CZK invested to organizing WM from public resources has a revenue for the regions of 5.53 CZK.

However, the ratio has its limitation because of the character of the data we received from the CIHA, CZSO and STEM/MARK. Shortcomings and possible extensions are described in the section 6.4.

The last question covers topic of tourism since the biggest financial benefit for economies is gained from it. As we supposed, the event attracted many foreigners to the Prague and Moravian-Silesian Regions. Especially in the Moravian-Silesian Region, the increase of incoming tourists was significant, 58.7 % more than in May 2014, resulting in 22601 non-residents. The highest increase was in tourists from those countries whose national teams qualified to play in Ostrava. For example, in comparison with May 2014 more than 10 times more Finns, 5.1 times more Slovenians, and 3.75 times more Norwegians arrived to this region in May 2015. Regarding Prague, this increase was only by 10 % and only the number of Latvians more than doubled (2.81 times). In the case of French tourists, their number even decreased by 8%. However, we concluded that in general, WM had a positive impact on tourism.

In the end of the previous chapter we discussed several shortcomings of the Cost-Benefit Analysis, related mostly to the dataset we have worked with. In order to provide more precise results and claims, data gathered only for the Ice Hockey World Championship 2015 is needed. Unfortunately, these were not available and therefore we calculated mainly with aggregated data. This issue could be tackled for example if a survey and study was done questioning the tourists right in the venues.

Bibliography

Bartíková, P. (2015). Legrační korbáčiky a centrum jako město duchů, hodnotí fanoušci Ostravu. Retrieved April 29, 2016, from http://ostrava.idnes.cz/fanousci-ve-stodolni-ulici-preckavaji-mezery-mezi-zapasy-ostrava-se-jim-libi-1wk-/ostrava-zpravy.aspx?c=A150507_2160945_ostrava-zpravy_woj

Beneš, J., & Kottová, A. (2015). Mistrovství světa v hokeji bude ziskové. Vydělaly na něm i restaurace, bary a hotely. Retrieved April 27, 2016, from http://www.rozhlas.cz/zpravy/domaciekonomika/_zprava/mistrovstvi-sveta-v-hokeji-bude-ziskove-vydelaly-na-nem-i-restaurace-bary-a-hotely--1491336

Bess, R., & Ambargis, Z. O. (2011). Input-Output Models for Impact Analysis: Suggestions for Practitioners Using RIMS II Multipliers. In *50th Southern Regional Science Association Conference* (pp. 1–28).

Blake, A. (2005). The London 2012 Olympics and its economic impact. *University Business*, *44*(0). Retrieved from http://eprints.bournemouth.ac.uk/8228/1/licence.txt

Brealey, R. A., Myers, S. C., & Allen, F. (2011). *Principles of Corporate Finance*. *Book*. http://doi.org/10.1016/0378-4266(82)90040-1

Brent Ritchie, J. R. (1984). Assessing the Impact of Hallmark Events: Conceptual and Research Issues. *Journal of Travel Research*. http://doi.org/10.1177/004728758402300101

Brunet, F. (1995). an Economic Analysis of the Barcelona ' 92 Olympic Games : Resources , Financing , and Impact. *The Keys of Success: The Social, Sporting, Economic and Communications Impact of Barcelona '92*, 1–30.

Campbell, HF & Brown, R. (2003). *Benefit-cost analysis: financial and economic appraisal using spreadsheets*. *Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki*. Cambridge University Press. http://doi.org/10.1017/CBO9780511791291

Cashman, R., & Hughes, A. (1999). *Staging the Olympics the event and its impact*. Sydney: University of New South Wales Press Ltd.

CIHA. (2014). MS 2015: Herní plán a ceny vstupenek zveřejněny. Retrieved April 10, 2016, from http://www.cslh.cz/clanek/1695-ms-2015-herni-plan-a-ceny-vstupenek-zverejneny.html

CIHA. (2015b). Podívejte se, jakou dětem udělala výstroj radost. Retrieved May 8, 2016, from https://www.youtube.com/watch?v=ZuXCQ0vxVYo

CIHA. (2015a). *2015 IIHF WM Final Report Czech Republic*. Prague.

Commission, E. (2012). Study on the contribution of sport to economic growth and employment in the EU. *SportsEconAustria*, (November). Retrieved from http://ec.europa.eu/sport/library/studies/study-contribution-spors-economic-growth-final-rpt.pdf

Crompton, J. L. (1995). Economic Impact Analysis of Sports Facilities and Events: Eleven Sources of Misapplication. *Journal of Sport Management*, *9*, 14–35.

CZSO. (2015). Cestovní ruch v moravskoslezském kraji ve 2 . čtvrtletí 2015, (1 370), 6–9.

Český rozhlas Radio Praha. (2015). Ticket offer key for economics of hosting ice hockey world championship. Retrieved April 10, 2016, from http://www.czech.cz/en/Comercio/Ticket-offer-key-for-economics-of-hosting-ice-hock

ČT Sport, & ČTK. (2015). MS nebývá rizikové, přesto budou bezpečnostní opatření přísnější. Retrieved April 19, 2016, from http://www.ceskatelevize.cz/sport/hokej/ms-2015/300676-ms-nebyva-rizikove-presto-budou-bezpecnostni-opatreni-prisnejsi/

ČTK. (2015). Hokejoví fanoušci přinesou české ekonomice půl druhé miliardy korun. Retrieved April 26, 2016, from http://ekonomika.idnes.cz/mistrovstvi-sveta-v-hokeji-prinese-ekonomice-1-5-miliardy-korun-pv8-/ekonomika.aspx?c=A150513_154151_ekonomika_lve

ČTK, & IDNES.cz. (2015). Kdo neskáče, není Čech? Hopsání poničilo O2 arenu, oprava stála miliony. Retrieved April 18, 2016, from http://ekonomika.idnes.cz/ponicene-tribuny-v-o2-arene-kvuli-skakani-fpj-/ekonomika.aspx?c=A150429_095223_ekonomika_neh

ČTK, & IDNES.cz. (2010). Česko Bude Pořádat Hokejové Mistrovství v Roce 2015. Retrieved March 22, 2016, from http://hokej.idnes.cz/cesko-bude-poradat-hokejove-mistrovstvi-v-roce-2015-fvp-/ms-hokej-2010.aspx?c=A100521_155836_ms-hokej-2010_cig

ČTK, & IDNES.cz. (2015). Fanoušci, nepoužívejte auta, ale vlaky, radí organizátoři hokejového MS. Retrieved April 23, 2016, from http://hokej.idnes.cz/hokej-doprava-pri-ms-2015-0bb-/reprezentace.aspx?c=A150402_163428_reprezentace_cig

de Nooij, M. (2014). Economic Impact Analysis versus Cost Benefit Analysis for a Medium Sized Sport Event, A Further Improvement. Retrieved March 21, 2016, from http://ssrn.com/abstract=2393427

de Nooij, M., van den Berg, M., & Koopmans, C. (2010). Bread or games? Social cost-benefit analysis of the World Cup in the Netherlands. *Journal of Sports Economics*. Retrieved from http://www.jstor.org/stable/10.2307/3217458

Dimanche, F. (2002). The contribution of special events to destination brand equity. *European Cities Tourism's International Conference*, (October), 73–80. http://doi.org/10.13140/2.1.1520.3529

Drèze, J., & Stern, N. (1987). The theory of cost-benefit analysis. In *Handbook of Public Economics* (Vol. 2, pp. 909–989). http://doi.org/10.1016/S1573-4420(87)80009-5

EUBA. (2011). Lokálne ekonomické vplyvy veľkých športových udalostí. Prípadová štúdia MS 2011 v ľadovom hokeji v Bratislave. Bratislava. Retrieved from https://www.researchgate.net/...vplyvy...MS_2011.../54358d710cf2bf1f1..

Exner, O. (2015). Hokejové mistrovství ovlivní dopravu. Retrieved April 23, 2016, from http://www.praha.eu/jnp/cz/doprava/automobilova/hokejove_mistrovstvi_ovlivni_dopravu.html

Falconieri, S., & Palomino, F. (2004). Collective versus individial sale of television rights in league sports. *Journal of the European Economic Association*, *2*, 833–862.

Fasel, R. (2015). Great effort leads to greater success. *IceTimes*, p. 2. Retrieved from http://www.iihf.com/home-of-hockey/news/ice-times/

Fasel, R. (IIHF). (2014). Hats off to Minsk 2014, *18*(3). Retrieved from http://www.iihf.com/fileadmin/user_upload/PDF/The_IIHF/IIHF_IceTimes_July2014.pdf

French, S. P., & Disher, M. E. (1997). Atlanta and the Olympics: A one-year retrospective. *Journal of the American Planning Association*, *63*(3), 379–392. http://doi.org/10.1080/01944369708975930

Getz, D. (1989). Special events. Defining the product. *Tourism Management*, *10*(2), 125–137. http://doi.org/10.1016/0261-5177(89)90053-8

Hall, C. M. (1989). The definition and analysis of hallmark tourist events. *GeoJournal*, *19*(3), 263–268. http://doi.org/10.1007/BF00454570

Harrison, W. T. J., & Horgren, C. T. (2008). *Financial Accounting*. *Other Stuff* (7th ed.). Prentice Hall.

Hokejzr.cz. (2015). ČSLH stupňuje svoji podporu mládežnickému hokeji v menších klubech, Plameny nejsou výjimkou. Retrieved May 8, 2016, from http://www.hokejzr.cz/clanek.asp?id=CSLH-stupnuje-svoji-podporu-mladeznickemu-hokeji-v-mensich-klubech,-Plameny-nejsou-vyjimkou-1504

Humphreys, B. R., & Prokopowicz, S. (2007). Assessing the impact of sports mega-events in transition economies: EURO 2012 in Poland and Ukraine. *International Journal of Sport Management and Marketing*, *2*(5/6), 1–14. http://doi.org/10.1504/IJSMM.2007.013963

IIHF. (2015). Tickets. Retrieved April 30, 2016, from http://www.iihfworlds2015.com/media/508289/Info_tickets.pdf

Infront Sports and Media. (2015). 2015 IIHF Ice Hockey World Championship surpasses all previous audience and spectator records. Retrieved March 22, 2016, from http://www.infrontsports.com/news/2015/09/2015-iihf-ice-hockey-world-championship-surpasses-all-previous-audience-and-spectator-records/

Infront Sports and Media. (2015). 2015 IIHF Ice Hockey World Championship takes to the ice stronger than ever. Retrieved May 3, 2016, from

http://www.infrontsports.com/news/2015/04/2015-iihf-ice-hockey-world-championship-takes-to-the-ice-stronger-than-ever/

iSport.cz, & ČTK. (2015). Kam se stamiliony za MS v Česku? Svaz zaplatí i 54 trenérů. Retrieved April 12, 2016, from http://isport.blesk.cz/clanek/hokej-reprezentace-ms-v-hokeji-2015/247290/kam-se-stamiliony-za-ms-v-cesku-svaz-zaplati-i-54-treneru.html

Jiménez-Naranjo, H. V., Coca-Pérez, J. L., Gutiérrez-Fernández, M., & Sánchez-Escobedo, M. C. (2015). Cost–benefit analysis of sport events: The case of World Paddle Tour. *Investigaciones Europeas de Dirección Y Economía de La Empresa*, 1–8. http://doi.org/10.1016/j.iedee.2015.04.001

Kasimati, E. (2003). Economic aspects and the Summer Olympics: A review of related research. *International Journal of Tourism Research*, *5*(6), 433–444. http://doi.org/10.1002/jtr.449

Késenne, S. (2005). Do We Need an Economic Impact Study or a Cost-Benefit Analysis of a Sports Event? *European Sport Management Quarterly*, *5*(2), 133–142. http://doi.org/10.1080/16184740500188789

Koziolová, M., & Vežranovský, V. (2015). Hokejové mistrovství v Ostravě vyprodalo hotely i penziony. Retrieved April 29, 2016, from http://moravskoslezsky.denik.cz/zpravy_region/hokejove-mistrovstvi-v-ostrave-vyprodalo-hotely-i-penziony-20150126.html

KPMG. (2015). *Pozitivní efekty Mistrovství světa IIHF v ledním hokeji 2015*.

Krasko, I. (2015). Hokej má miliónovú sledovanosť (kompletné výsledky MS v hokeji). Retrieved March 26, 2016, from http://strategie.hnonline.sk/spravy/media/hokej-ma-milionovu-sledovanost-kompletne-vysledky-ms-v-hokeji

Lee, C. K., & Taylor, T. (2005). Critical reflections on the economic impact assessment of a mega-event: The case of 2002 FIFA World Cup. *Tourism Management*, *26*(4), 595–603. http://doi.org/10.1016/j.tourman.2004.03.002

Lesková, I. (2015b). Vady hokejové Ostravy. Nepořádek na Stodolní i centrum bez fanzóny. Retrieved April 28, 2016, from http://ostrava.idnes.cz/vady-hokejove-ostravy-neporadek-na-stodolni-i-centrum-bez-fanzony-105-/ostrava-zpravy.aspx?c=A150505_2160474_ostrava-zpravy_jog

Lesková, I. (2015a). Ostrava přišla o ČEZ Arénu. Z názvu zmizelo jméno letitého sponzora. Retrieved May 3, 2015, from http://ostrava.idnes.cz/ostrava-prisla-o-cez-arenu-z-nazvu-zmizelo-jmeno-letiteho-sponzora-1po-/ostrava-zpravy.aspx?c=A150708_154552_ostrava-zpravy_sme

Li, S. (2013). Large Sporting events and economic growth : evidence From economic consequences of event infrastructure and venues, *17*.

Li, S., Blake, A., & Thomas, R. (2013). Modelling the economic impact of sports events: The case of the Beijing Olympics. *Economic Modelling*, *30*(1), 235–244. http://doi.org/10.1016/j.econmod.2012.09.013

Macalíková, J. (2015). Policie ČR je připravena na Mistrovství světa IIHF v ledním hokeji 2015. Retrieved April 19, 2016, from http://www.policejninoviny.cz/policie-cr-je-pripravena-na-mistrovstvi-sveta-iihf-v-lednim-hokeji-2015.html

Maennig, W., & Du Plessis, S. (2007). World Cup 2010: South African economic perspectives and policy challenges informed by the experience of Germany 2006. *Contemporary Economic Policy*, *25*(4), 578–590. http://doi.org/10.1111/j.1465-7287.2007.00074.x

Matheson, V. a. (2006). *Mega-Events : The effect of the world ' s biggest sporting events on local , regional , and national economies* (Vol. 01610).

Matlack, C. (2012). Poland, Ukraine Suffer as Euro Soccer Hosts. Retrieved April 26, 2016, from http://www.bloomberg.com/news/articles/2016-04-26/1mdb-says-it-s-in-default-after-missing-interest-payment

Mikolášová, M. (2015). MS - Skupina A - MS 2015: Predstavujeme štadióny MS 2015 v Česku - 02 Aréna. Retrieved April 17, 2016, from http://www.hokejonline.com/clanky/ms-2015-predstavujeme-stadiony-ms-2015-o2-arena/

MŠMT. (2016). METODICKÉ POKYNY K PROGRAMŮM „STÁTNÍ PODPORY SPORTU“. Retrieved May 5, 2016, from http://www.msmt.cz/sport-1/metodicke-pokyny-k-programum-statni-podpory-sportu

Mules, T., & Dwyer, L. (2005). Public Sector Support for Sport Tourism Events: The Role of Cost-benefit Analysis. *Sport in Society*, *8*(2), 338–355. http://doi.org/10.1080/17430430500087864

Müller, M. (2015). What makes an event a mega-event? Definitions and sizes. *Leisure Studies*, *4367*(October), 1–16. http://doi.org/10.1080/02614367.2014.993333

Musil, J. (2015). Policie se připravuje na hokejové MS. Opatření vyjdou na 65 milionů. Retrieved April 19, 2016, from http://hokej.idnes.cz/hokejove-ms-v-praze-a-ostrave-policie-bezpecnostni-opatreni-plu-/ms-hokej-2015.aspx?c=A150415_175726_ms-hokej-2015_bem

Oldenboom, E. R., Gratton, C., & Solberg, H. A. (2002). The economic impact of hosting UEFA EURO 2008 for the Nordic countries.

Ostrava. (2012). Ostrava bude v roce 2015 hostit mistrovství světa v ledním hokeji!!! Retrieved April 18, 2016, from http://www.ostrava.cz/cs/o-meste/tiskove-zpravy/ostrava-bude-v-roce-2015-hostit-mistrovstvi-sveta-v-lednim-hokeji

Pålsson, F. (2013). WC 2013: Gold medals but no gold at the bank. Retrieved March 7, 2016, from http://www.eurohockey.com/article/2693-wc-2013-gold-medals-but-no-gold-at-the-bank.html

Pellegrino, G., & Hancock, H. (2010). A lasting legacy How major sporting events can drive positive change for host communities and economies. Retrieved from http://www2.deloitte.com/content/dam/Deloitte/global/Documents/Public-Sector/dttl-ps-alastinglegacy-08082013.pdf

Perdoch, J. (2015). Během hokejového šampionátu klesla v Ostravě kriminalita. Retrieved April 24, 2016, from http://moravskoslezsky.denik.cz/zlociny-a-soudy/behem-hokejoveho-sampionatu-klesla-kriminalita-v-ostrave-20150520.html

Prague City Tourism. (2016). Praha loni pokořila rekord v počtu turistů i v jejich přenocování. Retrieved May 6, 2016, from http://www.praguecitytourism.cz/cs/media/tisk/praha-loni-pokorila-rekord-v-poctu-turistu-i-v-jejich-prenocovani-12230

Prague City Tourism. (2015). Počet turistů v Praze poprvé překonal hranici 6 milionů. Retrieved March 29, 2016, from http://www.praguecitytourism.cz/cs/media/tisk/pocet-turistu-v-praze-poprve-prekonal-hranici-6-milionu-11177

Roche, M. (2000). Mega-Events and Modernity, Perspectives and themes. *Olympics and Expos in the Growth of Global Culture*, (2000), 1–30.

STEM/MARK. (2015). *Příjezdový cestovní ruch 2. čtvrtletí 2015*.

Sušovský, A. (2014). O2 arena projde rekonstrukcí za 100 milionů. I kvůli MS. Retrieved April 17, 2016, from http://sport.aktualne.cz/o2-arena-projde-rekonstrukci-za-100-milionu-i-kvuli-ms/r~977a8d3ce6fd11e3a9c50025900fea04/

Šebová, M., & Džupka, P. (2013). Meranie ekonomického a finančného vplyvu majstrovstiev sveta v hokeji 2011 na mesto Košice. *E a M: Ekonomie a Management*.

Šebová, M., Džupka, P., & Rehák, Š. (2011). Štúdia k majstrovstvám sveta v hokeji 2011 v Košiciach.

Šenk, M. (2015). Úspěšný domácí šampionát přinesl českému hokeji půl miliardy korun. A zájem Číňanů. Retrieved April 12, 2016, from http://byznys.ihned.cz/c1-64932760-uspesny-domaci-sampionat-prinesl-ceskemu-hokeji-pul-miliardy-korun-a-zajem-cinanu

Štalmach, D. (2014). Šampionát v hokeji vyjde Ostravu na 30 milionů. Zatím. Retrieved April 17, 2016, from http://ostrava.idnes.cz/sampionat-v-hokeji-vyjde-ostravu-na-30-milionu-zatim-fhi-/ostrava-zpravy.aspx?c=A140203_2029828_ostrava-zpravy_jog

Štětínská, S. (2015). Mistrovství světa IIHF v ledním hokeji 2015. Retrieved April 23, 2016, from http://www.policie.cz/clanek/mistrovstvi-sveta-iihf-v-lednim-hokeji-2015.aspx

Taks, M., Kesenne, S., Chalip, L., Green, B. C., & Martyn, S. (2011). Economic impact analysis versus cost benefit analysis: The case of a medium-sized sport event. In *International Journal of Sport Finance* (Vol. 6, pp. 187–203).

Tuniz, D. (2014). Record profit for World Championship in Belarus. Retrieved April 30, 2016, from http://www.eurohockey.com/article/3489-record-profit-for-world-championship-in-belarus.html

Uher, A., & Kohutová, K. (2015). Kdo může vysílat MS v hokeji? Retrieved May 3, 2016, from http://moravskoslezsky.denik.cz/hokej_region/kdo-muze-vysilat-ms-v-hokeji-20150408.html

van Puffelen, F. (1996). Abuses of conventional impact studies in the arts. *The European Journal of Cultural Policy*, *2*(2), 241–254. http://doi.org/10.1080/10286639609358017

Varian, H. R. (2010). *Intermediate Microeconomics: A modern approach 8th Edition* (8th ed.). New York: W. W. Norton & Company. http://doi.org/10.1007/s13398-014-0173-7.2

Vogelová, M. (2016). *Attitude of Residents towards Tourism Development*. Prague.

Walo, M., Bull, A., & Breen, H. (1996). Achieving Economic Benefits at Local Events: A Case Study of a Local Sports Event. *Festival Management and Event Tourism*, *4*(3), 95–106. http://doi.org/10.3727/106527096792195353

Whitehead, J. C., Johnson, B. K., Mason, D. S., & Walker, G. J. (2013). Consumption benefits of national hockey league game trips estimated from revealed and stated preference demand data. *Economic Inquiry*, *51*(1), 1012–1025. http://doi.org/10.1111/j.1465-7295.2011.00397.x

Yuan, L. I. U., & Chong, C. (2007). The effects of festivals and special events on city image design, *1*(2), 255–259. http://doi.org/10.1007/s11709-007-0032-0

List of appendices

Appendices

Appendix 1: Review of positive and negative effects of large sport events

	Positive impact	Negative impact
Physical infrastructure	newly constructed or reconstructed special sport facilities	high construction or reconstruction costs
		insufficient further use by local people
Environmental impacts[13]	urban revival	pollution of cities
Economic impacts	increase of employment	high organizational costs
	improved public welfare	crowded-out investments
	more opportunities for local businesses	opportunity costs
	increased investment	increase of prices and rents
	corporate relocation	
	increase in per capita income	
Tourism impacts	increase of tourism	displacement of other tourist due to an event
	image enhancement	loss of permanent visitors
	enhanced international reputation	city prestige may be harmed
Social and cultural impacts	cohesion of local people	property or personal damage connected with drug or alcohol usage
	volunteering and interest in public goods	disturbance from overenthusiastic fans
	support of positive attitude toward sport	disruption to lifestyle of local people
	nation-state consciousness and civic pride	vandalism
	possible intercultural contacts	traffic congestion
Political impacts	increase of international regional cooperation	distraction from real regional or national problems
	propagation of political values held by local population	economic exploitation in order to satisfy goals of political elite

Sources: Kasimati (2003); Walo, Bull & Breen (1996); KPMG (2015); Ritchie (1984); Késenne (2005); Matheson (2006)

[13] linked with physical infrastructure

Appendix 2: Cost-benefit analysis versus Economic impact analysis

	CBA	EIA
Goal	determine costs and benefits from an event for the whole community	justify the public expenditures in front of local communities
Based on	welfare economics principles	multiplier analysis
Uses	consumer surplus opportunity cost	multipliers of sales, income and employment
Cons	includes intangible goods that are difficult to evaluate even though right evaluating methods are used	misapplication of multipliers
	covers more items in costs as well as benefits and thus it is more demanding to perform	failure to define the area of interest accurately
	data requirements for CBA are extensive	it is not well-defined what "economic impact" of a sport events means
		does not distinguish costs and benefits
Pros	provide more precise results than EIA	easier to conduct because of smaller requirement of items included
	useful for citizens and government because of more objective results	useful for hosts of the event because results are often more favorable than in reality

Sources: Crompton (1995); Taks et al. (2011); de Nooij (2014); Késenne (2005)

Appendix 3: Division of teams into arenas

Teams in a preliminary round (7 matches each)

	Group A O2 Arena, Prague	Group B ČEZ Arena, Ostrava
1.	Canada	USA
2.	Sweden	Finland
3.	Czech Republic	Russia
4.	Switzerland	Belarus
5.	Germany	Slovakia
6.	France	Norway
7.	Latvia	Denmark
8.	Austria	Slovenia

Source: IIHF

Teams in the following rounds

Quarterfinals		Semifinals, Finals
O2 Arena, Prague	ČEZ Arena, Ostrava	O2 Arena, Prague
Canada	USA	Canada
Belarus	Switzerland	Czech Republic
Finland	Sweden	USA
Czech Republic	Russia	Russia

Source: IIHF

Appendix 4: Definition of Ice Hockey World Championship

According to four characteristics serving as a size indicator: visitor attractiveness, mediated reach, cost and transformation, Müller (2015) developed a scoring matrix (Table 1) where major-, mega-, and giga-events events are differentiated.

Table 1. Scoring matrix

	3 points	2 points	1 point
Size	XXL	XL	L
Visitor attractiveness (*Number of tickets sold*)	>3 million	>1 million	>.5 million
Mediated reach (*Value of broadcast rights*)	>USD 2 billion	>USD 1 billion	>USD .1 billion
Cost (*Total cost*)	>USD 10 billion	>USD 5 billion	>USD 1 billion
Transformation (*Capital investment*)	>USD 10 billion	>USD 5 billion	>USD 1 billion
Giga-event	11-12 points in total		
Mega-event	7-10 points in total		
Major-event	1-6 points in total		

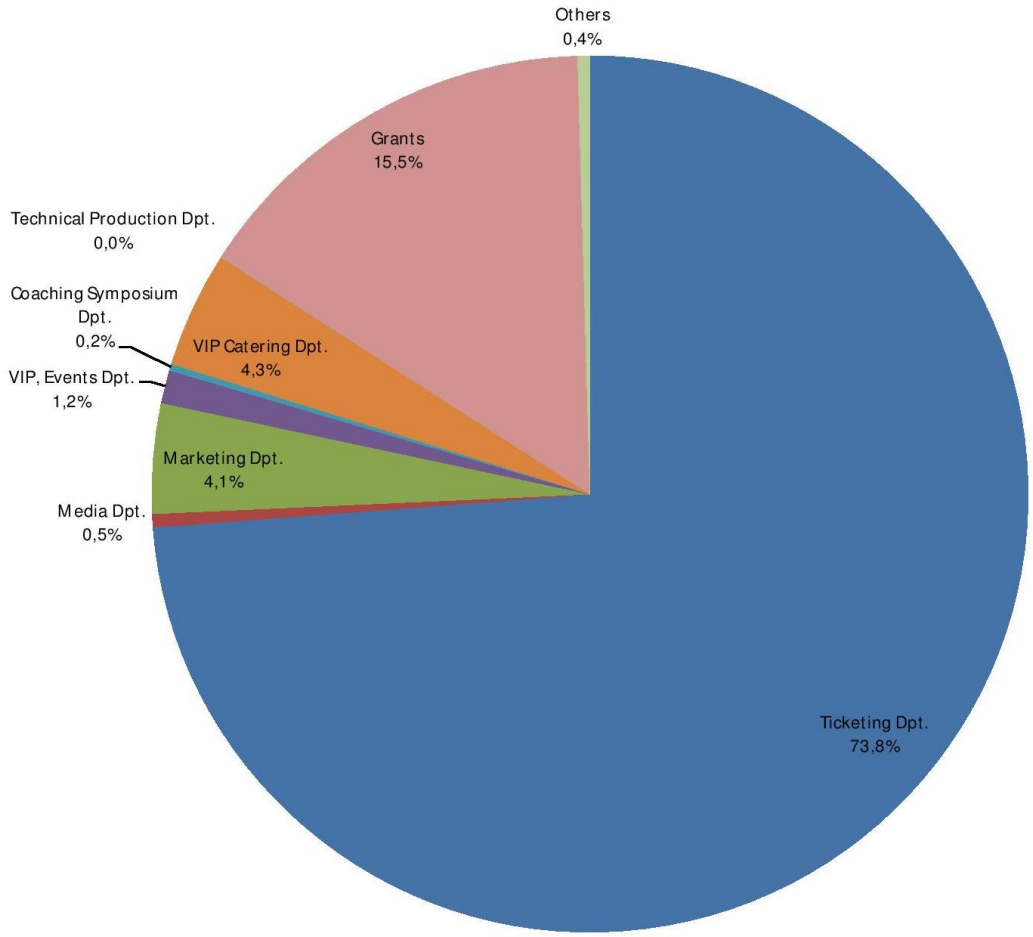
Source: Müller (2015)

Now we want to assign WM 2015 to one of these events, so we will make a small analysis from the data gain from CIHA and Czech Statistical Office.

1. Visitor attractiveness – According to CIHA 741 690 people visited the event, therefore in this section 1 point is received.
2. Mediated reach – Broadcast rights are owned by Infront Sports and Media and because of non-disclosure agreements with broadcast partner, the value is not public.
3. Total cost – 630 million CZK (26.26 million USD) reported by CIHA – 0 points
4. Transformation – since both stadiums were already built, capital expenditures were not as large as they would in the case when new stadiums are needed to be built. Capital costs are included in total costs and therefore the amount is smaller than 630 million CZK, meaning that no point is gained in this section of the scoring matrix.

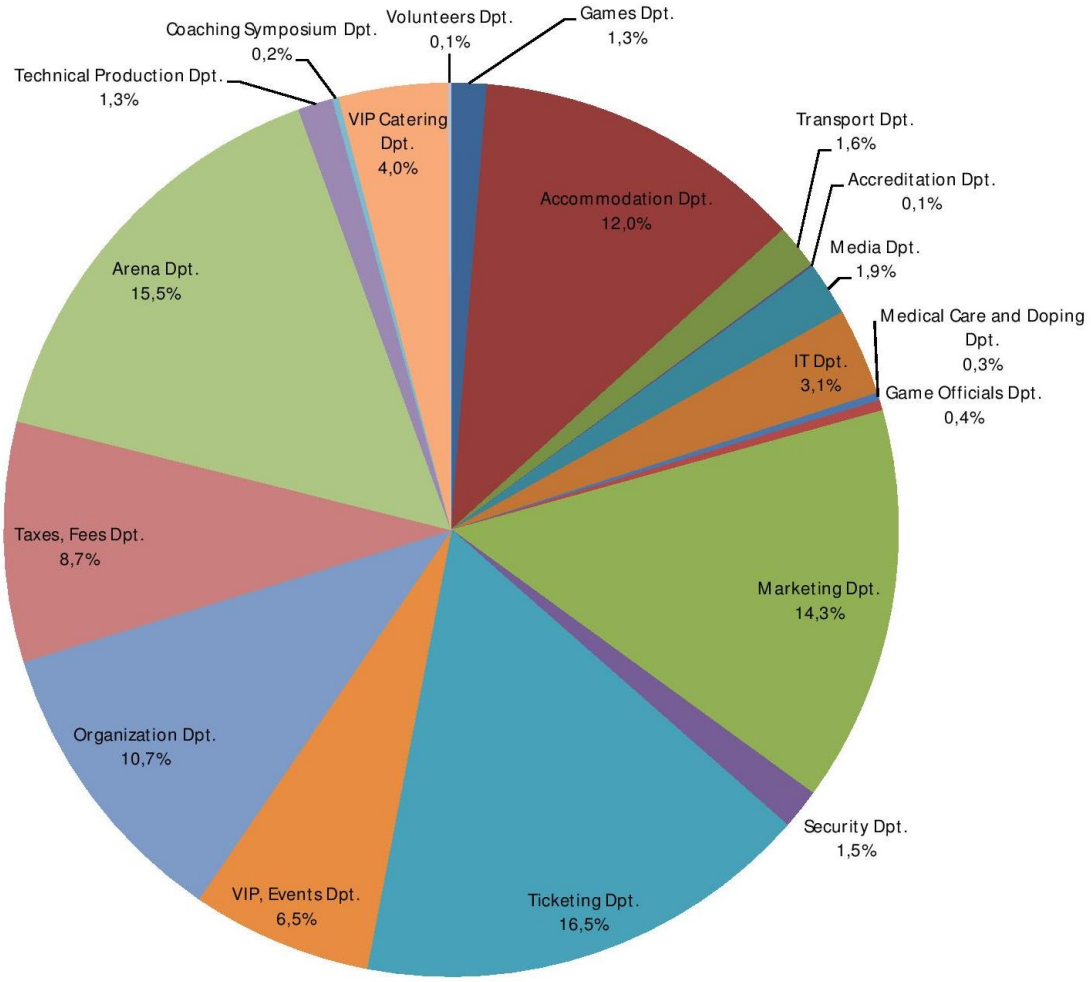
As a result, 1 or 2 points are gained in total and thus we can conclude that WM 2015 is a major-event and not mega- or giga-event.

Appendix 5A: Preliminary division of revenues of CIHA



Source: CIHA

Appendix 5B: Preliminary division of costs of CIHA



Source: CIHA

Appendix 6A: Price list of matches in O2 Arena, Prague

			Daily Packages		Single tickets	
			Cat. 1	Cat. 2	Cat. 1	Cat.2
Preliminary round						
1 May	16:15	CAN-LAT	2 480	1 880	790	590
	20:15	CZE-SWE			1 690	1 290
2 May	12:15	SUI-AUT			490	390
	16:15	FRA-GER	2 970	2 270	790	590
	20:15	LAT-CZE			1 690	1 290
3 May	12:15	AUT-SWE	-	-	270	190
	16:15	CAN-GER	2 080	1 580	1 290	990
	20:15	FRA-SUI			790	590
4 May	16:15	LAT-SWE	2 480	1 880	790	590
	20:15	CAN-CZE			1 690	1 290
5 May	16:15	SUI-GER	2 080	1 580	1 290	990
	20:15	AUT-FRA			790	590
6 May	16:15	SUI-LAT	2 580	1 980	1 290	990
	20:15	SWE-CAN			1 290	990
7 May	16:15	CZW-FRA	2 980	2 280	1 690	1 290
	20:15	SWE-GER			1 290	990
8 May	16:15	CZE-AUT	2 980	2 280	1 690	1 290
	20:15	GER-LAT			1 290	990
9 May	12:15	FRA-CAN	-	-	270	190
	16:15	AUT-LAT	2 080	1 580	790	590
	20:15	SWE-SUI			1 290	990
10 May	16:15	GER-CZE	2 980	2 280	1 690	1 290
	20:15	SUI-CAN			1 290	990
11 May	16:15	GER-AUT	1 580	1 180	790	590
	20:15	SWE-FRA			790	590
12 May	12:15	CAN-AUT	-	-	790	590
	16:15	LAT-FRA	2 480	1 880	790	590
	20:15	CZE-SUI			1 690	1 290
Quarter-Finals						
14 May	16:15	CAN-BLR	5 980	4 780	2 990	2 390
	20:15	FIN-CZE			2 990	2 390
Semi-Finals						
16 May	15:15	CAN-CZE	11 580	9 380	5 790	4 690
	19:15	USA-RUS			5 790	4 690
Final/Bronze Medal Game						
17 May	16:15	USA-CZE	14 380	11 480	5 390	4 290
	20:45	CAN-RUS			8 990	7 190

Source: IIHF (2015)

Note: All prices are in CZK; exchange rate is from 18th August 2014: EUR/CZK 1:27.941; time zone is GTM +2

Appendix 6B: Price list of matches in ČEZ Arena, Ostrava

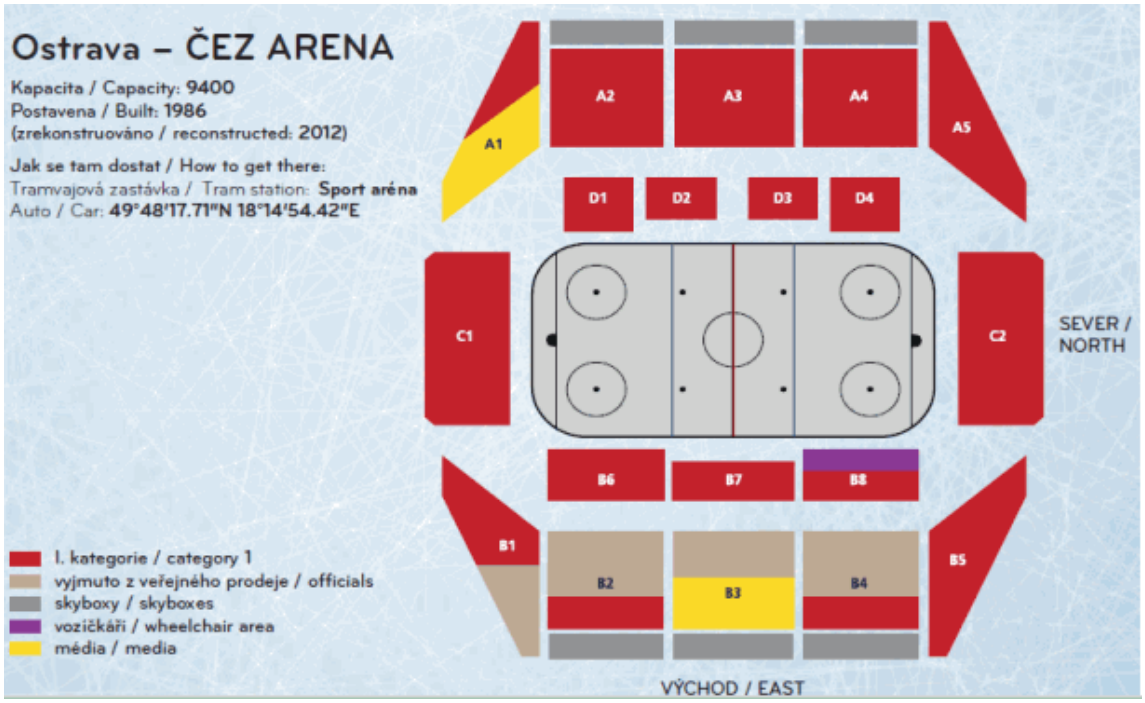
			Daily Packages		Single tickets	
			Cat. 1	Cat. 2	Cat. 1	Cat. 2
Preliminary round						
1 May	16:15	USA-FIN	2 580		1 290	
	20:15	RUS-NOR			1 290	
2 May	12:15	SVK-DEN			1 690	
	16:15	BLR-SLO	2 970		490	
	20:15	NOR-USA			790	
3 May	12:15	RUS-SLO			1 290	
	16:15	BLR-SVK	3 470		1 690	
	20:15	DEN-FIN			490	
4 May	16:15	RUS-USA	2 580		1 290	
	20:15	NOR-FIN			1 290	
5 May	16:15	DEN-BLR	2 480		790	
	20:15	SVK-SLO			1 690	
6 May	16:15	RUS-DEN	2 980		1 290	
	20:15	SVK-NOR			1 690	
7 May	16:15	USA-BLR	1 580		790	
	20:15	FIN-SLO			790	
8 May	16:15	SLO-NOR	-		270	
	20:15	USA-DEN			270	
9 May	12:15	BLR-RUS			1 290	
	16:15	FIN-SVK	3 470		1 690	
	20:15	DEN-NOR			490	
10 May	16:15	SLO-USA	2 980		1 290	
	20:15	SVK-RUS			1 690	
11 May	16:15	FIN-BLR	980		490	
	20:15	SLO-DEN			490	
12 May	12:15	NOR-BLR	-		490	
	16:15	USA-SVK	2 980		1 690	
	20:15	FIN-RUS			1 290	
Quarter-Finals						
14 May	15:15	USA-SUI	5 980		2 990	
	19:15	SWE-RUS			2 990	

Source: IIHF (2015)

Notes: All prices are in CZK; exchange rate is from 18th August 2014: EUR/CZK 1:27.941; time zone is GTM +2 and there were no second category prices for matches in ČEZ Arena

Appendix 7: Orientation plan of seating in the arenas

Source: IIHF (2015)



Source: IIHF (2015)