



It is not easy to collect financial data for a complex event such as the Olympic Games. During our research it very soon became clear that often the financial data of capital investments disappeared or were hidden or in ever-changing mixed categories. Furthermore, we learnt during our research that the reliable collection of all data regarding the Olympic Games is not possible for the following reasons:

1. Capital investments are not made by one authority and are not all displayed in a regular reporting system.
2. Capital investments are often a Public Private Partnership (PPP) and the private part is not published.
3. Costs and revenues are accounted differently.
4. The Olympic Games and Olympic Winter Games are different with regard to capital investments.
5. Information is not always clear about the particular time for which the amount displayed was projected.

As we explained above, we define a cost overrun COV if the OCOG budget or some non-OCOG budget does not succeed in collecting more revenues than expected ex-ante:

$$COV = R_t - R_{t-n}$$

In Flyvbjerg's (2011) view, a comparison of bid budget to final budget is valid. Like Flyvbjerg et al. (2016), we use the first serious projection (displayed in the candidature files), as that is the promise to the population, and compare it to the last budget, which covers the final revenues, expenditures and capital costs.

However, we follow a different method than Flyvbjerg et al. (2016) because, when we consider only cost overruns by looking at costs from bid book files and compare them to the final costs (wherever they can be found), we will not picture the reality for the following reasons:

1. OCOG budget: If we compare only OCOG expenditures with final OCOG expenditures we forget to consider the final OCOG revenues, which are also in fact often higher than final expenditures and result in a balanced or even surplus budget. A cost calculation should be connected to a revenue calculation.
2. Non-OCOG budget: If we take a very first bid concept (master plan) we tap into the politically desired cost underestimation, which was tactically relevant to position the city better in the bid race. Then we have to decide if a study like this would measure the actual cost overrun of the project or the cost overruns that arise due to bidding tactics.
3. Non-OCOG budget: If we take the official bid concept (from the candidature file), we have an acceptable starting point, as that is the budget promised to the public. However, we still have the concern (see point 2). The other problem is to find reliable bid data for all venues and the final budget that is really based on capital costs of the Olympic project. Our concern is that many non-Olympic infrastructural developments become connected to the Games and appear in some statements about final costs (often in media articles). If we take cost statements that have many non-Olympic related capital investments included, we are no longer talking about cost overruns. If we do that, we try to compare a totally different scope of projects. The problem here is that Olympic Games are not one infrastructure project but many. The reality is that there is often no final cost displayed for all the venues and infrastructural changes in official documents.

Overall the research design for this study will adopt the following delineation:

1. We evaluate the OCOG costs and revenues over a period of eight years (from the candidature file to the final cost statement).
2. We acknowledge the recurrent changes in the Olympic Games project and its so-called gigantism. Therefore, the research is limited to the past five Olympic Games (Sydney 2000 to Rio 2016) and past five Olympic Winter Games (Salt Lake City 2002 to PyeongChang 2018).

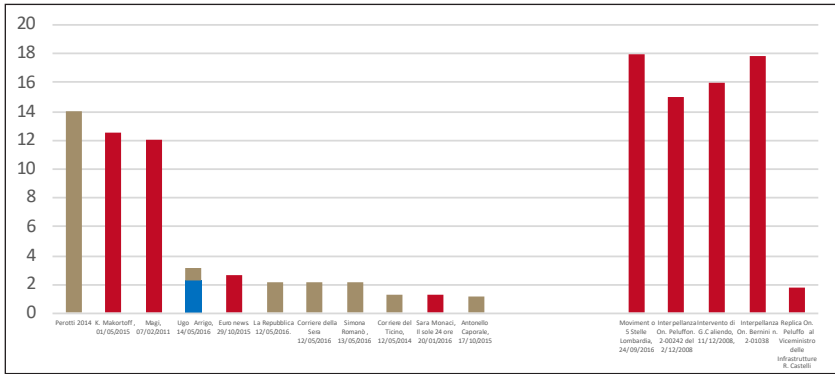
3. We divide the cost/revenue overruns into three budgets, the OCOG costs, the OCOG revenues and a set of directly Olympic-related non-OCOG costs.
4. The non-OCOG costs are selected to create a “basket” of different infrastructural projects, such as an Olympic Stadium, a multipurpose hall, an Olympic Village and the International Broadcasting Centre (IBC) and Main Press Centre (MPC). This basket provides a good mixture of key infrastructure projects needed for all Games editions, representative of the type (competition venue/housing), the size and the complexity of most of the venue-related infrastructure projects.

It became clear that the OCOG budget can consist of up to 300 accounting positions and the revenues of 100. Due to the different display of costs from Games to Games, we decided to categorise them. These categories are then comparable from Games to Games and provide information about the cost/revenue overruns.

3.1 Availability of Financial Data from the Olympic Games

The gathering of reliable financial data about the costs and revenues of the Olympic Games is extremely difficult. Data published in media reports are often estimates or relying on wrong information or wrong data. The wrong information are given from those that want to spread the message that the event is cheap respectively expensive.

The following figure illustrates the public display of costs in billions of euros regarding the world exposition (EXPO) in Milan in 2015. The announced costs vary from EUR 1 billion to 18 billion. Furthermore, the figures show that different costs were taken into account from one estimate to the other. Similar findings were found for the Olympic Games.



Legend: brown = total costs / red = investments / blue = operation costs

Fig. 7 Costs EXPO 2015 in billions of euros announced by different media

Source: Massiani (2018)

Data collection for this study was organised manifold to use the highest possible variety of information sources from which we gathered the figures. This is important for several reasons:

1. To make sure we obtain at least some data.
2. If available, to crosscheck the data and avoid using wrong information that may have been copied from a particular political party or any kind of vested interests.
3. To avoid being dependent on one single source of information.

The next figure visualises data collection implemented for this study. It shows the chronology followed to access the data.

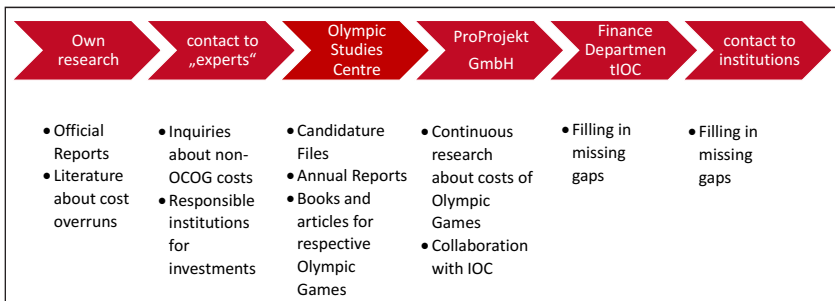


Fig. 8 Chronology of data collection

First we started with literature research and used our own private Olympic data collection as we do Olympic research for more than 25 years. Then we contacted several experts (Olympic scholars). The following table shows all experts who were contacted as well as their function and the data they could provide.

Table 5 Experts contacted to gather data

	Name	Function	Useful Data
Sydney 2000	Rizakos, Angie	Assistant Manager, SOCOG	Non relevant data
	Taylor, Tracy	Professor, University of Technology Sydney	Non relevant data
Salt Lake 2002	Bullock, Fraser	COO Salt Lake Organising Committee 2002	Useful data
	Fay, Ted	Professor, SUNY Cortland	Useful data
Athens 2004	Cartalis, Kostas	Professor, University of Athens / formerly Minister of Culture in charge of Athens 2004	Useful data
	Gargalianos, Dimitrios	Professor, Democritus University of Thrace	Non relevant data
	Georgiadis, Kostas	Professor, University of Peloponnese	Non relevant data
	Panagiotopoulou, Roy	Professor, University of Athens	Useful data
	Bondonio, Piervincenzo	Past-president, OMERO, Interdepartmental Research Centre on Urban and Events Studies, University of Turin	Useful data
Turin 2006	Bottero, Marta	Associate Professor in Project Appraisal and Planning Evaluation, Politecnico di Torino	Useful data
	Castellani, Valentino	Former Mayor of Turin (in 2006) Professor at the University of Turin	Non relevant data
	Guala, Chito	OMERO Group – sociology professor	Non relevant data
	Solberg, Arne	Professor, Trondheim Business School	Non relevant data but several journal papers
Beijing 2008	Hu, Xiaoqian Richard	Professor, Xinhua University Beijing	Non relevant data
	Lin, Xinpeng	Professor, Beijing Sport University	Non relevant data

	Name	Function	Useful Data
Vancouver 2010	Parent, Milena	Professor, University of Ottawa	Useful data
	Girginov, Vassil	President European Association for Sport Management	Non relevant data
London 2012	Rizakos, Angie	Olympic Delivery Authority (ODA)	Non relevant data
	Aivazyan, Sima	Head or PR Department, Olympstroy	Non relevant data
Sochi 2014	Belousov, Lev	Rector of Russian International Olympic University (RIOU)	Non relevant data
	Bocharnikova, Evgeniia	Media Relations, Sochi OCOG	Non relevant data
	Dobis, Michael	Head of Unit Science and Research, German Embassy Moscow	Non relevant data
	Macharadze, Iya	Head of the whole Master's, RIOU	Non relevant data
	Peshin, Nikolay	Vice-Rector for research at RIOU Sochi OCOG	Non relevant data
	Braga, Tania	Head of Sustainability, Accessibility and Legacy, Rio OCOG	Useful data
Rio 2016	Payne, Michael	Consultant, Rio Candidate City	Non relevant data
PyeongChang 2018	Hong, Seok-Pyo	Professor, Kangwon National University, Chuncheon, OSC	Useful data

Experts from former host cities were contacted to gather data that may be hidden in local archives.

The next step was to visit the IOC Olympic Studies Centre (OSC) in Lausanne and the National Olympic Academy in Frankfurt in order to access a huge collection of sources about the Olympic Games. The IOC OSC and Finance Department supported this research intensively and provided us with access to public and non-public archives for OCOG and non-OCOG budgets.

The ProProjekt GmbH agency, which was managing several candidate cities, including the two German bids (Munich 2018 and Hamburg 2024), supported our research. They provided us with their database on the OCOG and non-OCOG

budgets of several previous Games. These data were extremely useful and were in particular used to crosscheck the data we had collected before.

The final step was to contact the ministries and official departments in host cities, requesting data about the non-OCOG budgets. However, most of them could not or did not want to provide data. It proved to be difficult receiving useful data on non-OCOG budgets.

3.2 Preparation of Data

The preparation of data started with a differentiation of data required. We wanted to avoid mixing categories or considering data that are not related to the Olympic Games. In this study we distinguish between:

1. OCOG revenues = revenues the OCOG receives, including the IOC contribution.
2. OCOG costs = all operational expenditures of the OCOG, including royalties paid to the IOC.
3. Non-OCOG costs = investments in a selection of key infrastructure projects needed for hosting the Games, as described in the “Methodology” section.

Available data about Olympic Games costs and revenues in the sources are neither homogeneous by currency nor by date. For example, in older candidature files (until the 2012 candidature process) the budgets are in USD at the time of writing the candidature file. This makes at least eight years before the Olympic Games were staged and still many years before the investments were made. Until the 2012 candidature process, these figures did not take inflation into account and if they did, they must have taken the right inflation rate. Estimating the rate of inflation can also be seen as a source of error.

The bid process has changed significantly over time. Since 2006⁷, the IOC has requested in candidature files that the budget must be provided in both USD and the local currency. Thus Rio 2016 were the first Games to stick to this new procedure and consequently provide transparent data about the exchange rates

7 The Candidature File for Sochi 2014 mentioned only that the existing tables with local currency and inflation adjusted figures were in the annexes of the document. These were not accessible to us. It was only since the Candidature Process for the Olympic Games 2016 that the tables in the candidature file had to include national currency and inflation adjusted figures.

used. Additionally, the IOC expects the budget to be displayed in two tables, one with current values and one with inflation-adjusted values. In the present study, for the eight Olympic Games investigated before Rio 2016, the values had to be adjusted for inflation. However, even the data provided for Rio 2016 and PyeongChang 2018 needed to be re-adjusted because the budgets projected were based on inflation rates estimated at the time of bidding; at this time, the candidature committees did not know the real inflation rates and construction price index of the future. Tab. 6 shows the revenue of the Rio 2016 and PyeongChang 2018 OCOGs and compares the real inflation with the estimated inflation by the bid committee. Thus, Rio 2016 underestimated the inflation rate, which led to 27% lower costs than were finally incurred, while PyeongChang 2018 overestimated the inflation rate and had at the end 12% less costs. This shows the power of inflation on perceived cost overruns. However, it will remain tricky if not impossible to estimate the true inflation rate, but bid committees should put more effort into using realistic rates.

Table 6 Comparison of estimated and real inflation of the total OCOG revenues

	Estimated Inflation	Real Inflation	Difference	%
Rio 2016	7,557,992,000 BRL	10,380,766,000 BRL	2,822,774,000 BRL	27%
Pyeong-Chang 2018	2,195,923,000,000 KRW	1,968,582,765,000 KRW	-227,340,235,000 KRW	-12%

Reports that contain data for post-bidding years though these data pertain to earlier years than when the final costs and revenues are known and usually publish figures in local currency. Revenues and costs in the bid documents before Rio 2016 were usually in USD. To minimise conversion errors, we decided to convert the OCOG budget from the candidature file into local currency by using the current exchange rate at that time. After converting all available data into one currency, the host country's GDP deflator for the respective years was used to adjust revenues and costs to one base year. Thus a comparison of the data from the candidature file with data published during the preparation period and data available on the final revenues and costs has been made possible.

For the OCOG budget, we opted to take an overall inflation rate (the GDP deflator), while for investments in infrastructure, we opted for construction price indices. In countries where we could not find a construction price index, we used the GDP deflator of the respective country. Missing inflation inevitably translates into an overestimation of perceived cost overruns which do not exist in reality. For example, investment in a stadium with a relatively normal construction price index of 4% p.a. over six years (from bidding to construction two years prior to the Games) results in a 25% cost increase simply due to inflation. Therefore, any study that ignored inflation rates would wrongly exhibit higher costs than the actual costs. On the other hand, the IOC contribution (revenue) that is paid only in instalments over time, with a large portion in the Games year, needs to be deflated. If revenues were not discounted at the bidding time, they would be announced with a too-optimistic value.

In this study we will only show the percentage changes compared to the initial budget, because the intention is not to show which Olympic Games have been the most costly or the cheapest. Nonetheless, the percentages are based on real cost figures. Using the percentage changes enables us to show and interpret a “five-Games” average of costs and revenue overruns in total and by category. This provides some insights into the areas where costs and revenue overruns emerge the most often.

There are some cases where, at the time of bidding, there was no information on certain categories of OCOG and non-OCOG revenues and expenditure. When the category was first mentioned, we took that value as the starting value. When it was in the final budget only, a cost overrun of 0% occurred. However, even though that happened often, we then took the real value of that cost into our cost overrun calculation as that was always done based on real figures. In other words, the final costs of the unlisted category were taken into the total final costs, but they were based on zero in the bid stage (as it was not mentioned there), and therefore huge nominal cost overruns occurred. Thus, even if some categories are displayed only with 0% cost overruns in the final budget, the overall percentage figure reflects the cost overrun that occurred at the end.

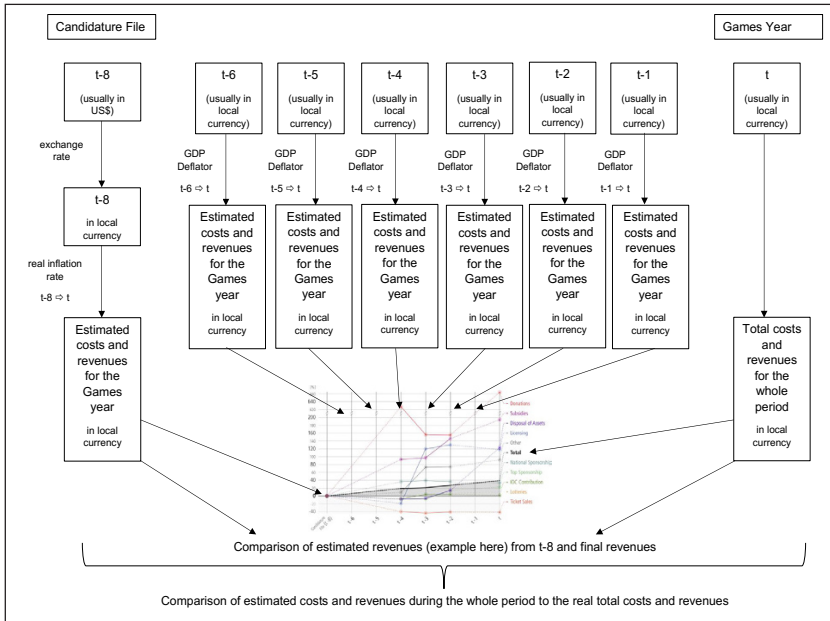


Fig. 9 Methodology of data conversion

It is difficult to obtain information about non-OCOG costs. Non-OCOG costs include all capital investments that need to be delivered for the Olympic Games. It is highly debatable which of the capital investments are really needed and which are added simply because the Olympic Games open up an opportunity and provide good arguments for incorporating into the Games event some investment projects that were planned regardless of the Games.

The Olympic Games are a complex event with more than 300 projects to be coordinated, involving several administrative levels of a country. The resources to finance the new or to refurbish the old infrastructure come from many different authorities and often even from different communities, private investors or state authorities. This complex situation makes it impossible to collect a comprehensive set of infrastructure costs. Often even a single project (e.g. Olympic Stadium) attracts financing from different entities (e.g. the state pays for ground work, accessibility; the city for the construction, a private investor for the VIP areas). The non-OCOG budget here includes all capital investments that are needed for staging the Olympic Games, but does not encompass general infrastructure improvements such

as road, metro or railway construction, new harbours and airports or a general re-urbanisation of cities by planting trees, creating beaches, building museums or pedestrian zones and public recreation areas. Given that different stakeholders are in charge of the different venues for the Olympic Games, we decided to compose a subset of exemplary venues (see table below) and look at the cost overruns for their construction. We avoided a selection bias by taking a variety of very different venues and not looking at who was investing.

Our investment sample (hereinafter referred to as “basket”) represents a fair mix of venues that are definitely needed for staging the Olympic Games. The rationale behind this procedure is that a good bundle (basket) of investment projects, such as an Olympic Village or an Olympic Stadium, triggers many possible cost overruns that can be expected for the Olympic Games. In other words, cost overruns of the well selected exemplary investments will show relatively the same cost overruns that a larger or a full sample of all Olympic investments would create. This is the reason why we display all the results only in percentages, as the nominal costs would represent only the basket and not the entire costs of the Games.

The rationale behind the method to work with a representative “basket” was taken from economics and enables us to:

- a. Manage the problem of lacking financial information about all capital investments in the Olympic Games;
- b. Avoid misinterpretation regarding the fact that the Olympic Games are not one single mega project, but a bundle featuring a high number of separate (mega) projects. It is to be expected that several projects get added and change over the eight years of preparations (so-called changes to the master plan). However, even though one can argue we should label these costs as overruns, it only shows a small part of them, namely those based on project changes. Here the “basket” of investments contains the same projects over the entire period and therefore displays the cost overruns in a comparative way;
- c. The basket contents venues that are financed considerably by public money (see next table). Projects financed by public money cause higher cost overruns than private investments (see discussion below and chapter discussion and rationale on the *PRINCIPAL-AGENT* theory). With public finance there is always an incentive to spend without counting (since it is not your own but public money), to bargain additional subsidies and the like.

The venues picked for research into the Olympic Winter Games and Olympic Games are listed below. All of them are large venues and address different industries such as housing, technology, special architecture (iconic buildings), special construction (ski

jump, velodrome), etc. Furthermore, this basket represents the most iconic venues of the Games, which are often the most expensive ones and consequently one can expect the highest cost overruns. Thus, the data of our basket may lead rather to an overestimation of the cost overruns than being too low (conservative approach).

Table 7 Definition of “baskets” for the non-OCOG budget

Basket of venues for the Olympic Winter Games	Basket of venues for the Olympic Games
Olympic Stadium	Olympic Stadium
Ski Jumping Hill	Swimming Pool
Sliding Centre	Multipurpose Hall
Ice Stadium	Velodrome
Olympic Village	Olympic Village
IBC/MPC	IBC/MPC

For the former Olympic cities of Sydney and London, we looked only at the costs of the public sector, as the figures we had were only those from public money. For Sydney 2000, therefore, we considered in the Candidature File only the proportion of public money. In the case of London 2012, the Candidature File stated that all Olympic-related costs would be paid by the government. Due to changes in the master plan, the costs severely increased, and some parts of the venues were covered by private funds. Nevertheless, for our calculation, we took at the beginning (candidature file) and at the end (final report) only the amount of public money. The total nominal costs of London 2012 that were available to us were largely found in newspapers and therefore did not seem reliable to us. In the cases of Athens 2004 and Rio 2016, we took the total costs, although almost all venues were completely financed by public money. The exact percentage of the public costs of the individual venues of the Olympic Games is entered in the following table.

Table 8 Percentage of public costs of the total costs of Olympic Games venues

	Sydney	Athens	Beijing	London	Rio***
Olympic Stadium	19%	100%	N/A	88%	100%
Swimming Pool	N/A	100%	N/A	93%	100%
Multipurpose Hall	72%	100%	N/A	100%	32%**
Velodrome	100%	100%	N/A	94-98%*	100%
Olympic Village	N/A	Non-residential constructions implemented with public funds	N/A	80%	0%
IBC/MPC	N/A	100%	N/A	99%	32%**

* range of percentages due to different sources

** Multipurpose Hall Carioca Arena and IBC/MPC are listed together because the report has summarised it, as it is located at the same area

*** Official final costs are not available as the Games had not been formally wound up at the time of writing.

Sources: ATHOC (n. d.); Camara dos Deputados (2017); Department for Culture, Media and Sport (2012b); Detail (2012); Gibson (2011); Kim (2011); Panagiotopoulou (2014); SOCOG (2001); StadiumDB (n. d.); The Guardian (n. d.)

For Salt Lake City 2002, it seems that some of the venues were totally financed by private sources (see chapter on Salt Lake 2002), whereas the Olympic Village and IBC/MPC were totally financed by public money. The venues of the other host cities of the Olympic Winter Games were almost exclusively financed by public funds. The exception is the Olympic Village for PyeongChang 2018, which was totally financed by private investors. Tab. 9 shows the exact breakdown.

Table 9 Percentage of public costs of the total costs of Olympic Winter Games venues

	Salt Lake City	Turin	Vancouver	Sochi	Pyeong-Chang****
Olympic Stadium	75%	N/A	100%	100%	100%***
Ski Jumping Hill	0%	100%	100%	100%**	100%***
Sliding Centre	0%	100%	100%	100%	100%***
Ice Stadium	33%	100%	100%	100%	100%***
Olympic Village	100%	100%	100%*	100%**	0%
IBC/MPC	100%	100%	N/A	N/A	N/A

* 9% were funded by governmental contributions; 91% were funded by municipal contributions

** funded by State-secured loan

*** 75% were funded by central government and 25% by local government

**** Official final costs are not available as the Games had not been formally wound up at the time of writing.

Sources: Bottero, Sacerdotti & Mauro (2012); Hong (2017); Müller (2014); SLOC (2001); VANOC (2010b)

Due to the presentation of cost overruns by percentage, we took great care that the data collected over the years always addressed public money. Therefore, an extension of works that were covered by private sources does not appear, but in turn the extension of investments when private investors dropped out increased the cost overruns. In this case, the overall costs may not have overrun, but it appears as overrun due to additional public money being invested.

3.3 Quality of Data and Building of Categories

The available data about the costs and revenues of the Olympic Games and in particular investments for Olympic venues is limited. This study has collected more than 220 sources, but still many data are missing and may not be available at all.

We were able to gather at least for all Games cost estimates from the candidature files and, in most cases, final costs as presented in the official reports. The exceptions are Rio 2016 and PyeongChang 2018, whose Organising Committees are not yet closed, and thus there is no final financial data for the Games. Several times we found cost estimates during the preparation period or the final cost statements in other sources than the official report. We collected them all to display the development of cost and revenue overruns. Missing data could be partly completed by internal data that were made available to us by the IOC Finance Department.

Whenever there was any doubt, we checked for the institution that published the data or started more in-depth research ourselves. For example, we found two different final figures for Sochi 2014 non-OCOG costs: one from the Anti-Corruption Foundation and one from Müller (2014, 631f.). Our research observed that Müller's citation of data did not contain the data he cited from (we used a native Russian speaker to seek and check the sources). Furthermore, none of the official documents about the non-OCOG costs of the 2014 Sochi Winter Games were accessible. Another example is the final costs for Athens 2004. We used the data from Panagiotopoulou (2014), as she had data from the government, which we trusted more than the data from Kasimati (2015).

Categories on OCOGs' costs and revenues were often built differently in various sources. They lacked consistency because the accounting systems were different from Games to Games. Sometimes we even found changes at the same Games when comparing the candidature file to the final cost statements and in-between they sometimes also changed. Then in another official source, costs and revenues were again displayed in a different bundle or even missing. Overall, we found many examples of a missing consistency of data display.

3.4 Problems in the Preparation of Data

Data comparability is possible only when all data are adjusted to a same base year. To do this, we used GDP deflators for OCOG budgets and construction price indexes for non-OCOG budgets.

A construction price index is not available for all countries, and additionally the price index of the different countries is based on different baskets. For our study, that is important because the comparison of the different Games is not our main purpose. As long as we use a consistent “basket” for each Olympic Games, we have robust results to compare the cost and revenue overruns. Further, we could not use one index, because the respective index is always based on the construction situation and material prices in each country. Therefore, it is preferable to use an individual index for each nation.

Table 10 Construction Price Index at Olympic host nations

	t-8	t-7	t-6	t-5	t-4	t-3	t-2	t-1	t	
Australia	50.2	49.6	51.2	53.5	55.3	57.3	59.6	61.8	63.9	Non-dwelling construction – New building
United States	474	492	505	525	549	570	595	613	619	Turner Building Cost Index
Greece	85.1	89.5	94.7	98.1	100	102.2	103.8	106.2	108.7	Work categories price indices for new residential buildings construction
Italy	66.8*	68*	70.0	71.5	74.3	76.6	79.8	83.0	85.3	new residential buildings
China										N/A
Canada										N/A
United Kingdom	160	171	181	193	196	186	188	195*	199*	All Construction Tender Price Index
Russia										N/A
Brazil										N/A
Korea										N/A

* the value used is interpolated from previous or later values.

Sources: Australian Bureau of Statistics (2018); data360 (2008); Department for Business Innovation and Skills (2012); Eurostat (2018); National Statistical Service of Greece (2007); Turner (n. d.)

However, for the countries for which no construction price index was available, we used the GDP deflator of the respective country.

Inflation is taken into account using the GDP deflators as displayed in the table below.

Table 11 GDP deflators in Olympic host nations

	t-8	t-7	t-6	t-5	t-4	t-3	t-2	t-1	t
Australia	56.0	56.4	57.0	58.3	59.8	60.6	61.3	61.6	63.1
Brazil	194.0	208.2	225.7	244.5	263.9	283.8	306.0	330.2	357.7
Canada	82.0	84.7	87.5	90.2	92.6	95.7	99.5	97.2	100.0
China	58.0	59.1	59.5	61.0	65.3	67.8	70.5	76.0	82.0
Greece	63.1	67.2	70.7	73.2	74.4	77.0	79.5	82.3	84.8
Italy	76.9	78.1	79.7	82.0	84.8	87.5	89.7	91.4	93.1
Korea	100.0	101.6	102.6	103.5	104.1	106.6	108.6	111.8	
Russian Federation	51.7	58.9	69.4	70.8	80.9	100.0	109.1	115.0	123.6
United Kingdom	86.9	89.2	91.9	94.3	97.0	98.5	100.0	102.0	103.6
United States	72.9	74.4	75.8	77.1	77.9	79.1	80.9	82.7	84.0

Sources: The World Bank (2018a); Trading economics (2018)

The Olympic Games in Athens (2004) and Turin (2006) were held in Europe, but at the time of planning their budget (1996 and 1998) the euro was not an official currency. We used the first official exchange rate between dollars and euros, which was published in 1999, since no other conversion to the euro was possible.

Table 12 Exchange rates in the Olympic Games countries t-8 to t

	t-8	t-7	t-6	t-5	t-4	t-3	t-2	t-1	t
Australia	1.462	1.471	1.368	1.349	1.278	1.347	1.592	1.550	1.725
Brazil	1.833	1.999	1.759	1.673	1.953	2.156	2.353	3.327	3.491
Canada	1.569	1.401	1.301	1.212	1.134	1.074	1.067	1.143	1.030
China	8.279	8.277	8.277	8.277	8.277	8.194	7.973	7.608	6.949
Greece	N/A	N/A	N/A	0.939	1.085	1.118	1.063	0.886	0.805
Italy	N/A	0.939	1.085	1.118	1.063	0.886	0.805	0.804	0.797
Korea	1156.0	1108.2	1126.5	1094.9	1053.0	1131.2	1160.4	N/A	N/A
Russian Federation	27.19	25.58	24.85	31.74	30.37	29.38	30.84	31.84	38.38
United Kingdom	0.546	0.550	0.543	0.500	0.544	0.642	0.647	0.624	0.633
United States	1	1	1	1	1	1	1	1	1

Source: The World Bank (2018b)

3.5 Building of OCOG and Non-OCOG Budget Categories

A comparison of the various Games is very difficult, because each OCOG establishes a different reporting categorisation based on the tradition of their accounting systems. To overcome this difficulty, we grouped all data in a way that the various Games can be compared on the basis of an identical grouping of cost (revenue) categories. The table below shows which costs and revenues are included in each group. The group names will be used in the analysis in the results section.

The following tables show a collection of all nominations of positions in the candidature and later files on the left side. We collected all of them in order to build categories that contain the same information. The category names are shown on the right.

Table 13 Grouping of OCOG revenues

Categories of the budget listing	Summarised categories
Television Rights	IOC Contribution ⁸
Revenues from TOP Programme	TOP Sponsorship
Local Sponsorship	National Sponsorship
Local/Domestic Sponsorship	
Official Suppliers	
National Sponsors (1st tier)	
National Sponsors (2nd tier)	
National Sponsors (3rd tier)	
Revenues from Ticket Sales	Ticket Sales
Ticket Sales/Ticketing	
Licensing Merchandise	Licensing
Licensing & Merchandising/Retail	
Consumer Products	
Philately	
Olympic Coin Programme	
Revenues from national and other lotteries	Lotteries
Donations received from third parties without any attached sponsorship or marketing rights	Donations
Revenues from post-Games sales of capital investments	Disposal of assets
Car & remaining equipment sales	
Subsidies received from municipal, regional and state authorities	Subsidies
Subsidies – national government	
Subsidies – regional government	
Subsidies – local government	
Cultural Activities/Events	Other
Event Revenues	
Signature Events	
Torch relay Revenues	
Paralympic Revenue	
Sponsor Hospitality	
Sport Publication	
Sport Sciences Congress	
Accommodation Fees	
Food and Beverage Services	
Foreign Exchange Revenue	
Interest Income	
Rate Card Revenue	
Mixed Categories	
Other	

8 The inflation was calculated in such a way that the total sum of the IOC contribution was paid in the year of the Games. In reality, the payments start four years before, but the largest sum is paid just before the Games.

Table 14 Grouping of OCOG expenditures

Categories of the budget listing	Summarised categories
Capital Investments Sports Facilities/Venues Olympic Village Design & Overlay Energy Services Venue Development Venue Operation	Venues
Education Human Resources Staffing Volunteers Workforce	Workforce
Technology Information Systems Results Technology Services Telecommunications Internet	Technology
Medical Services Catering or Food Services Transport Security Waste Management/Environment Management Sustainability & Legacy	Services
Ceremonies and Culture Torch Relay Advertising & Promotion Brand Management Marketing Sponsorship Media Communication Games Management Look of the Games Ticketing Sports	Marketing & Events
Administration CEO Office Finance Pre-Olympic Events & Coordination Governmental Integration City Liaison Protocol	Administration & Coordination

Categories of the budget listing	Summarised categories
Accommodation	Other
Accreditation	
Broadcasting	
Contingency	
Fixed Payments	
Foreign Exchange Gain/Loss	
Rate Card	
IOC/HOC Royalties	
Mixed Categories ⁹	
Other	

The table above is already a reduction of cost items we found in the documents. Overall we found more than 300 different cost items for the 10 Olympic Games we investigated.

Table 15 Grouping of non-OCOG investments

Categories of the budget listing	Summarised categories
Olympic Stadium	Olympic Stadium
National Stadium	
Swimming Pool	Swimming Pool
Aquatic Centre	
Basketball Arena	Multipurpose Hall
Volleyball Arena	
Handball Arena	
Gymnastics Arena	
Velodrome	Velodrome
Velopark (including BMX track) ¹⁰	
Ski Jumping Hill	Ski Jumping Hill
Bobsleigh, Skeleton & Luge	Sliding Centre
Figure Skating & Short Track	Ice Stadium
Curling	
Ice Hockey	
Speed Skating	

9 Mixed categories were established when separation of “summarised categories” was not possible.

10 In one case, the Velopark was not subdivided into velodrome and BMX track. Therefore, the BMX track was included in the evaluation. However, these costs were consistently included from the bidding stage to the final budget, thus the basket remained the same and the potential cost overrun included the Velopark.

Categories of the budget listing	Summarised categories
Olympic Village Olympic and Paralympic Village Main Olympic Village Mountain Olympic Village Metropolitan Area Village	Olympic Village
IBC & MPC Media Village	IBC & MPC

The table above contains the baskets we used for the non-OCOG costs. The label was taken from the above table (summarised categories). In our basket we have taken one of the venues shown on the left, depending on which data were available in the bidding documents. Mostly, the biggest venues were taken. For example, when we write “Ice Stadium”, it could be the speed skating venue for one Winter Games and the Ice Hockey Arena for another Winter Games. Since we did not display overall costs, but only the changes, it does not matter if different “Ice Stadium” venues were considered in our basket, as long as we took the costly ones.

The table above displays only the venues we have considered in our baskets. As explained for Sydney 2000 and London 2012, we took only the public money share of the overall investments into account. That leads most probably to an overestimation of cost overruns, because the spending of public money is often not profit driven and less well controlled than that of private investors.

For example, for Sydney 2000, we took only the governmental contribution to the stadium into account and the construction of the stadium itself. In doing so, we missed out the private contribution. Additionally, we did not consider the remediation works and transport and railway connection to the stadium as they are not the direct costs of the “Olympic Stadium” venue.

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