Tokyo 2020 Evaluation of the elite sport expenditures and success of 14 nations

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TOKYO 2020

EVALUATION OF THE ELITE SPORT EXPENDITURES AND SUCCESS IN 14 NATIONS

Veerle De Bosscher, Simon Shibli et al.

SPLiSS

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1. INTRODUCTION

In the run up to the Tokyo 2020 Olympic and Paralympic Games held in 2021, the SPLISS consortium invited nations with an interest in elite sport development systems to take part in an exercise to quantify their nationally coordinated expenditure on elite sport. Finance is Pillar 1 of the SPLISS conceptual model of an elite sport development system and quantifies the most important input to the process of producing elite athletes capable of competing at the highest level of international sport[1]. This project was concerned with the fundamentals of financial investment in elite sport and was called SPLISS Pillar 1-Light. If estimating how much nations spend on elite sport is a measure of input, then the amount of success achieved, typically medal-based measures, represents the output of the system. Our analysis then focuses on the input of finance and the output of medals using Tokyo 2020 (taking place in 2021) as our primary case study. Where data permit, we also look backwards at trends in the relationship between inputs and outputs. Before starting our analysis, we provide a contextual overview looking at the big picture of all participating nations and the underlying factors that contributed to Tokyo 2020 being such an interesting edition of the Olympic Games. Following this introduction, our paper is structured as follows:

- Setting the scene for Tokyo 2020;
- The nations which took part in SPLISS Pillar 1-Light;
- Performance of the sample nations in Tokyo;
- Focus on inputs, financial support;
- The relationship between inputs and outputs; and
- Conclusions.

Fourteen nations accepted the Pillar 1-Light challenge and when we allow for Belgium being divided into two autonomous provinces of Flanders and Wallonia[2], we have up to 15 data points with which to make comparisons across the sample. Note, that not all nations were able to complete all data points. The participating nations and basic information about them are shown in Appendix 1.

1 see www.spliss.net for an overview of publications

2 Flanders is the northern, Dutch speaking part of Belgium (6.3 million inhabitants), Wallonia the southern, French and German speaking part (4.0 million inhabitants). In Belgium the Flemish community (Flanders) and the French/German speaking community (Wallonia) have separate sport policies at each level, from local to national (including three separate ministers of sport). Apart from the Olympic Committee (BOIC), whose main task is to select athletes for the Olympic Games, there is no national (federal) policy or structure for sport, nor are there expenditures on sport at federal level. Therefore, Flanders and Wallonia are seen in this research as if it is two distinct nations.

2. SETTING THE SCENE FOR TOKYO 2020

Tokyo 2020 can be described as the 'uncertain' Olympics for two key reasons. First, it was uncertain that the event would take place after its postponement in March 2020 as a response to the Covid-19 pandemic. Second, there was also uncertainty over how nations would perform because of a variety of changes and challenges surrounding the event. These are discussed in the subsections below.

2.1 OPPORTUNITIES

Tokyo 2020 witnessed the largest increase in the Olympic programme of all time. While at the beginning of the 21st century, the total number of events was capped by the IOC around 300, a different picture emerged in Tokyo 2020. Five new sports were introduced, namely: baseball / softball; climbing, karate; skateboarding; and surfing. In addition, new disciplines were added such as BMX Freestyle and 3x3 Basketball; as were new events, notably mixed relay events in athletics, swimming and triathlon. Overall, 33 new events and 107 medal winning opportunities were added to the programme, which was the largest in Olympic history as shown in Figure 1.

With 33 new events, Tokyo 2020 witnessed the largest increase in the Olympic programme of all time

The key point about the new sports, disciplines and events was that they had never been part of the programme previously and reflected the International Olympic Committee's desire for a more 'youthful and urban' event. There had never been more medal winning opportunities than in Tokyo 2020 and there was considerable interest in which nations might develop medal winning capability in the new events. As will be shown later, the performance of nations was quite different to previous editions of the Olympic Games.

2.2 DISRUPTIONS

2.2.1 Athlete life cycles

The Covid-19 pandemic caused considerable disruption for Tokyo 2020 and the 206 nations that took part in the event. The delay of one year resulted in some athletes who would have taken part had the event been held in 2020, deciding to retire instead. One notable example was Australia's triple world cycling champion Amy Cure, who was first selected for London 2012. On the positive side, there were also emerging athletes who might not have been ready for Olympic competition in 2020, but who with another year's development could peak at the right time. As an example, Great Britain's 13-year-old bronze medallist in skateboarding, Sky Brown, might not have been ready to win a medal aged 12, but a year later proved that she was highly competitive.

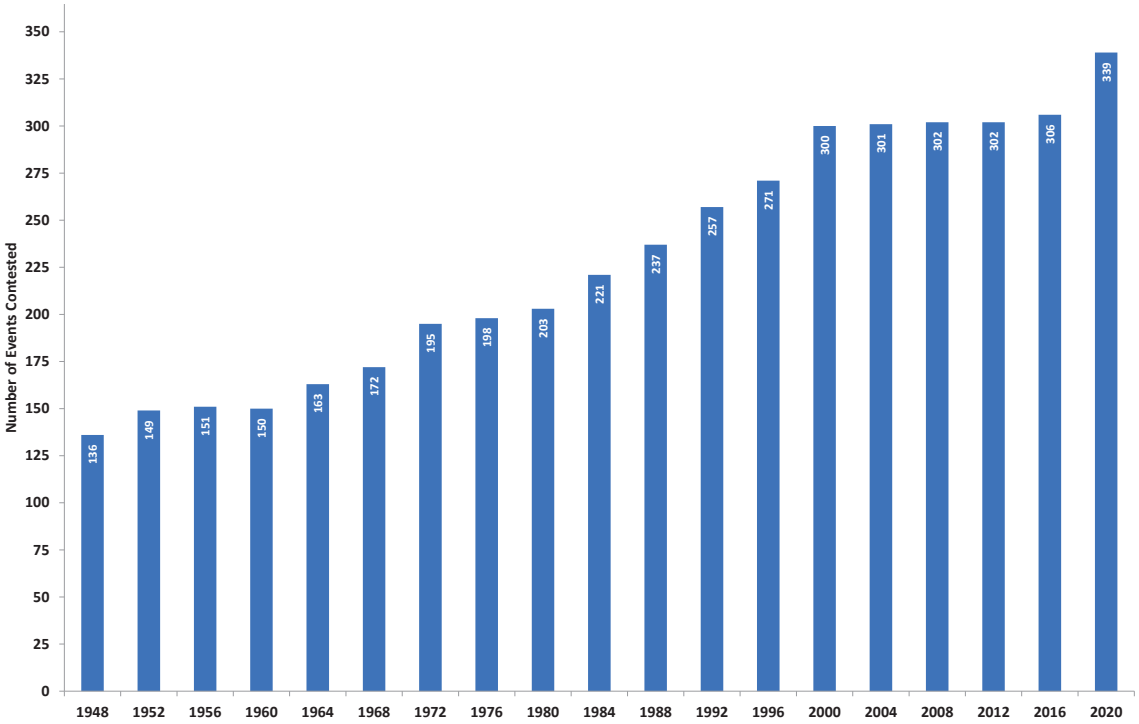

Figure 1: Number of events contested at the Olympic Games 1948-2020

2.2.2 Disrupted training, competition and peaking

In addition to athlete 'churn' over a five-year cycle, rather than a four-year cycle, nations experienced differing levels of disruption to training and competition opportunities because of nation-specific Covid-19 lockdown restrictions. In some nations where strict lockdown restrictions were enforced, athletes no longer had physical access to facilities, equipment and coaches. Some devised innovative solutions using technology and home gyms, others were less fortunate. With curbs on international travel, elite sport events such as Olympic qualifying events were postponed or cancelled. This situation in turn prevented athletes from testing themselves against their peers and prevented other nations from gathering data on their competitors. Furthermore, whilst agreement in principle had been reached for a rescheduled Games in 2021, there remained a threat of cancellation up until July 2021 when it was announced that the event would take place without fans. In the interim there had been rumours that the Games would have to be cancelled, whilst simultaneously public opinion in Japan was negative as people lived in a 'state of emergency' with only 1% of the population vaccinated against Covid-19. For athletes who work on a four-year cycle to peak at a precise moment, the lack of clarity around whether and when the event would take place could only have been disruptive. In short, uncertainty was the order of the day.

Covid-19 disrupted the competition in Tokyo 2020, by changed athlete life cycles, competition, no fans and North Korea not participating

2.2.3 The specific case of North Korea

North Korea proved to be the only nation that did not compete at Tokyo 2020 because of Covid-19 fears. Whilst this might not seem like a major issue, North Korea won 7 medals in Rio 2016 in weightlifting (4), gymnastics, shooting and table tennis (1 each). As North Korea was unable to defend these medals, it follows that they would be allocated to other nations at Tokyo 2020. Thus, the absence of a nation with proven medal winning capability created both uncertainties as to who would take North Korea's share of the medals and opportunity for nations who would benefit from reduced competition in certain events. For example, whilst China won gold and silver in the women's singles event in both Rio 2016 and Tokyo 2020, the bronze medal won by North Korea in 2016 was won by host nation Japan in Tokyo 2020.

2.2.4 An Olympic Games behind closed doors

The decision to hold Tokyo 2020 without fans was likely to have impacts on athlete performance and sporting outcomes. One of the more compelling arguments for a home advantage effect is the impact that crowds are thought to have on officials, particularly in subjectively scored (e.g. boxing and gymnastics) or subjectively officiated events (e.g. team sports). Less compelling evidence for home nation effects include the 'lift' that crowds can give to athletes by their encouragement. Japan, particularly, was denied the full impact of the home nation effect and by contrast rival nations could be said to have been protected from it, which is a reasonable argument for yet another dimension of uncertainty.

2.3 OUTPUTS: WHAT HAPPENED IN TOKYO 2020?

2.3.1 High level overview

In the end the Tokyo 2020 Olympic Games took place and for 17 days gave the world a festival of sport. All events took place as planned and a summary of the nations taking part and achieving a degree of success (top eight places and medals) is shown in Figure 2.

Overall, 206 nations took part in Tokyo 2020, which is one fewer than in 2016 because of the absence of North Korea. Of these nations 121 (59%) achieved at least one top eight place (or Olympic diploma); 93 (45%) won at least one medal of any colour; and 65 (32%) won at least one gold medal.
For the three output measures of a top eight place, any medal or a gold medal, the Tokyo 2020 results are the highest on record. Top eight places increased from the previous record of 120 in Rio by 1; the number of nations winning any medal (93) was seven more than in any previous edition of the Games (86 in Beijing 2006); and the number of nations winning a gold medal (65) was nine more than the previous record of 56 in Athens 2004. Overall, fifteen nations who did not win a medal in Rio 2016 won 22 medals collectively in Tokyo 2020; whereas ten 'nations' (including Independent Olympic Athletes) which won a medal in Rio 2016 did not win a medal in Tokyo 2020, losing 19 medals overall (see Appendix 1). It is not possible to explain categorically why new record scores were set in all three output measures, but two high level explanations would be the increase in medal winning opportunities from new sports and events; as well as the impact of the disruption factors described in section 2.2.

7 more nations won medals in Tokyo 2020 compared with Rio 2016, due to increasing medal winning opportunities from new sports and events combined with disruption factors

2.3.2 Winners and losers at Tokyo

It is possible to move beyond the high-level picture by looking at the variances in medals won by nations between Tokyo 2020 and Rio 2016 to get a picture of the winners and losers. Figure 3 provides an overview of the change in gold medals won and the change in total medals won by the major medal winning nations in Tokyo compared with Rio.

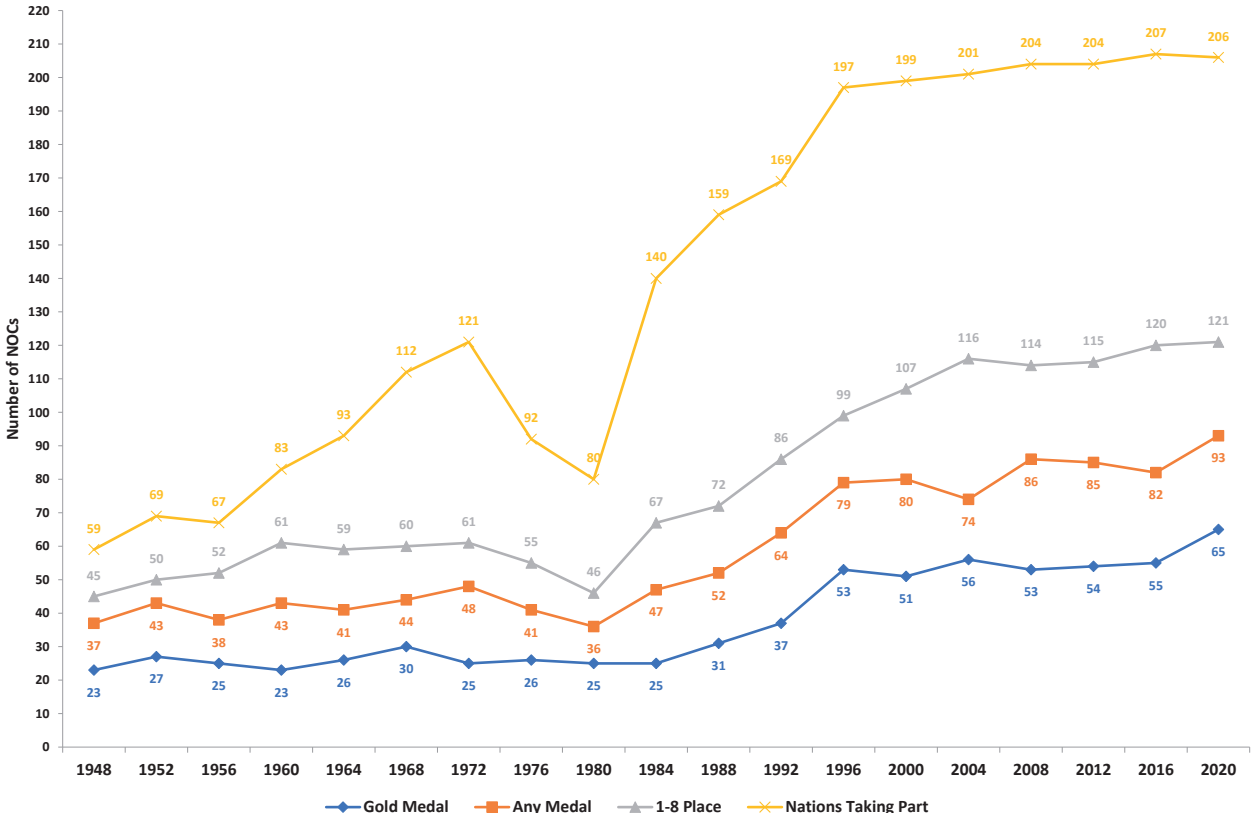

Figure 2: An overview of performance in the Tokyo 2020 Olympic Games

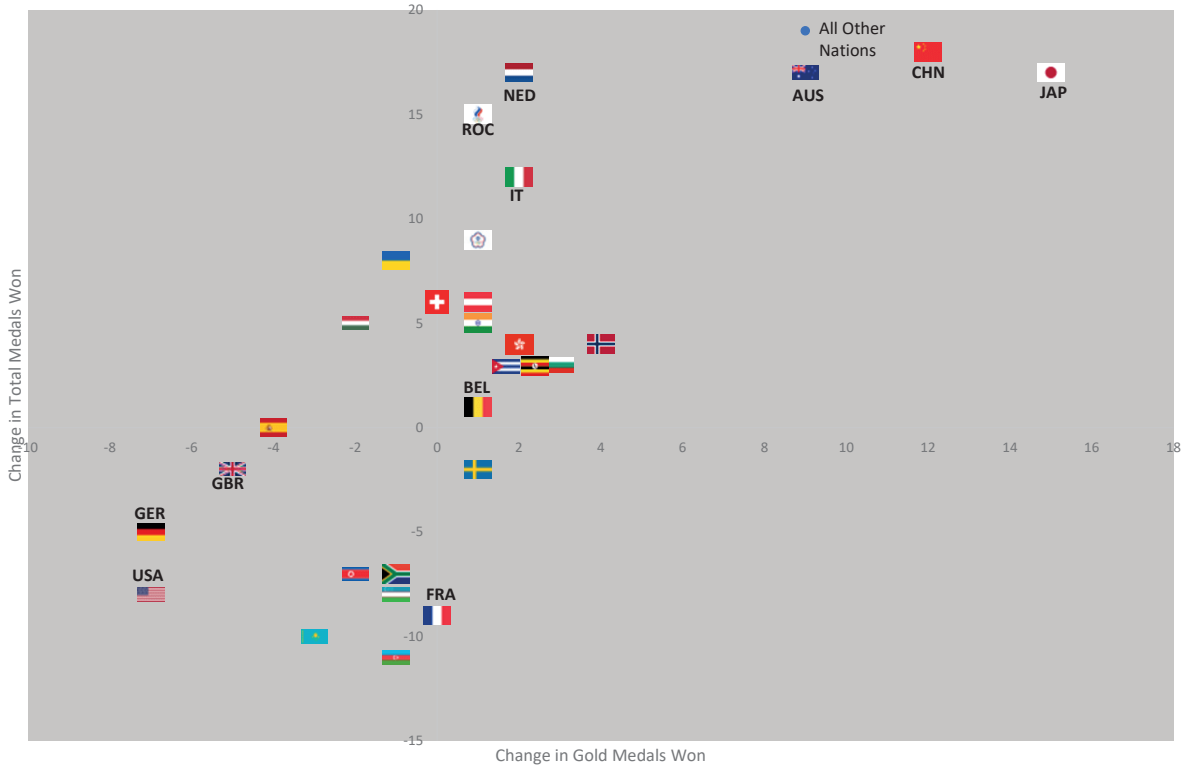

Figure 3: Change in gold medals and total medals in Tokyo 2020 versus Rio 2016

The key point about Figure 3 is that the scale of increases on both medal count measures is greater than the scale of the losses, because more medals were contested in Tokyo than Rio. Beyond this basic point, a relatively familiar pattern emerges. The host nation, Japan, performed well and is the most improved nation in terms of gold medals won. China and Australia also delivered very successful performances in Tokyo. The Russian Olympic Committee, the Netherlands and Italy are all distinguished by gains in gold medals and increases of more than 10 medals won in total. The USA, despite finishing top of the medal table, won fewer gold medals and total medals than in 2016. Germany also experienced a decline in medals, notably -7 gold medals.

Azerbaijan and Great Britain were two nations who entered Tokyo 2020 with the only five edition 'winning streaks'[3] in Olympic history, both dating back to continuous improvement from Atlanta 1996. Both nations failed to deliver an increase in total medals won (AZE -11; GBR –2), but New Zealand (one of our sample nations in this report) became the third nation to achieve a five-edition winning streak and could be the first to achieve a six edition winning streak in Paris 2024. Overall, if we look within a boundary of +/- 5 gold medals and +/- 10 medals in total, we find that there are relatively few outliers despite 206 nations taking part and 1,080 medals awarded.

3 A winning streak is defined as a period of continuous increase in total medal


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3. THE SPLISS PILLAR 1-LIGHT NATIONS

3.1 HIGH LEVEL OVERVIEW

Overall, 14 nations took part in the SPLISS Pillar 1-Light exercise and when we subdivide Belgium into its two autonomous regions of Flanders and Wallonia, we have a maximum of 15 data points to work with. The participating nations are shown in Figure 4 and listed by continent, including some data on Tokyo outputs, and macro variables (i.e. population and GDP figures) in Table 1.

A further analysis on macro level inputs and outputs for the sample is shown in Figure 5.

Whilst the SPLISS nations account for 30% of all Olympians and medals won, they account for only 7.5% of the world's population and 20.5% of its wealth.

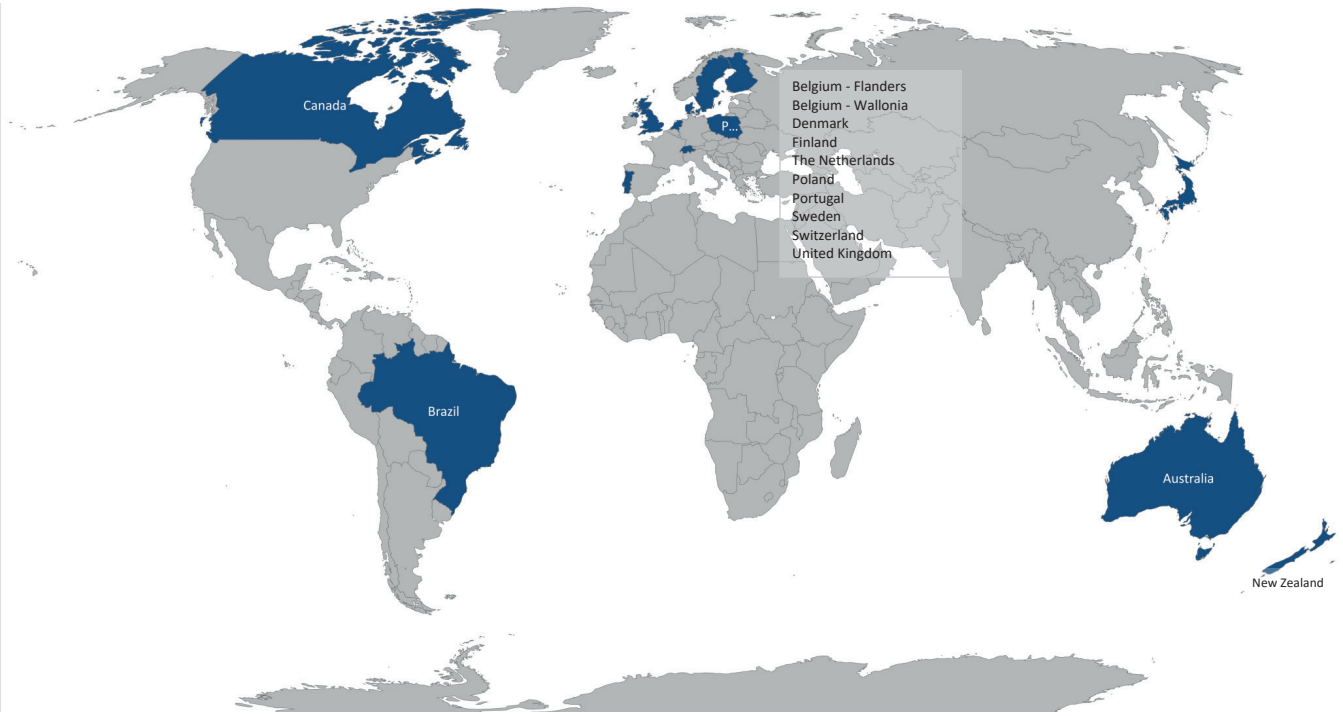


Figure 4: SPLISS Pillar 1-Light nations

Nation	Population (Mn)	GDP US$ (Bn)	Gold	Silver	Bronze	Total	Top 8s	Olympians
Europe (9)								
Belgium - Flanders[4]	6.59	308	2	1	2	5	21	123
Belgium - Wallonia	3.63	121	1	0	1	2	5	
Denmark	5.84	353	3	4	4	11	30	108
Finland	5.53	269	0	0	2	2	8	45
The Netherlands	17.13	912	10	12	14	36	86	278
Poland	37.85	594	4	5	5	14	49	210
Portugal	10.20	231	1	1	2	4	15	92
Sweden	10.38	538	3	6	0	9	29	134
Switzerland	8.65	748	3	4	6	13	36	107
United Kingdom	67.89	2,708	22	21	22	65	136	376
Oceania (2)								
Australia	25.85	1,331	17	7	22	46	111	477
New-Zealand	5.10	212	7	6	7	20	41	213
Asia								
Japan	125.71	5,240	27	14	17	58	137	556
The Americas (2)								
Brazil	213.86	1,363	7	6	8	21	52	302
Canada	38.01	1,643	7	6	11	24	75	381
Total	**582.22**	**16,571**	**114**	**93**	**123**	**330**	**831**	**3400**
SPLISS %	**7.5%**	**19.6%**	**33.5%**	**27.5%**	**30.6%**	**30.6%**	**30.7%**	**29.6%**

Table 1: The SPLISS Pillar 1-Light nations by continent

4 For Belgium, the output data are shown as follows: Belgium won 7 medals in Tokyo, of which four medals were won by Flemish athletes, one by a Walloon athlete, and two can be seen as bicommunautary (hockey and equestrian teams). Belgium won 26 top 8 placings, of which 15 are Flemish, two are Wallonia, and two can be seen as bicommunautary.

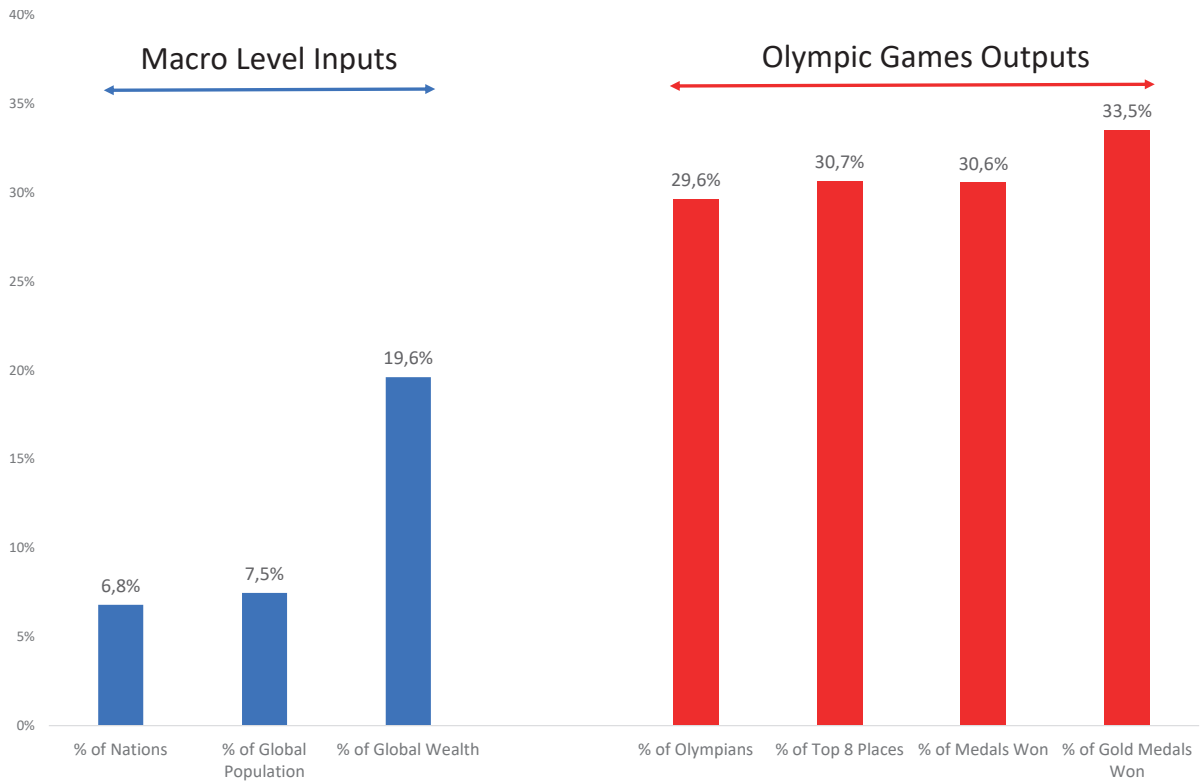


Figure 5: SPLISS Pillar 1-Light sample macro level inputs and Olympic outputs

On the inputs' side, the participating nations account for c. 6.8% of the participating nations, c. 7.5% of the world's population and c. 19.6% of the world's wealth. On the outputs' side they account for 29.6% of Olympians at Tokyo 2020; 30.7% of all Top 8 places; 30.6% of all medals won; and 33.5% of all gold medals won.

The differences between the blue bars (inputs) and the red bars (outputs) shows clearly that the sample nations account for a disproportionately high level of the outputs achieved given their basic raw materials of population and wealth.

What we are dealing with then, is an atypical sample of self-selecting nations who achieved above average success in Tokyo 2020. This is an important contextual point to bear in mind when reading the remainder of our analysis.

3.2 PERFORMANCE OF THE SAMPLE NATIONS IN TOKYO 2020

The distribution of medals won by each of the sample nations, as presented in the International Olympic Committee's convention of descending order of gold, silver and medals won is shown in Figure 6.

Host nation Japan was the most successful of the SPLISS Pillar 1-Light nations at Tokyo 2020 winning 27 gold medals (11 more than any previous edition) and securing third place in the medals' table for the third time in its history. The United Kingdom (GBR) won the most medals (65) amongst the sample nations and achieved its second best 'away' Olympics. To achieve a more comprehensive view of all the sample nations' performance at Tokyo 2020, Figure 7 presents an analysis of the change in gold medals won against the change in total medals won between Rio 2016 and Tokyo 2020.

Apart from the UK, which experienced a reduction in both gold medals won (-5) and total medals won (-2) all other nations in the sample saw improvement on one or both dimensions of Figure 7. Japan, Australia and the Netherlands all increased their total medals won by 17 and for Japan 15 of this increase was in gold medals driven in part by being the host nation and taking advantage of the extra medal winning opportunities in all five of the new sports, notably skateboarding in which Japan won three gold medals.

Finland, Brazil (the previous hosts) and Switzerland all increased total medals won without an increase in gold medals. By contrast, Sweden and Denmark increased their gold medals won and reduced total medals won. Canada, New Zealand, Poland, Portugal and Belgium all experienced improvements on both measures but to a lesser extent than Japan, Australia and The Netherlands. In total, the sample nations increased their aggregate number of medals won by 67 and their share of total medals, which is part of a longer-term trend shown in Figure 8.

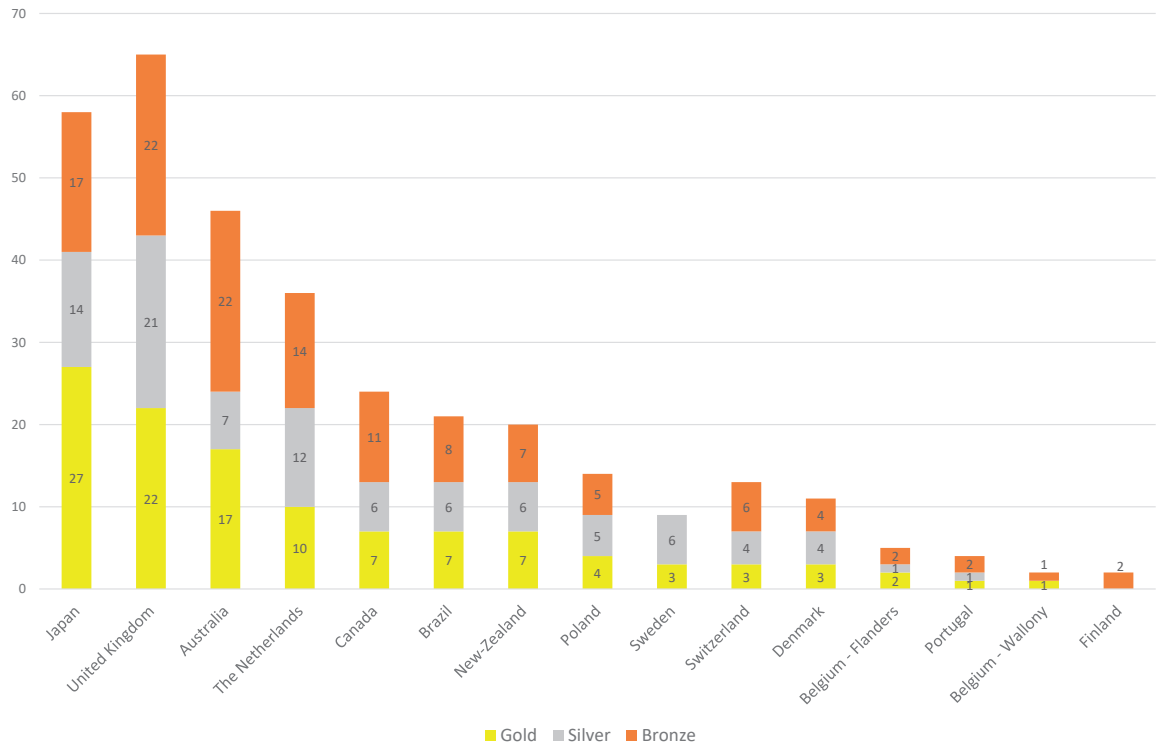


Figure 6: Medals won by participating nations at Tokyo 2020

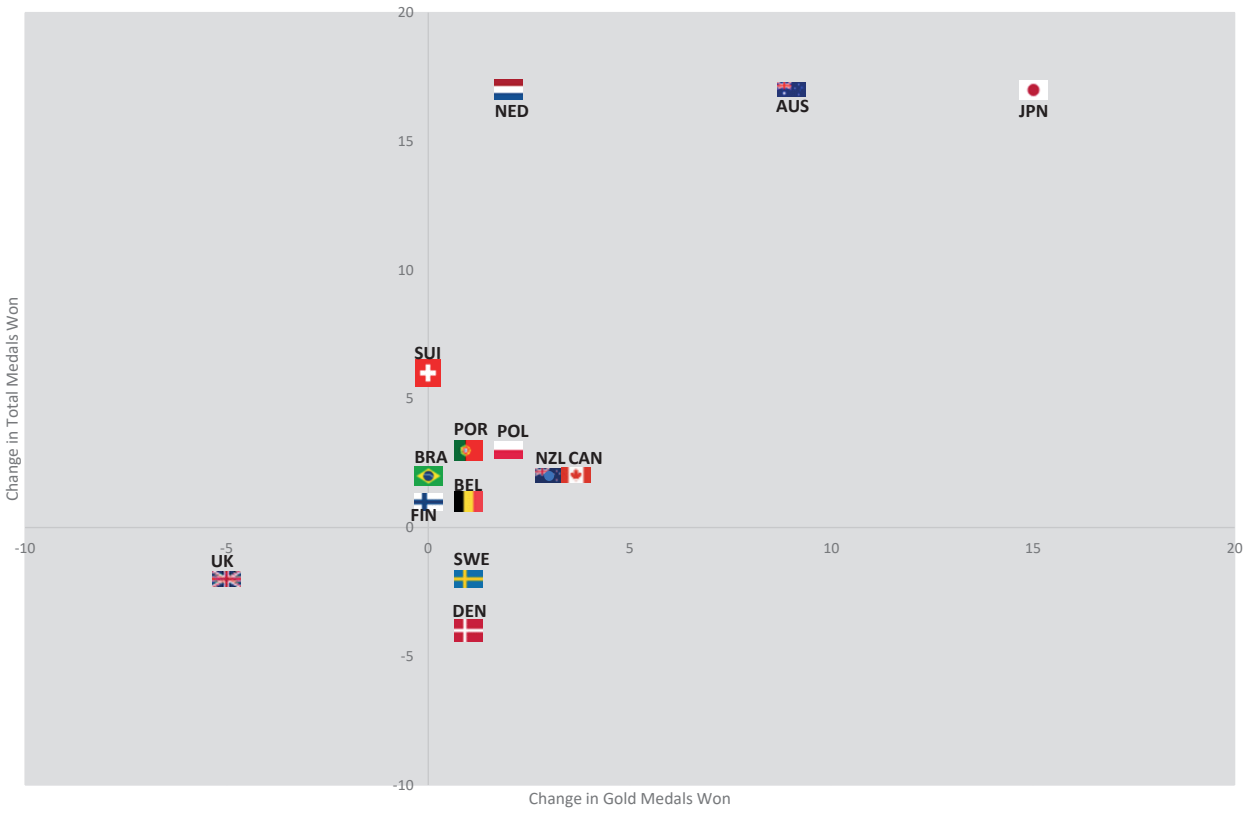


Figure 7: Change in Gold medals won v Change in Total medals won Tokyo 2020 v Rio 2016

Since the Sydney 2000 Olympics, our sample nations have increased their number of medals won by 119 from 211 to 330 (56%) and their share of medals won by 7.8 percentage points from 22.8% to 30.6% (34%). We consider these to be highly unusual findings and contrary to the notion of a global sporting arms race, whereby nations invest increasingly more money in elite sport development systems simply to maintain their medal share. Evidence of increasing medal share is rare, particularly over such a prolonged period, and makes for an interesting analysis when we look at the money invested in elite sport development systems relative to the outputs achieved. First, we examine the inputs.

All together, the SPLISS nations increased their medal share in Tokyo compared to Rio to 30.6% (63 medals). This is contrary to findings from previous SPLISS studies where performances decreased despite increasing investments made

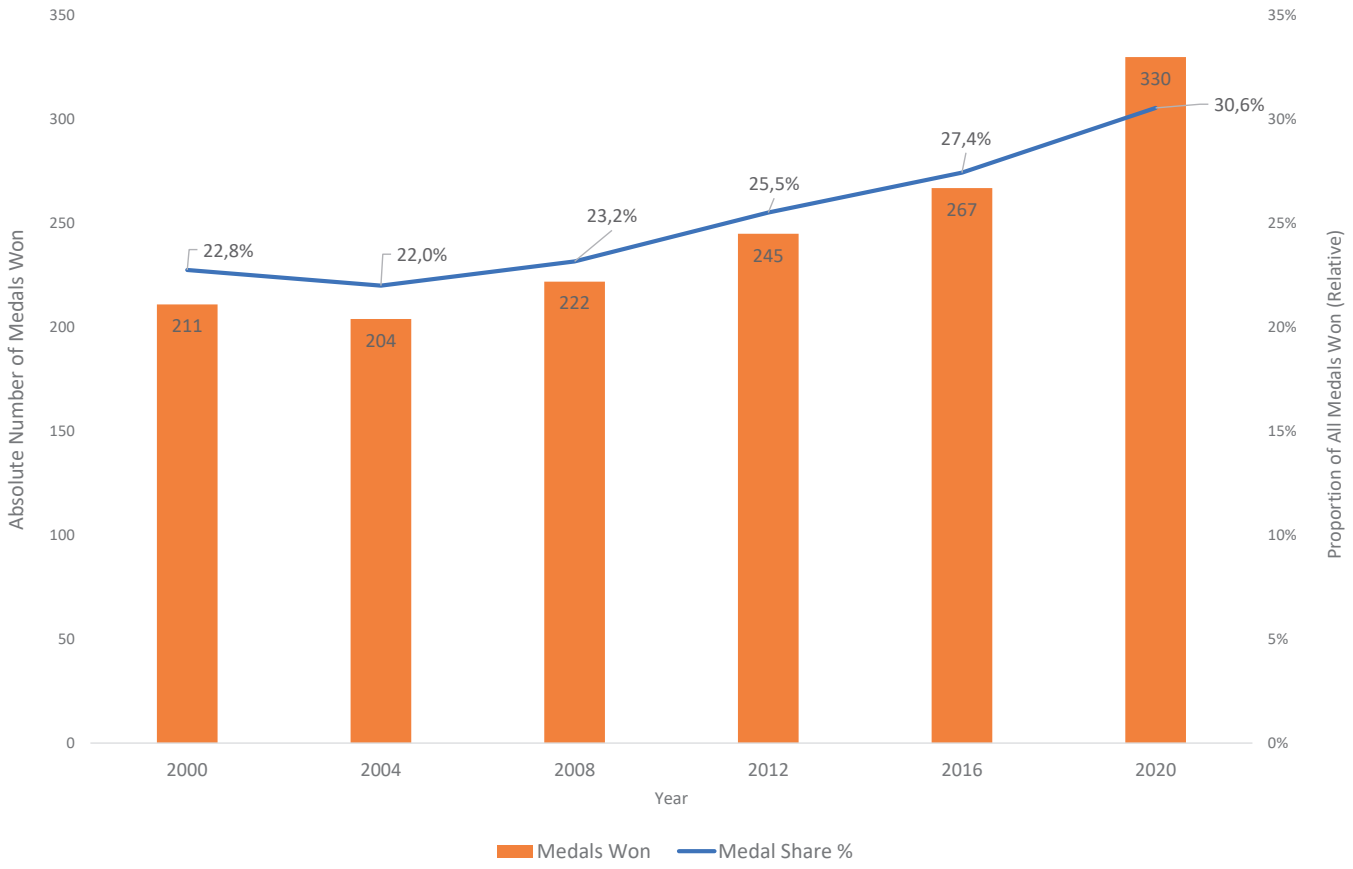


Figure 8: Long term trends in the number of medals won and the share of medals won by the SPLISS light sample nations

4. INPUTS: FINANCIAL SUPPORT FOR ELITE SPORT (PILLAR 1)

4.1 TOKYO CYCLE INVESTMENTS

As an initial view on the level of financial investment, or input, made by each nation, we show in Figure 9 the estimated total national expenditure (including Paralympic sport) for the sample nations. Data include nationally coordinated funding from government, lotteries and the National Olympic Committee. As comparability of nations is a notoriously difficult exercise, important comments on each nation can be found in Appendix 2. For example, the data presented for Australia are arguably an under estimation because it excludes the funding allocated to the AIS (Australian Institute of Sport) and its associated national high-performance programmes and initiatives. In Canada, an estimation of 57% spent on high performance sport in SPORT Canada, based on a detailed breakdown for the 2018-19 budget was used as a guide by the local researcher.

The input data has also been converted from national currencies to International Dollars to improve comparability between nations[5] (see appendix 4).

There is considerable disparity in the scale of investment made by each nation in 2020. Two nations invested over €200m, four more invested over €100m and the remaining eight invested between €14m and €73m. The usefulness of Figure 9 is that it provides a near complete current data point for the last full year for each of the 15 nations, or regions, in the sample and thus gives a sense of the broad scale of investment made in elite sport by each contributor.

However, Olympic cycles tend to be funded on a four-year basis and thus a more reliable figure for investment is the totality of the expenditure on elite sport over the entire cycle. Data points are not available for Wallonia and thus there are only 14 data points.

Furthermore, not all nations were able to provide complete annual datasets with government/lottery and NOC funding over a longer period. Accordingly, some caveats are applied to our data. In Switzerland an estimation for 2019/2020 had to be made based on 2018 data (see Appendix 2) and were qualified by the Swiss researcher as an under estimation because from 2020 onwards

National expenditures on elite sport in 2020 vary between 26 million Euros in Sweden and €229m in Japan.

(due to the Covid-19 pandemic) the financial support for elite sports by central government was increased. In the Australian and Canadian data, the figures are an underestimation (>40 million Euros per year) of total national government spend on High Performance sport. As previously explained, the figures in Australia do not include the funding allocated to the AIS national high-performance programmes. In Canada, annual budget numbers are hard to discern, because of the regionalised/state funded sport system. Here, the full cycle data do not include the NOC expenditures which explains the relatively lower expenditures by Canada in Figure 10 compared with the 2020 data point in Figure 9. Additionally, as the Rio to Tokyo Olympic cycle was five years rather than four because of COVID-19 extension and because 2021 data were not available in all countries, we used the 2017-2020 cycle for comparability reasons. The Olympic cycle funding data for Rio 2016 to Tokyo 2020 for the 13 nations for which usable data were available is shown below in Figure 10, subject to the caveat outlined above.

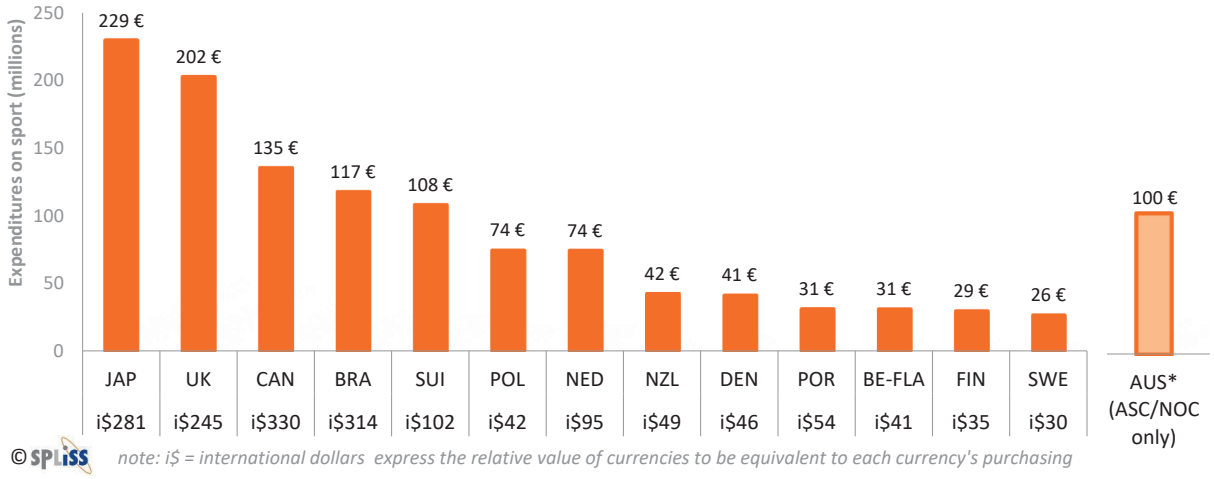


Figure 9: National support for elite sport from government, lotteries and NOCs (comments per nation, see Appendix 2)

5 The international dollar is a hypothetical unit of currency that has the same purchasing power parity that the U.S. dollar had in the United States at a given point in time. It is mainly used in economics and financial to determine and compare the purchasing power parity and gross domestic product of various countries and markets. See SPLISS 2.0 book, De Bosscher et al., 2015, pp 117 for more information.

As is also the case in Figure 9, Figure 10 shows there is considerable disparity in the investment made in the Tokyo Olympiad by each nation. Perhaps not surprisingly, the host nation Japan invested the most at more than €1 billion. Previous recent hosts the United Kingdom (2012) and Brazil (2016) are the next two highest investors. By contrast Finland, Portugal, Flanders and Sweden all invested around 10% or less of Japan's total. Whilst inputs in isolation are interesting, the relationship between inputs and outputs (or efficiency) provides arguably the most interesting insights.

4.2 CHANGES IN NATIONAL ELITE SPORT EXPENDITURES

The SPLISS 1.0 (2008, six nations) and SPLISS 2.0 (2015, 15 nations) studies clearly showed that elite sport expenditures increased considerably over time. When comparing the expenditure levels in 2012 with those in 2001, spending on elite sport had increased in almost all nations , with some nations tripling (e.g. Belgium, Brazil, Northern Ireland) or doubling (e.g. France, South Korea, Finland) their expenditures. One of the lessons learned was that it is increasingly difficult for nations to increase their market share of international sporting success, despite increased funding for elite sport, thereby fuelling an escalating global sporting arms race. Consequently, the rules of the games are dictated by what rival nations are doing now, not by what an individual nation is doing now compared with what it did in the past (De Bosscher et al., 2008, pp.134). In 2020 a slightly different picture emerges.

In the London (2009-12) to Rio (2013-16) cycle, although funding increased in all nations, the increases were considerably smaller than prior to 2008 in earlier SPLISS studies (see Figure 11).

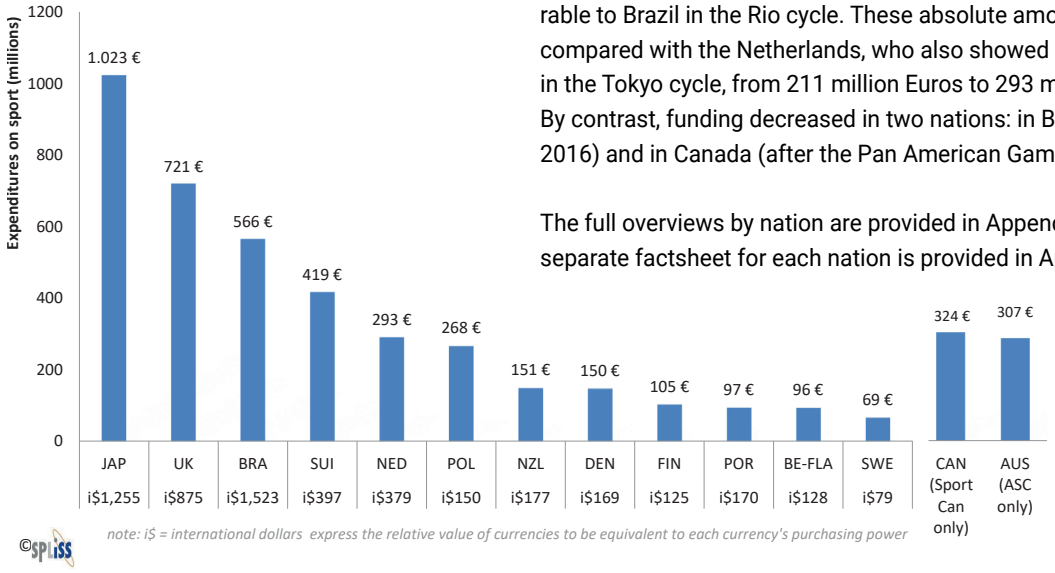


Figure 10: Investment in the Tokyo 2020 Olympic cycle (comments per nation, see Appendix 2)

A continued global sporting arms race whereby nations increasingly invest in elite sport to increase international sporting success, was still apparent in the Rio Olympic Cycle. In Tokyo, for the first time, a different picture seems to emerge, with smaller increases in most nations and some nations with decreased funding. Nations organising large international events remain an exception.

The doubling of the budget in Brazil (from 542 million Euros to 1.118 billion Euros), was driven by several events, including the announcement in 2009 that the 2016 Olympic Games would take place in Rio de Janeiro; 2012 was the development of the "Brazil Medals Plan"; in 2014, the FIFA World Cup took place in Brazil; and obviously hosting the Olympic Games in 2016. The home advantage effect and increasing investments made by nations prior to hosting the Games is a well-known phenomenon in the literature. The second highest percentage increase of all nations during this period in Figure 11 was Finland (70%, from 56.3 million Euros during the 2012 cycle to 95.6 million Euros up to 2016). This decision to increase funding was made following Finland's Elite Sport Reform project (2010-12). Furthermore, Figure 11 illustrates increases in financial support of 40% in New Zealand and Canada between London and Rio. Canada's funding increased between 2013-2014 primarily because of investment made for the organisation of the 2015 Pan American Games in Toronto.

When looking at the change in investments made between the Rio (2013-16) and Tokyo (2016-20) cycles, Figure 12 shows that the relative increase has become smaller in many nations. A 40% increase in Japan obviously is still high in absolute numbers, with a total investment of 1 billion Euros in the period, which is comparable to Brazil in the Rio cycle. These absolute amounts are high compared with the Netherlands, who also showed a 39% increase in the Tokyo cycle, from 211 million Euros to 293 million Euros. By contrast, funding decreased in two nations: in Brazil (after Rio 2016) and in Canada (after the Pan American Games in 2015).

The full overviews by nation are provided in Appendix 3 and a separate factsheet for each nation is provided in Appendix 4.

6 See De Bosscher et al. (2015) p 127 for a detailed overview

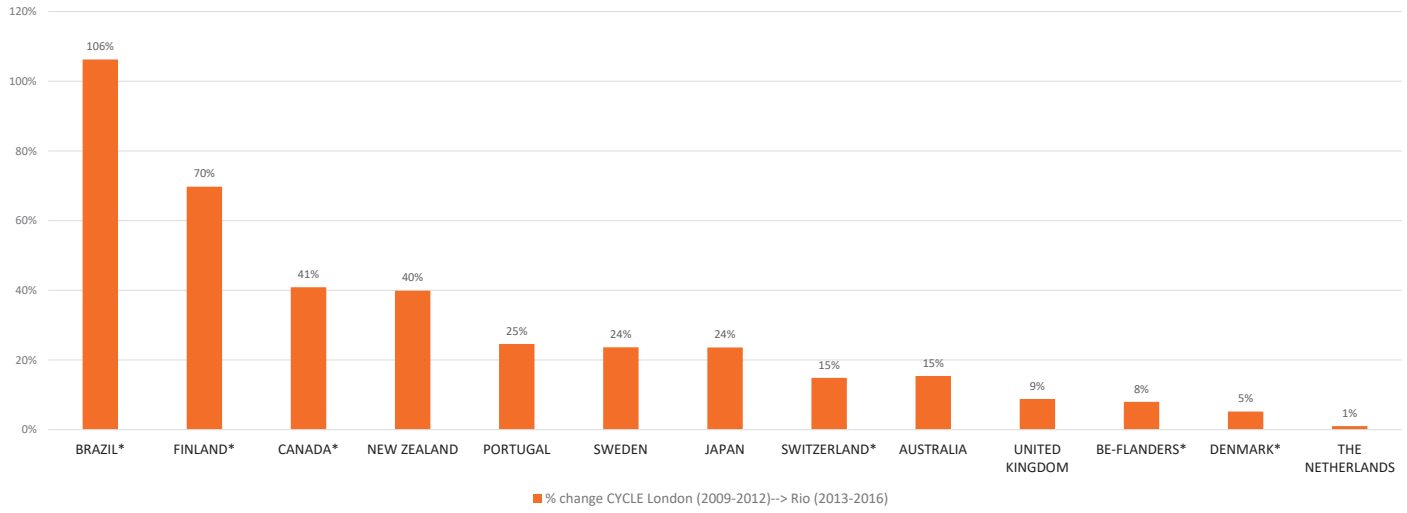
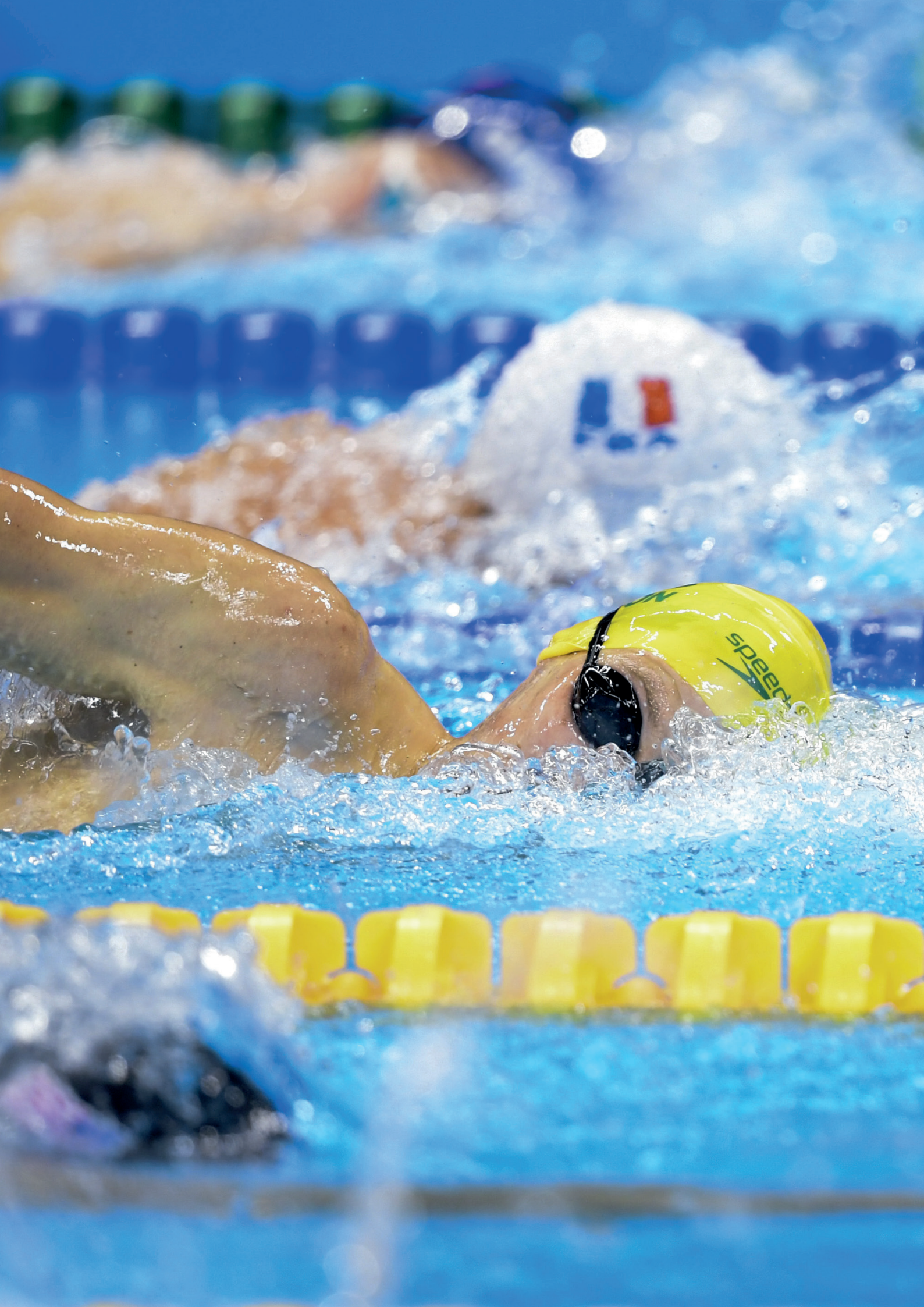


Figure 11: Change in investments from the London (2009-2012) cycle to Rio (2013-2016) in 13 nations

Figure 12: Change in investments from the Rio cycle (2013-2016) to Tokyo (2017-2020) in 13 nations



5. INPUTS VERSUS OUTPUTS

At the end of the twentieth century, Hogan and Norton (2000)[7] argued that 'more money in equals more medals out'. The SPLISS 1.0 (6 nations, 2008) and 2.0 studies (15 nations, 2015) confirmed that the absolute amount of funding allocated to elite sport is the best predictor of output, with spearman's rank correlations above 0.9 for summer sports and above 0.588 for winter sports. However, as noted: "nations have seen their success in international sport decline by increasing the amount of money they spend on elite sport, thereby fuelling an escalating global sporting arms race" (De Bosscher et al., 2008, pp. 134). Consequently, the price of success has increased over time.

For the sample, the median cost per medal is around €17.6m and is the highest in Finland.

5.1 INDICATIVE COSTS PER MEDAL

If we combine the money invested in elite sport (input) with the medals won as a result (output), the most basic relationship between inputs and outputs is the cost per medal of the investment. Figure 13 takes the Tokyo Olympiad investment from Figure 10 and compares it with the output data from Figure 6 to derive a cost per medal indicator. Data points are not available for Wallonia or Switzerland, or comparable in Australia and Canada (for the reasons mentioned above) and thus there are only 11 data points.

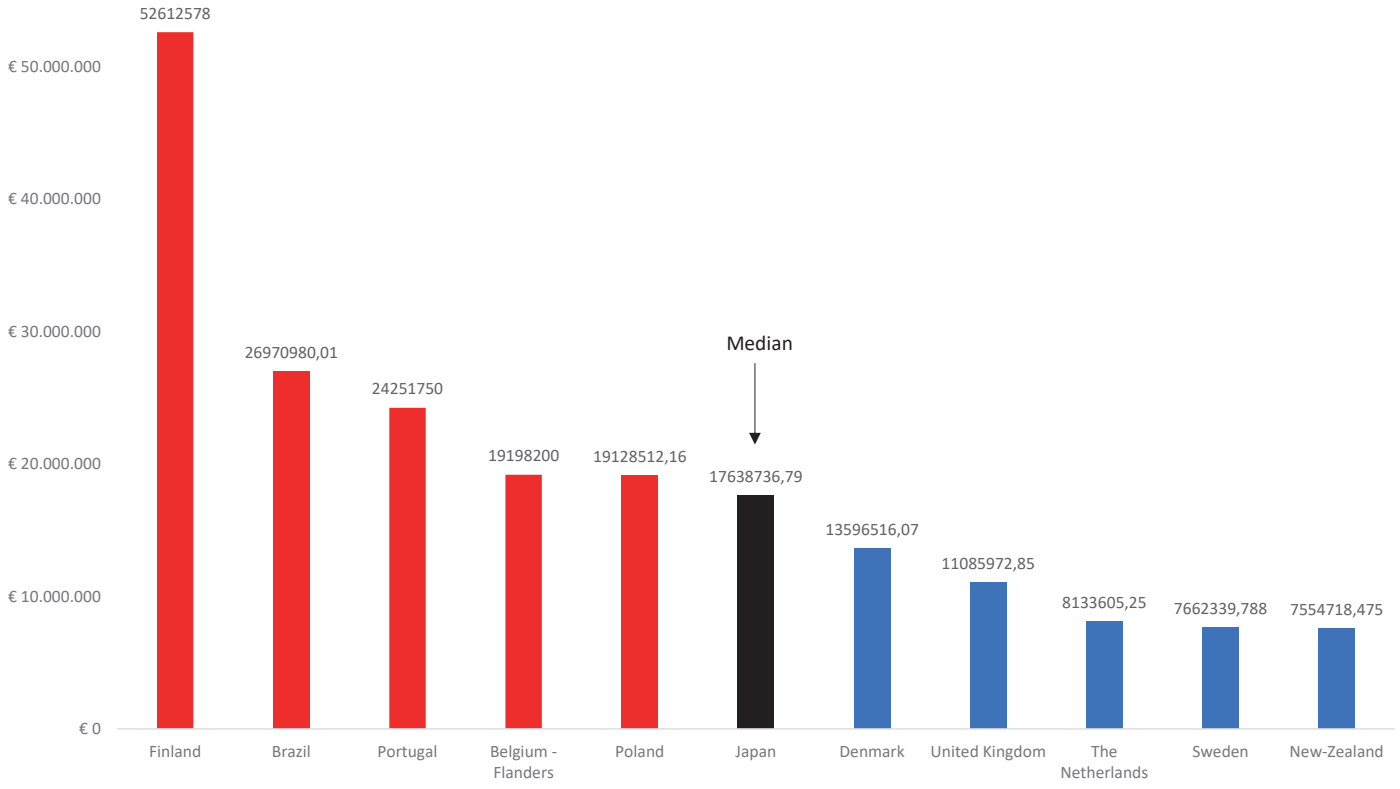


Figure 13: Tokyo 2020 cost per medal for the sample nations[8]

7 Hogan, K., & Norton, K. (2000). The price of Olympic gold. Journal of Science and Medicine in Sport, 3, 203-218.

8 In some countries differences are notable depending on the source of data included (government; Lotteries; National Olympic Committee)-see Appendix 2 for more details. An overview is provided below. JAP: GOV/LOT - UK: GOV/LOT/NOC - BRA: GOV/LOT (incl NOC) - AUS*: ASC only-> NA - CAN*: SPORT CANADA only-> NA - NED: GOV/LOT/NOC - POL: GOV/LOT/NOC - NZL: GOV - DEN: TEAM DENMARK: DIF (est) - FIN: GOV/NOC/others (NGB estimation) - POR: GOV/NOC - FLA: GOV - SWE: GOV/NOC

For the sample, the median cost per medal is around €17.6m as shown in black in Figure 13 for Japan. Nations above the median are shown in red and Finland is identified as an outlier with its two medals costing around €52.6m each. By contrast, the relatively more efficient nations (or producers) are shown in blue and have scores that vary from €13.5m to less than €8m per medal for both Sweden and New Zealand. Calculating a cost per medal is obviously a rudimentary evaluation of elite sport, as a nation's spending on elite sport does not necessarily go directly into sports, athletes or medals, but in a system as a whole and some nations may invest in long-term success (e.g. through talent development) and indeed Winter sports. Nevertheless, it offers a way to reflect on the financial efficiency of outputs in the short term.

It is also possible to produce an 'input-output' relationship as a further measure of efficiency. To illustrate the point, Figure 14 analyses the medals won at Tokyo 2020. When we examine the data of elite sport funding in 2020, the strength of the relationship between elite sport expenditure and medals won is 0.80 which is a strong positive correlation that is statistically significant ($p<0.01$).

We can conclude reasonably confidently for the sample nations that the saying "more money in equals more medals out" also appears to be applicable to the Tokyo 2020 data.

Interestingly, Figure 14 shows that some nations achieve 'more' success with 'less' investment. Nation-by-nation diagnostics of the 13 nations show that the United Kingdom, The Netherlands, New Zealand and Sweden can be identified as the most efficient nations in Tokyo given their investment. They won respectively 65, 36, 20 and 9 medals and are located above the line of best fit. Japan performed in line with the model. The countries that under performed in Tokyo, given their funding allocation, are Canada, Brazil, Switzerland, Poland and some nations with smaller elite sport expenditures (Finland, Flanders, Portugal).

Whilst policy makers have an immediate concern with a point in time (e.g. Tokyo 2020), it is also useful to look at the changes in funding against the changes in medals won over time, which we demonstrate in Section 5.2.

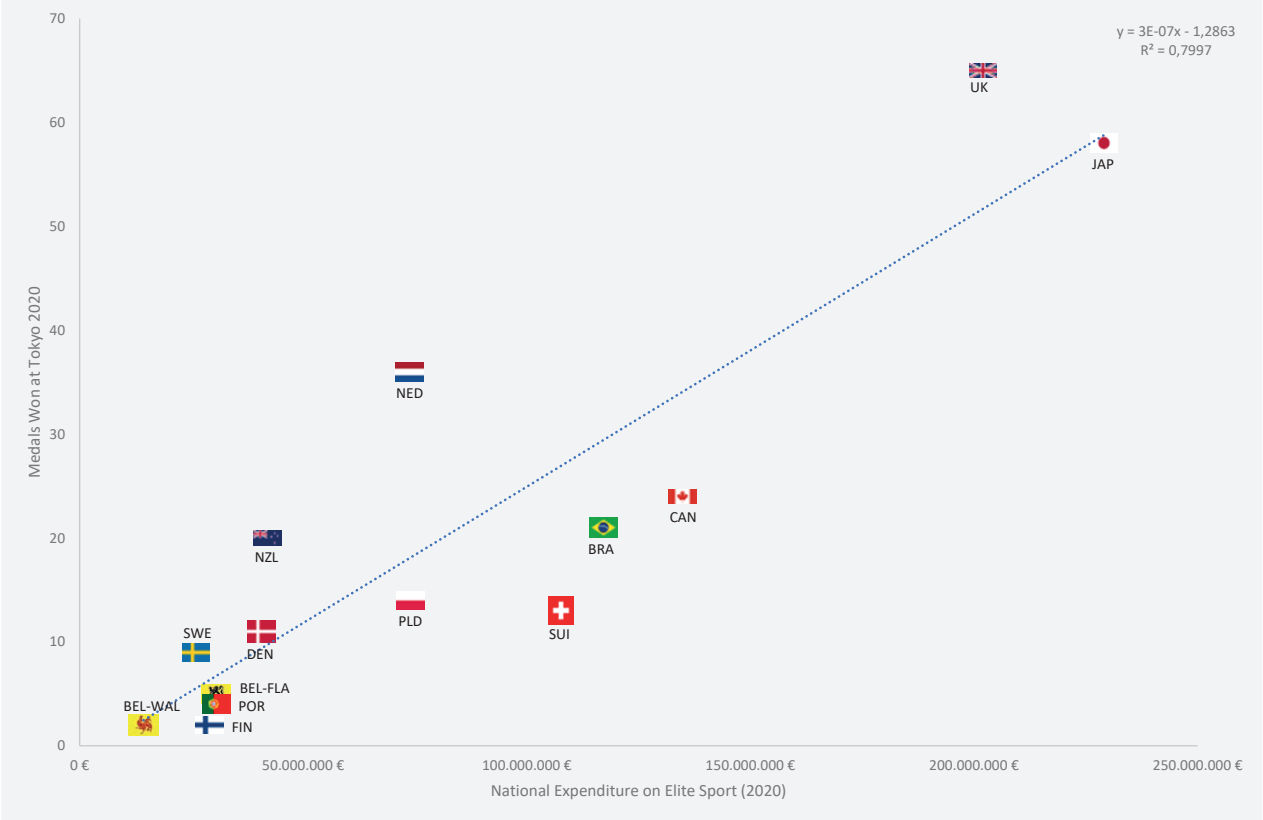


Figure 14: Medals won at Tokyo 2020 versus elite sport Investment in 2020 (as the most complete and reliable dataset)

9 Given that we lack the full data set of Australia, the 2020 expenditures are an under estimation of overall elite sports spending.

5.2 TIME SERIES ANALYSIS

While 'money in equals medals out' it does not follow that 'MORE money in, compared with previous investments, will equal more medals out'. As shown in the previous SPLISS 1.0 and 2.0 studies, more money was required to invest in the system just to maintain a consistent level of success, with diminishing returns to scale found in the relationship between resources and the additional output achieved from them.
In the short term, the best comparison is the change in medals won relative to the change in investment between Tokyo 2020 and Rio 2016. Figure 15 provides this analysis and is based on 13 data points for which we have directly comparable data.

The data presented in Figure 15 provide a mixed picture of the relationship between the change in funding and the change in medal share between Rio 2016 and Tokyo 2020. At the left-hand side of the graph, we see that both Brazil and Canada reduced their expenditure considerably (-49% (after the Olympic Games in Rio) and -22% (after the Pan American Games in Toronto) respectively), but the impact on the share of the medals was relatively modest (-0.4% and -1.7% respectively). By contrast, on the right-hand side of the graph in the upper quadrant are six nations which increased their expenditure on elite sport between Rio and Tokyo and simultaneously increased their share of medals, with remarkable results in the Netherlands (+17 medals), Australia (+17 medals), Japan (+17 medals) and Switzerland (+6 medals). For Portugal and Finland, whilst the relative change in medals is high, it is only modest in absolute terms (4 v 1; and 1 v 0 respectively). In the bottom right-hand quadrant are three nations which despite increasing expenditure experienced a reduction in their share of medals (Denmark, United Kingdom and Sweden). The correlation between the change in funding and the change in medal share is modest at 0.14. It is notable that there are no nations in the upper left-hand quadrant whereby a reduction in expenditure is associated with an increase in medal share.
What we are looking at is probably three clusters of performance types, which are nuanced and would benefit from larger sub-sample sizes and qualitative research with relevant stakeholders. However, the key point of note is that a generalisation such as diminishing returns to scale ('the global sporting arms race') is not proven by the data and more subtle interpretations are necessary.

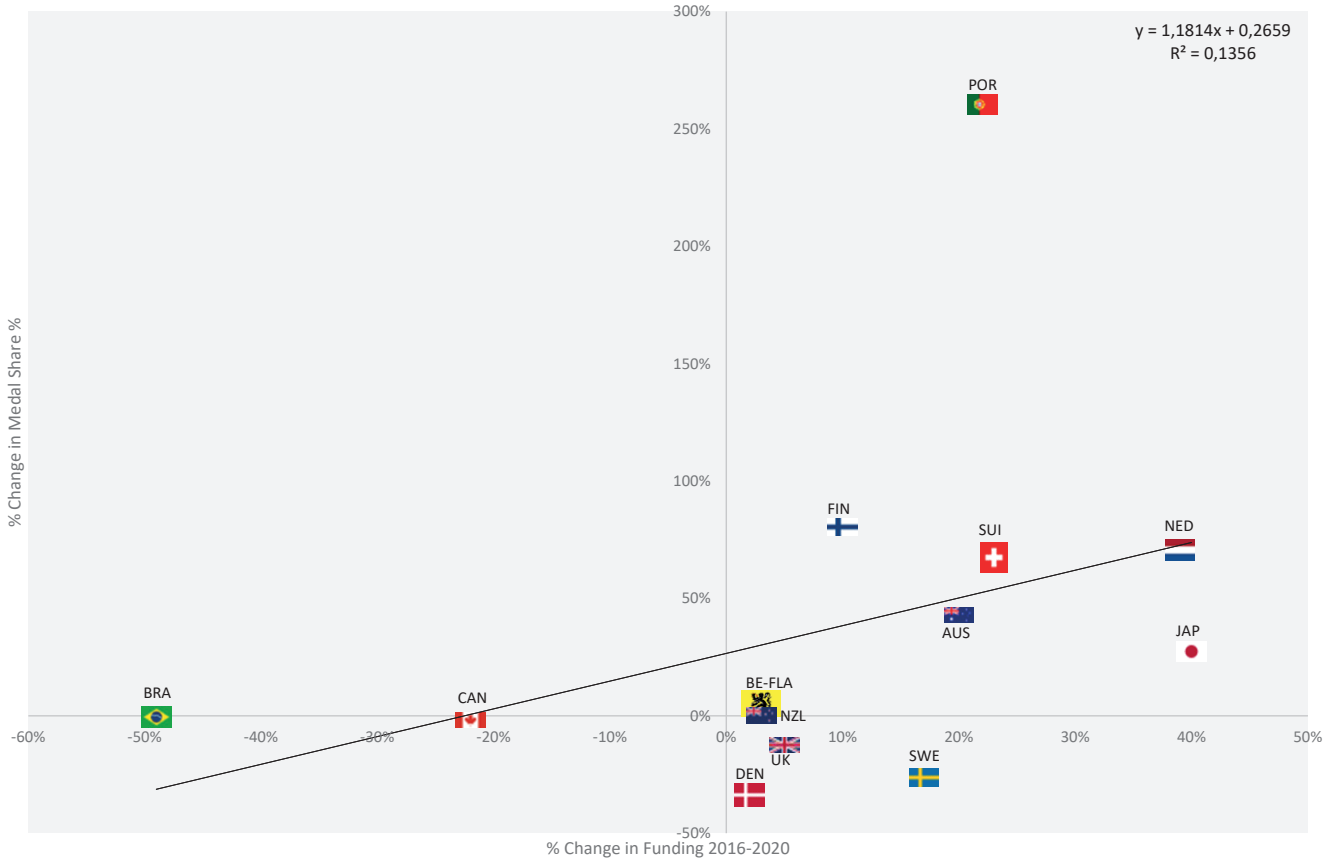
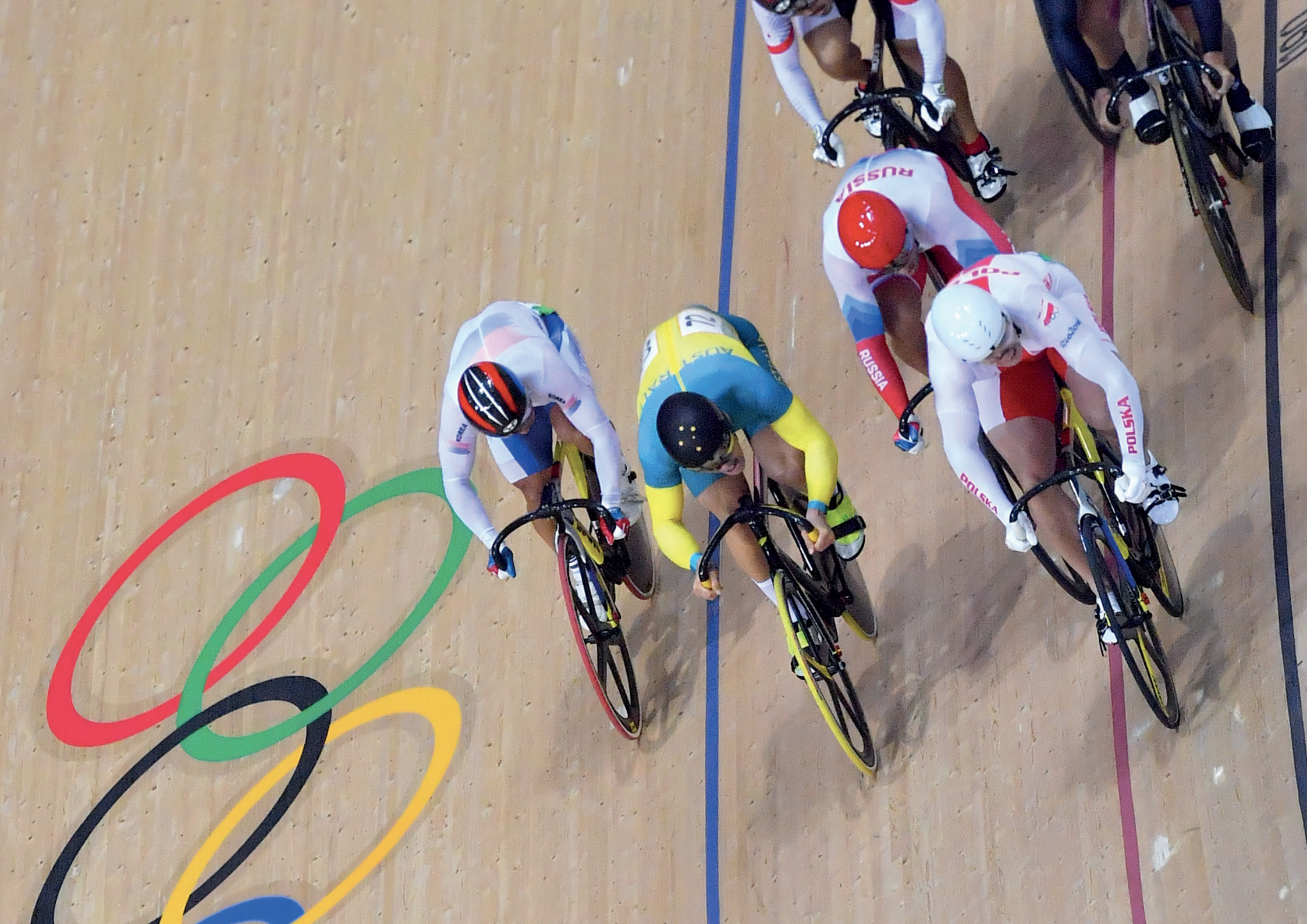


Figure 15: Change in funding versus change in medal share Tokyo 2020 v Rio 2016


RUSSIA
RUSSIA
POLSKA
POLSKA

6. CONCLUSIONS

The SPLISS Pillar 1-Light challenge for the Tokyo 2020 Olympic Games was accepted by 15 nations and provinces and the results provide useful contemporary insight into the funding for elite sport, the outputs achieved, and the relationship between the two measures. Our key findings are outlined below in bullet point style.

- Measuring inputs on a meaningful 'like for like' basis is difficult and not all contributors were able to provide the data required in the format required for all variables. Therefore, our analysis is pragmatic in the sense that we make the best use of the data available.
- Our sample of nations is atypical of the population of nations. On the inputs' side, the participating nations account for c. 6.8% of the participating nations, c. 7.5% of the world's population and c. 19.6% of the world's wealth. On the outputs' side they account for 29.6% of Olympians at Tokyo 2020; 30.7% of all Top 8 places; 30.6% of all medals won; and 33.5% of all gold medals won.
- Tokyo was an uncertain Olympic Games in terms of: whether it would take place; being a five year cycle rather than a four year cycle; the introduction of new sports, disciplines and events; disruption to training and international competition; and taking place without spectators.
- Tokyo 2020 witnessed the largest increase in the Olympic programme of all time, with five new sports, 33 new events and 107 medal winning opportunities being added to the programme
- Most of the contributing nations increased their number of medals won in Tokyo 2020 compared with Rio 2016. Collectively, the sample has increased its share of medals from 22.8% to 30.6% between Sydney 2000 and Tokyo 2020.
- There is a strong positive correlation (0.80) between the absolute amount of money invested in elite sport and the absolute number of medals won in Tokyo 2020.
- The relationship between relative change in funding and relative change in medals is relatively weak (0.14) and challenges the veracity of the view that there are diminishing returns to scale ('a global sporting arms race').
- Whilst there is evidence about the relationship between the input of finance and the output of medals, much less is known about the societal impacts of the Olympic Games. What evidence is there that the event is a platform for private sector investment and the public sector leveraging the event to improve people's lives? This is our call for the next generation of SPLISS research.
- With the increasing importance and profile of the Paralympic Games, there appears to be a huge opportunity to adapt the analysis presented here to the Paralympic Games as well.


Beijing 2008
25
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APPENDICES

APPENDIX 1: TOKYO INFORMATION

Nation	Gold	Silver	Bronze	Total
Ecuador	2	1	0	3
Latvia	1	0	1	2
Bermuda	1	0	0	1
Kyrgyzstan	0	2	1	3
San Marino	0	1	2	3
Namibia	0	1	0	1
North Macedonia	0	1	0	1
Saudi Arabia	0	1	0	1
Turkmenistan	0	1	0	1
Botswana	0	0	1	1
Burkina Faso	0	0	1	1
Ghana	0	0	1	1
Kuwait	0	0	1	1
Moldova	0	0	1	1
Syria	0	0	1	1
Totals	**4**	**8**	**10**	**22**

Nations which won a medal in Tokyo 2020 but did not in Rio 2016

Nation	Gold	Silver	Bronze	Total
North Korea	2	3	2	7
Vietnam	1	1	0	2
Independent Olympic Athletes	1	0	1	2
Singapore	1	0	0	1
Tajikistan	1	0	0	1
Algeria	0	2	0	2
Niger	0	1	0	1
Burundi	0	1	0	1
Trinidad and Tobago	0	0	1	1
United Arab Emirates	0	0	1	1
Totals	**6**	**8**	**5**	**19**

Nations which won a medal in Rio 2016 but not in Tokyo 2020

Note: Table shows medals won at Rio 2016, all achieved 0 in 2020.

APPENDIX 2: NATION SPECIFIC NOTES

APPENDIX 2.1: NATIONS' OVERALL EXPENDITURES ON ELITE SPORT IN 2020

The following information is important to take note of for every nation.

Australia The figures are potentially an under estimation of total national government spend on HP sport. The figures in Australia are those reported in the ASC Annual Reports (Australian Government (i.e. Federal Government revenue only)). The funding previously appropriated to the AIS (Australian Institute of Sport) and its associated national high-performance programs/initiatives (such as athlete and coach talent development; coordination of sports science, sports medicine and elite sport research; support for HP strategy, planning and delivery) are no longer separately identifiable. Therefore, the only comparable elite sport funding data over the past three Olympic cycles is High Performance funding to National Sporting Organisations (NSOs).

Brazil The funding includes the national government (only for elite sports), lottery funding, tax exemption amounts in favour of the elite sport and army funding for athletes (grants). Lottery funding is transferred to the Brazilian Olympic Committee, Brazilian Paralympic Committee, Brazilian Club Committee, and for elite football clubs. Funding delivered by state companies was not considered.

Canada (proxy) An estimation of 57% spent on high performance sport in SPORT CANADA, based on a breakdown for the 2018-19 budget that was used as a guide. Annual budget numbers are harder to discern, because of the regionalised/state funded sport system. In addition to the Federal Govt (Sport Canada), the researcher added elite sport expenditures by Provinces (as sport is regionalised) and complemented this with Canadian Olympic and Paralympic Committee data. In SPLISS 2.0 (2011) expenditures were €120m (CAD$188m), which is half of the 2020 expenditure. The following comments need to be kept in mind for Canadian funding:

- Understanding the financial support for Canadian high-performance sport is challenging in that it is a combination of centralized federal government support in addition to Provincial / State and corporate and independent non-profit directives. Also discerning whether funding should be labelled as grassroots development or high performance is sometimes difficult.
- The challenge in discerning the Canadian financial contributions also results from the convoluted Canadian sport system which is a combination of clubs that perhaps mimics a European model, the scholastic based system that might reflect the American NCAA approach and a government led system of Provincial and National Sport Organizations.
- Another complication is ascertaining funding for able bodied versus athletes with disabilities in a particular segment of the federal budget referred to as Enhanced Excellence. With that the funding defined for athletes with disabilities could be higher than reported.
- The results meanwhile were positive from a medal standpoint with Canada winning 24 medals, 7 of which were gold. This was the most medals Canada has won at an Olympics other than the boycotted Games in 1984 and it tied for the most Gold medals with our results from 1992. Of particular note is the performance of Canadian women who shined in Tokyo winning Canada's first 13 medals and 18 of the 24 in total.

Denmark (proxy) The data include an estimation of €16.3m funded by the DIF-federations and is based on SPLISS 2.0 data. DIF is the national umbrella organization for all elite sport federations in Denmark and also the National Olympic Committee. The estimate contains the national federation's budgets (i.e. the parts for elite sport paid by (mainly) public money in each federation with an elite sports program). Between 2009 and2011, this funding was stable (varying between €16.0m and €16.7m), which was used as a proxy for subsequent years until 2020.

Flanders Data include Sport Flanders, lottery funding (subsidies BOIC, Be gold, BPC, Olympic Games) and BOIC remaining funding; data exclude additional funding for elite sport facilities; data exclude national lottery sponsorship (cycling team, 7.3million Euros, as this is not nationally coordinated funding). For National data, an estimation is made, based on 2/3 athletes from Flanders and 1/3 from Wallonia.

Finland Data include state subsidies from the state sport budget 2020: Finnish Olympic Committee (2,0 M€ elite sport share of the general subsidy), NOC/elite sport unit (6,3 M€), URA-foundation (0,3M€), State athlete grants (2,0 M€), Sport academies & training

	centres (3,8 M€), Organization of international competitions (1,6 M€), KIHU - research institute (1,7 M€). 3,1 M€ subsidy for sport schools outside the sport budget. Data do not include funding for elite sport facilities (2017-20: Helsinki Olympic training centre & sport academy campus and Tampere Arena) or the renovation of the Olympic Stadium, Helsinki 2012-2020 (total 337 M€, of which government paid 168,5 M€ and the city of Helsinki 168,5M€). In addition an estimation of 30% of NGBs subsidisation was estimated to be spent on elite sport, based on earlier research.
Japan	The government funding shows the total amount of the elite sport budget within the national sports budget. The figures are calculated by adding up the expenses for improving international sporting performance and the operating grants to the Japan Sport Council (JSC) according to the Ministry of Finance's general account (initial budget). For Lotteries, the amount of subsidies granted by the Sports Promotion Lottery, especially for improving Japan's competitiveness in sports, is tabulated. In Other, the amount of subsidies for the activities that contribute to enhancing Japan's competitiveness in sports among the amount of subsidies granted by the Sports Promotion Fund is tabulated (i.e. grants to sports organizations for athlete development activities and hosting competitions, individual grants to athletes and coaches).
Poland	The funding includes Elite sport research - 1000000 PLN; Methodical support for coaches - 1720000PLN
Switzerland	(a) Data in 2019/2020 were not available and are estimated based on 2018 data. These are an under estimation because funding increased after 2018 (the data are calculated including the internal cost for elite sport by the Federal Institute of Sport, which were not available). From 2020 onwards, due to the Covid-19 pandemic, the financial support for elite sports has been increased exceptionally by the central government. b) For comparability reasons, the figures exclude expenditures on elite sport facilities in Magglingen and Tenero, as well as the costs of the Swiss Federal Institute of Sport Magglingen SFISM for elite sports, which is CHF31m (€28.7m) in total. When including these, the total amount of funding is €136m.
Sweden	Figures as per the year end reports of the Swedish Sports Confederation, Swedish Olympic Committee and Swedish Parasport Federation and Paralympic Committee.
United Kingdom	The national expenditures on elite sport in 2020 include the organization of large-scale international high-performance events: £1.7m for the Road Cycling Championships in 2019, as well as £2.0m for the Women's Euro Football Championships 2021.The amount awarded to NGBs to deliver their elite sport development programmes will not equal the total expenditure made on elite sport. This is because our figures include the expenditure made on UK Sport itself, which is in effect a vital component of Pillar 2 for the entire system. In addition, the expenditure made by the BOA cannot be disaggregated by sport as it relates to the entirety of the BOA's activities which may involve sports that are not funded e.g. professional sports such as tennis, golf, and rugby sevens. Financial Performance: Total income of £149.3 million (£144.3 million in 2018-19) was received by UK Sport which included £7.4m from DCMS in respect of the underwrite against shortfalls in Lottery income. UK Sport received £81.3 million from the National Lottery Distribution Fund (£73.4 million in 2018-19) and £67.4 million from Exchequer (£70.1 million in 2018-19). Exchequer Funding includes £1.7m for the Road Cycling Championships in 2019, as well as £2.0m for the Women's Euro Football Championships 2021.
Wallonia	Data include FWB (11.9m€), lottery funding (subsidies BOIC, Be gold, BPC, Olympic Games) and BOIC remaining funding; data exclude additional funding for elite sport facilities; data also exclude national lottery sponsorship (cycling team, 7.3million Euros, as this is not nationally coordinated funding)

APPENDIX 2.2: SPLISS NATIONS' LONGITUDINAL OVERALL EXPENDITURES ON ELITE SPORT

The following information is important to take note of for every nation.

Australia
The figures are potentially an under estimation of total national government spend on HP sport. The figures in Australia are those reported in the ASC Annual Reports (Australian Government (i.e. Federal Government revenue only)). The funding previously appropriated to the AIS (Australian Institute of Sport) and its associated national high-performance programs/initiatives (such as athlete and coach talent development; coordination of sports science, sports medicine and elite sport research; support for HP strategy, planning and delivery) are no longer separately identifiable. Therefore, the only comparable elite sport funding data over the past three Olympic cycles is High Performance funding to National Sporting Organisations (NSOs).

Brazil
2007: The high peak in 2007 is explained by the organisation of the Pan American Games (=166.048.903€)
2009 was the announcement of the Rio Olympic Games in Brazil
2012 was the development of the "Brazil Medals Plan"
2014: 1) World Cup Football; 2) Brazil Medals Plan in preparation for Rio;
2016: Brazil hosted the Rio Olympic Games
2018: Politics, with new elections, new parties and changing policies (sport ceases to be an investment priority).

Canada (proxy):
Data only contain Sport Canada figures. The Canadian data, annual budget numbers are hard to discern, because of the regionalised/state funded sport system. An estimation of 57% spent on high performance sport in SPORT CANADA, based on a detailed breakdown of the 2018-19 budget was used as a guide by the local researcher. NOC data are not included in this figure.
In the long-term data, the financial support that is related to the organisation of international events is included in the data.

- 2010: Olympic and Paralympic Games in Vancouver
- 2013: The changes in 2013 and 2014 are likely the result of increased investment in Canada hosting the 2015 Pan Para Pan-American Games in Toronto.
- 2015: Pan American Games Toronto

Denmark (proxy):
As long-term data on elite sport are only available from Team Denmark (and not DIF) an estimated proxy was made based on SPLISS 2.0 data. The data include an estimation of €16.3m funded by the DIF-federations and is based on SPLISS 2.0 data. DIF is the national umbrella organization for all elite sport federations in Denmark and also the National Olympic Committee. The estimate contains the national federation's budgets (i.e. the parts for elite sport paid by (mainly) public money in each federation with an elite sports program). Between 2009 and2011, this funding was stable (varying between €16.0m and €16.7m), which was used as a proxy for the next years until 2020.

Flanders
Longitudinal data include: Subsidies elite Bloso/Sport Vlaanderen as defined by the decree, Funding for elite sport at the departement CJSM: subsidies & finance elite Service Level Agreement (infrastructure), employment elite athletes (Bloso/SVL), operations funding through Be Gold and Sport Vlaanderen.

Finland
To estimate the share of NGBs subsidies for elite sport, the researcher added 25 % (2009-12) and 30 % (2013-2021). The latter (30 %) is based on an earlier study with NGBs in 2014 (n=64 NGB's). Although the percentage is estimated to be higher in 2017-2020, there are no confirming figures.
The elite sport reform project (2010-12) led to changes in the level of elite sport expenditure made by the state.
Until 2013 25% of the general subsidies to NGBs was counted as elite sport support. In 2013 new subsidy to the NOC's elite sport unit replaced this support. In addition an estimation of 30% of NGBs' general subsidies was estimated to be spent on elite sport, based on earlier research.
2017: NOC became the umbrella organization of Finnish sport and organizes physical activity.
2019: Finnish Paralympic Committee became the umbrella organization for Paralympic and disabled sport and organized physical activity.

Japan
In 2021, Japan hosted the 2020 Olympic Games in Tokyo
Note: the way elite sport expenditure is calculated is slightly different before and after 2008. The government funding figures for 2002-2007 (A) are based on the Ministry of Education, Culture, Sports, Science and Technology (MEXT)'s own data, while the figures for 2008 and onwards (B) are calculated by adding up the expenses for improving international sporting performance and the operating grants to the Japan Sport Council (JSC) according to the Ministry of Finance's general account (initial budget). Basically, there is no difference between the projects included in (A) and (B). These data include expenses entrusted to local governments and private organizations for elite sport projects, subsidies for holding the National Sports Festival,

	subsidies to the Japanese Olympic Committee, expenses for the development of the National Training Center, and subsidies for the operation of the JSC. It also includes a budget for Paralympic and elite sports.
New Zealand	Data only available since 2008
Poland	The figure in 2017 is the average of 2018-2019-2020, since data were not available; long-term data exclude funding for Paralympic sport.
Sweden	Data represent ONLY government funding plus NOC and NPC commercial money. - 2008: The SSC received additional funding for elite sports from the government that was recorded in the year-end report for 2008. - 2012: The specific elite sports funding from the government was seized and support was cut. - 2013: The SSC regrouped and allocated further resources towards elite performance. - Up until 2008 funding was not allocated specifically to elite sport in the Swedish Sport system, nor by the government, nor by the Swedish Sports Confederation (SSC), distributed to the NGBs. Although federations did use basic funding also for elite sport, it was not exactly determined. Therefore, change in funding in the graph, may be an over estimation of actual changes.
Switzerland	Data in 2019/2020 were not available and are estimated based on 2018 data. These are an under estimation because funding increased after 2018 (the data are calculated including the internal cost for elite sport by the Federal Institute of Sport, which were not available). From 2020 onwards, due to the Covid-19 pandemic, the financial support for elite sports has been increased exceptionally by the central government. 2008: Switzerland hosted the UEFA Football European Championships together with Austria (which explains the peak in 2008). For comparability reasons since 2012, we recalculated the data before 2012. 2019: This figure is the average from 2017-2018-2020.
United Kingdom	In 2012, UK hosted the London Olympic Games In the Tokyo 2020 cycle total national expenditure on Paralympic sport was £74.9m or the equivalent of £18.7m per year. In the Beijing 2020 cycle total national expenditure on Paralympic sport is £3.5m or the equivalent of £0.88m per year. These figures exclude any expenditure that might be derived from the British Paralympic Association (local currencies).


BRA

APPENDIX 3: LONG-TERM COMPARATIVE GRAPHS

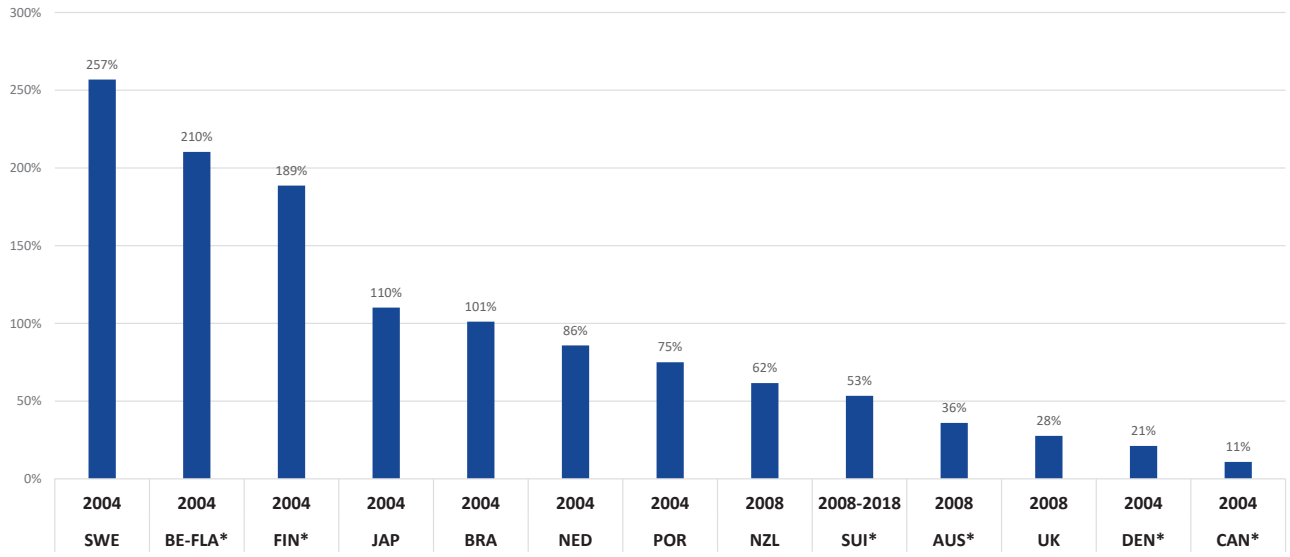
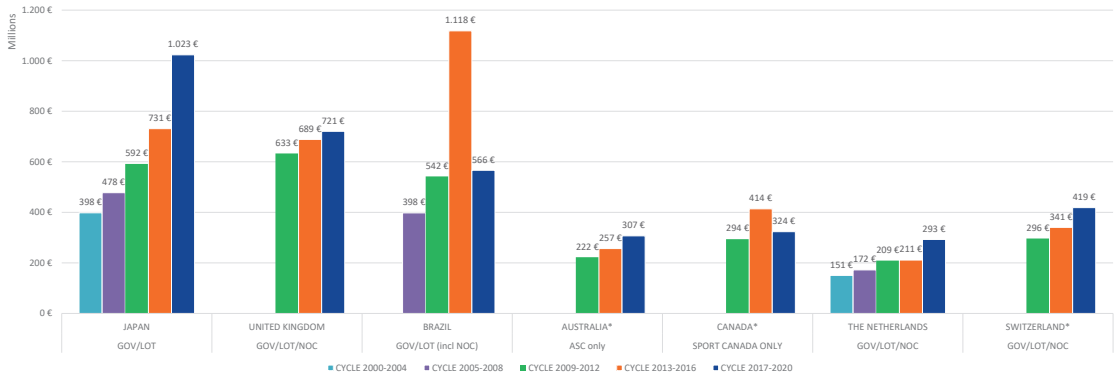


Figure: CHANGE in ELITE SPORT EXPENDITURES (12 nations) in 2020 since 2004 or the earliest point in time of data available



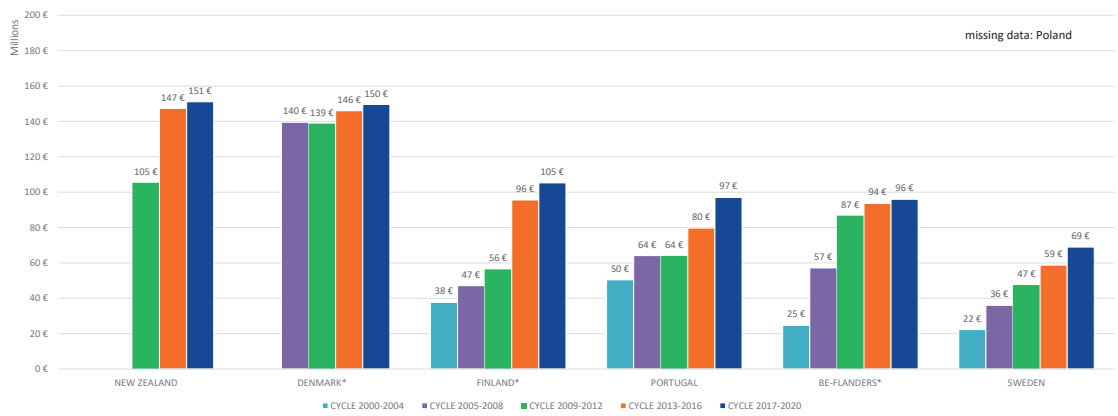


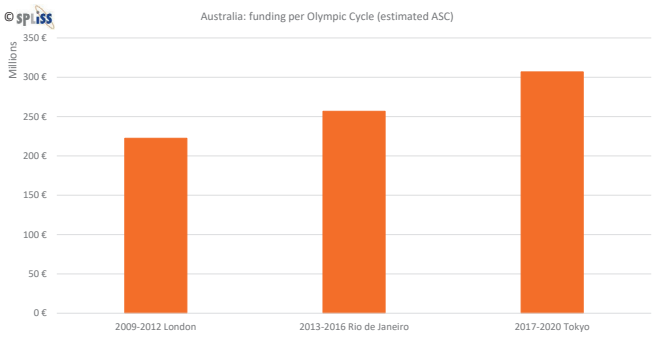
Figure: LONGTERM ELITE SPORT EXPENDITURES by nation; missing: Poland, Be-Wallonia

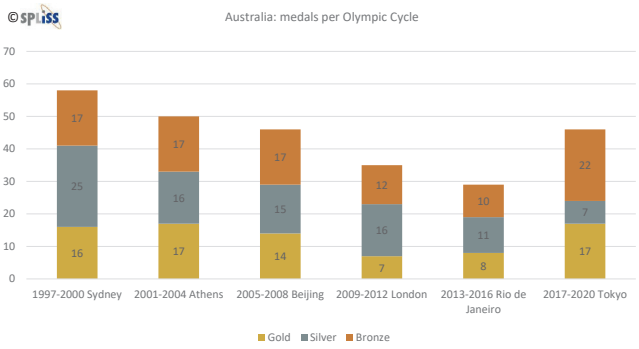
APPENDIX 4: EXCHANGE RATES

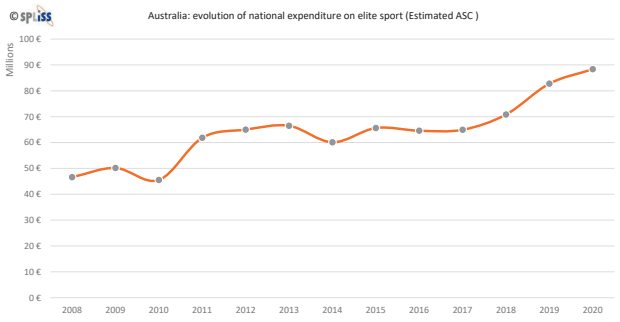
Countries	Currency exchange to euro	Exchange to i$
Australia	1,5864	1,472
Brazil	6,3507	2,362
Canada	1,5596	1,206
Denmark	7,4414	6,597
Finland	1	0,84
Flanders	1	0,751
Japan	126,1944	102,835
The Netherlands	1	0,773
New Zealand	1,6998	1,45
Poland	4,5677	1,782
Portugal	1	0,57
Sweden	10,0422	8,765
Switzerland	1,0813	1,139
United Kingdom	0,85	0,7

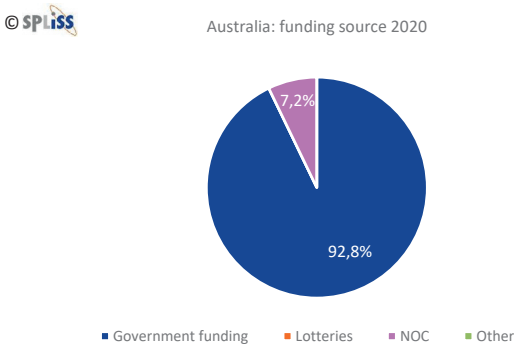

TOKYO 2020

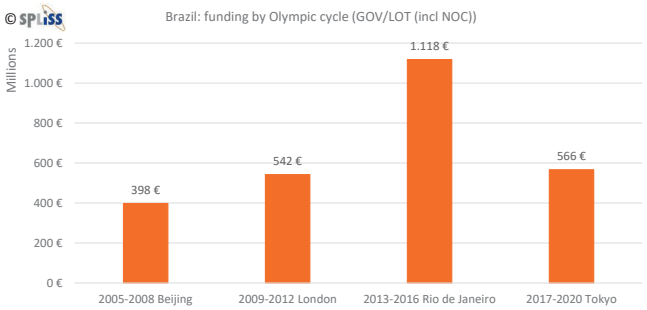
APPENDIX 5: DATA FROM INDIVIDUAL NATIONS

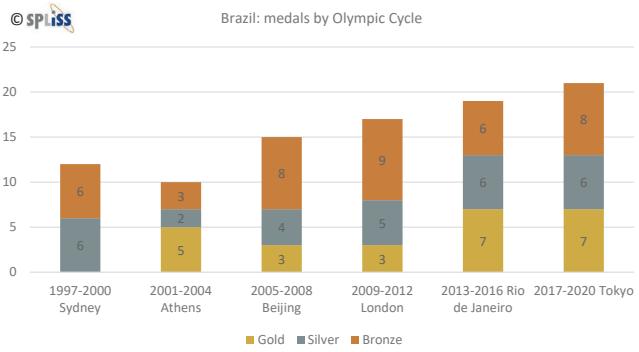


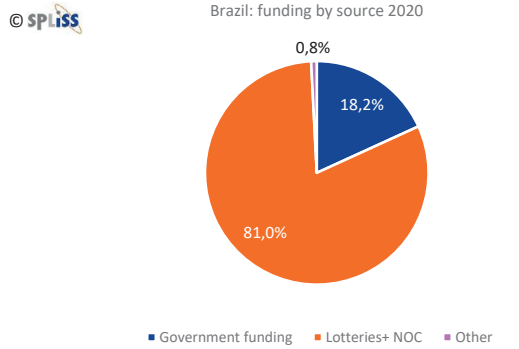


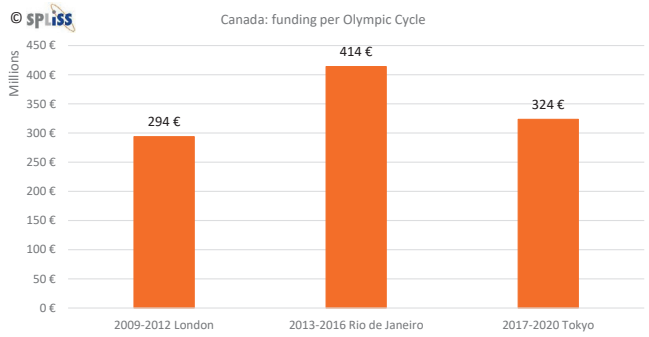


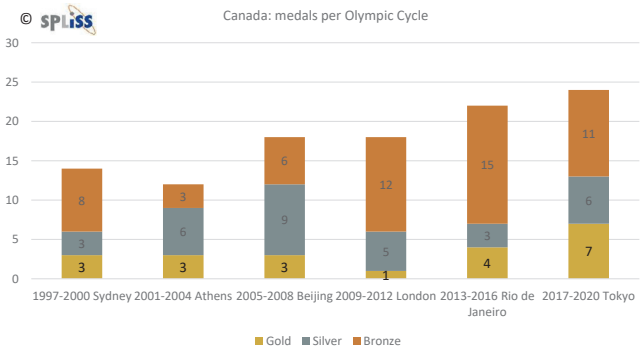


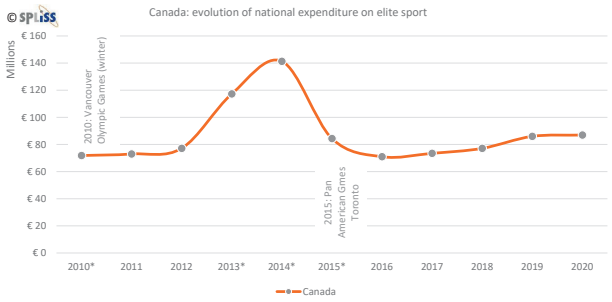


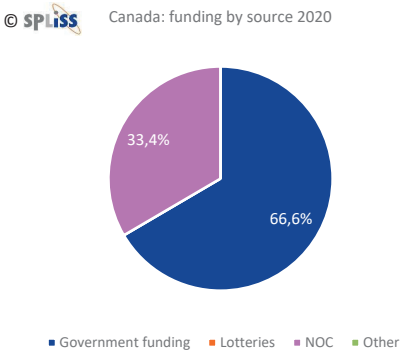


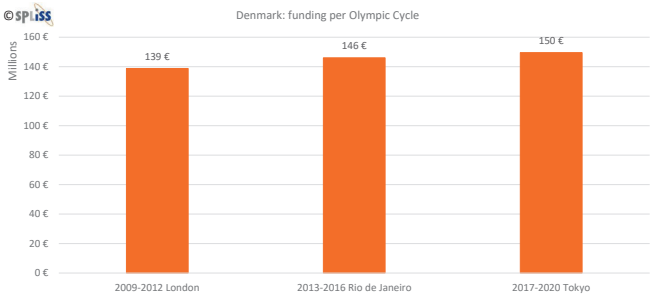


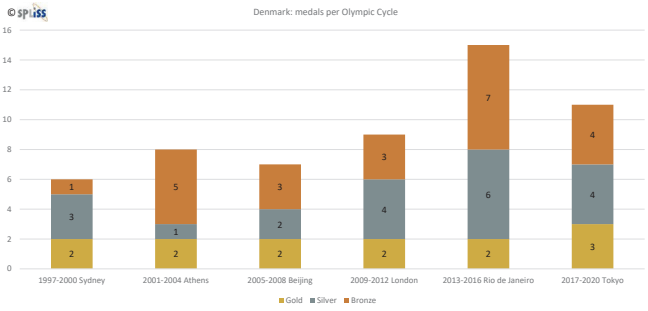

© SPLISS
Canada: funding per Olympic Cycle
Millions
450 €
400 €
350 €
300 €
250 €
200 €
150 €
100 €
50 €
0 €
294 €
414 €
324 €
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo

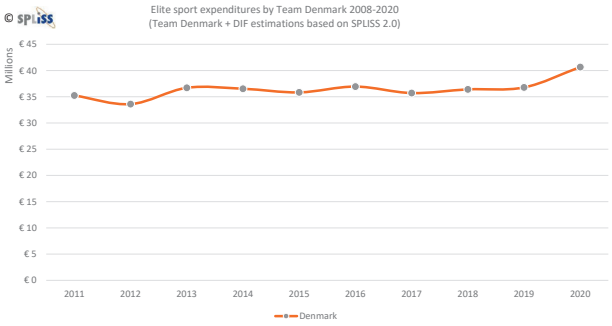

© SPLISS
Canada: medals per Olympic Cycle
30
25
20
15
10
5
0
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze


© SPLISS
Canada: evolution of national expenditure on elite sport
Millions
€ 160
€ 140
€ 120
€ 100
€ 80
€ 60
€ 40
€ 20
€ 0
2010: Vancouver Olympic Games (winter)
2015: Pan American Gmes Toronto
2010*
2011
2012
2013*
2014*
2015*
2016
2017
2018
2019
2020
Canada


© SPLISS
Canada: funding by source 2020
33,4%
66,6%
Government funding
Lotteries
NOC
Other


© SPLISS
Denmark: funding per Olympic Cycle
Millions
160 €
140 €
120 €
100 €
80 €
60 €
40 €
20 €
0 €
139 €
146 €
150 €
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo


© SPLISS
Denmark: medals per Olympic Cycle
16
14
12
10
8
6
4
2
0
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze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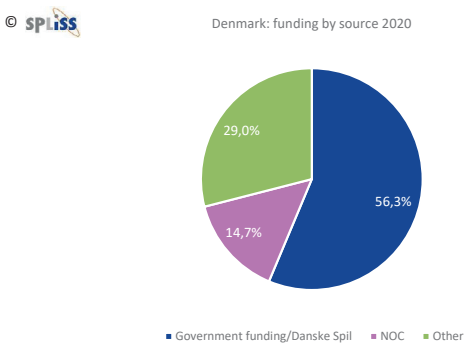
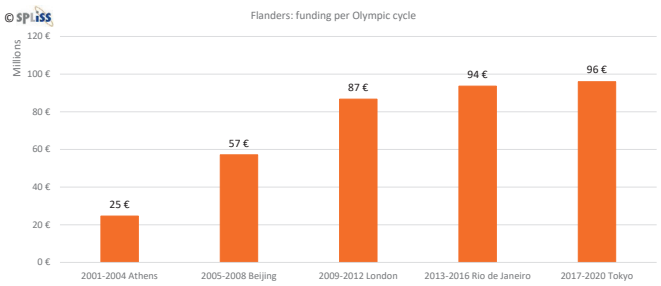
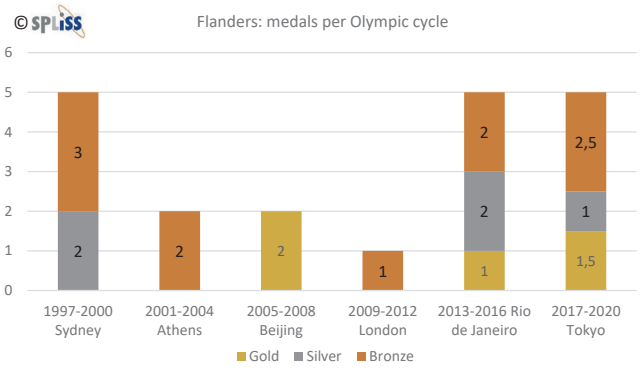
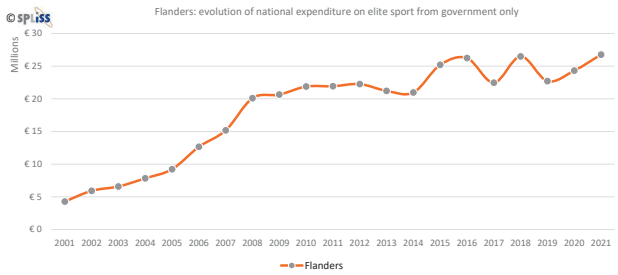
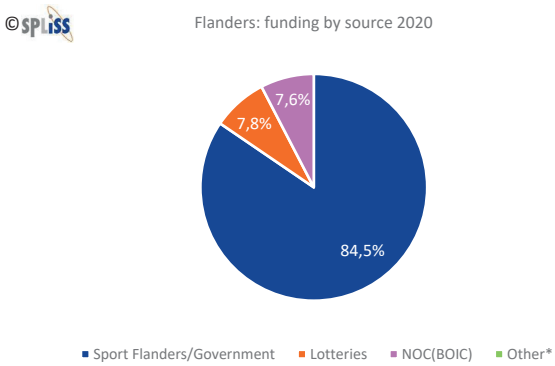
Elite sport expenditures by Team Denmark 2008-2020
(Team Denmark + DIF estimations based on SPLISS 2.0)
Millions
€ 45
€ 40
€ 35
€ 30
€ 25
€ 20
€ 15
€ 10
€ 5
€ 0
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Denmark

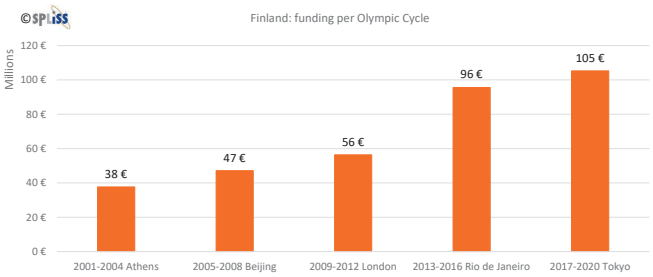

© SPLISS
Denmark: funding by source 2020
29,0%
56,3%
14,7%
Government funding/Danske Spil
NOC
Other

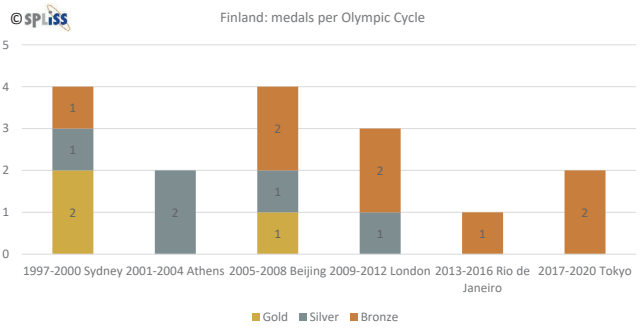

Flanders: funding per Olympic cycle
Millions
120 €
100 €
80 €
60 €
40 €
20 €
0 €
25 €
57 €
87 €
94 €
96 €
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo

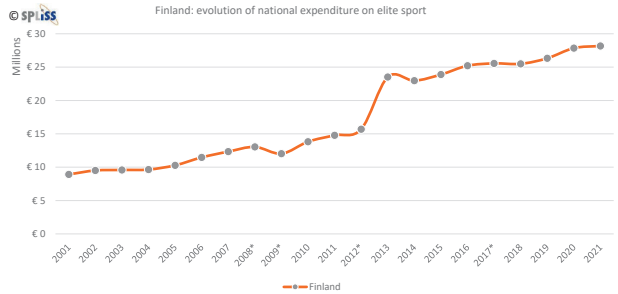

Flanders: medals per Olympic cycle
6
5
4
3
2
1
0
3
2
2
2
1
2
2
1
2,5
1
1,5
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze

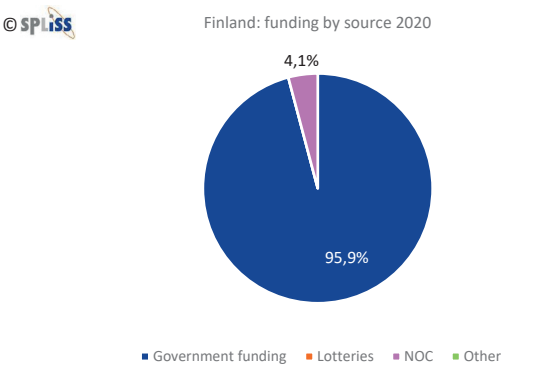

Flanders: evolution of national expenditure on elite sport from government only
Millions
€ 30
€ 25
€ 20
€ 15
€ 10
€ 5
€ 0
2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
Flanders

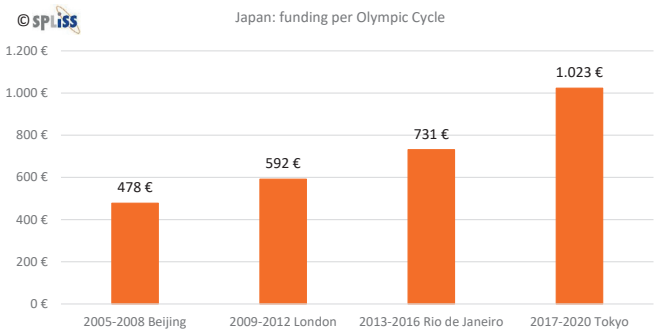

Flanders: funding by source 2020
7,6%
7,8%
84,5%
Sport Flanders/Government
Lotteries
NOC(BOIC)
Other*


Finland: funding per Olympic Cycle
Millions
120 €
100 €
80 €
60 €
40 €
20 €
0 €
38 €
47 €
56 €
96 €
105 €
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo


Finland: medals per Olympic Cycle
5
4
3
2
1
0
1
1
2
2
2
1
1
2
2
1
1
2
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze


Finland: evolution of national expenditure on elite sport
Millions
€ 30
€ 25
€ 20
€ 15
€ 10
€ 5
€ 0
2001 2002 2003 2004 2005 2006 2007 2008* 2009* 2010 2011 2012* 2013 2014 2015 2016 2017* 2018 2019 2020 2021
Finland


Finland: funding by source 2020
4,1%
95,9%
Government funding
Lotteries
NOC
Other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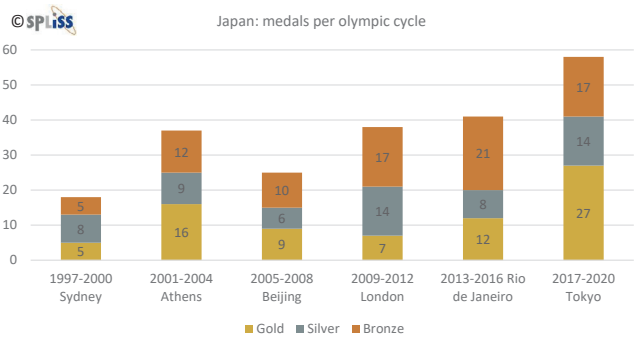
Japan: funding per Olympic Cycle
1.200 €
1.000 €
800 €
600 €
400 €
200 €
0 €
478 €
592 €
731 €
1.023 €
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo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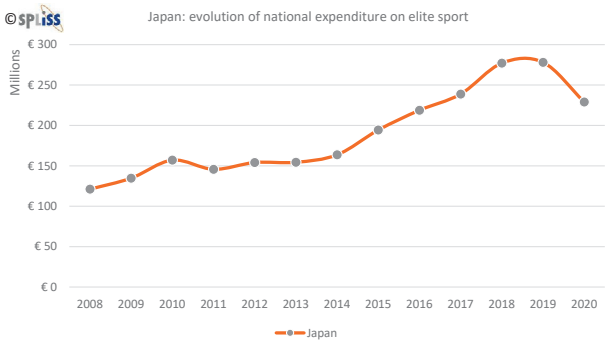
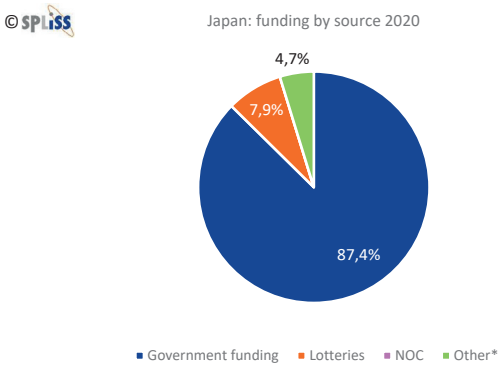
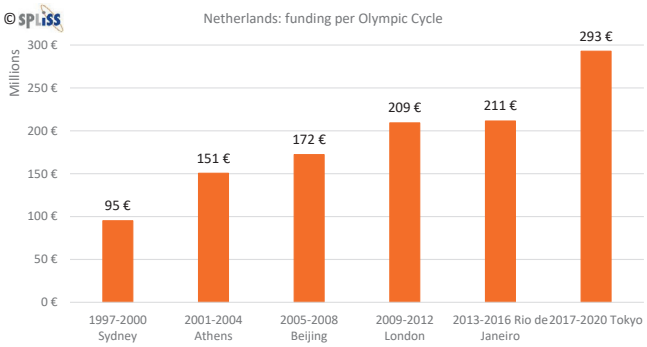
Japan: medals per olympic cycle
60
50
40
30
20
10
0
5
8
5
12
9
16
10
6
9
17
14
7
21
8
12
17
14
27
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze


© SPLISS
Japan: evolution of national expenditure on elite sport
Millions
€ 300
€ 250
€ 200
€ 150
€ 100
€ 50
€ 0
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Japan


© SPLISS
Japan: funding by source 2020
4,7%
7,9%
87,4%
Government funding
Lotteries
NOC
Other*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Netherlands: funding per Olympic Cycle
Millions
300 €
250 €
200 €
150 €
100 €
50 €
0 €
95 €
151 €
172 €
209 €
211 €
293 €
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo


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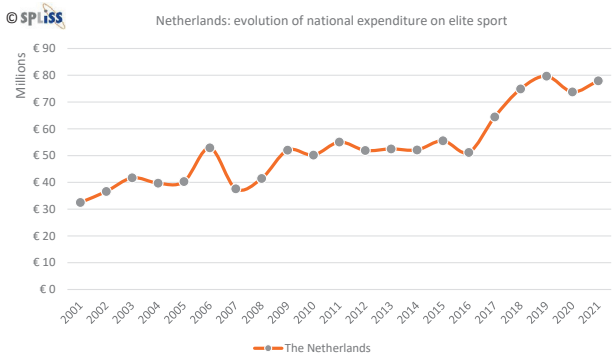
Netherlands: medals per Olympic Cycle
40
35
30
25
20
15
10
5
0
4
9
12
9
9
4
4
5
7
8
6
6
4
7
8
14
12
10
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze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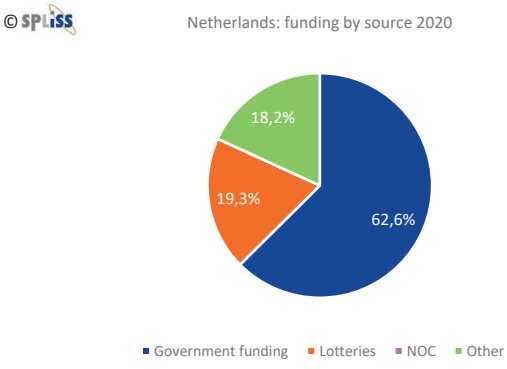
Netherlands: evolution of national expenditure on elite sport
Millions
€ 90
€ 80
€ 70
€ 60
€ 50
€ 40
€ 30
€ 20
€ 10
€ 0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
The Netherlands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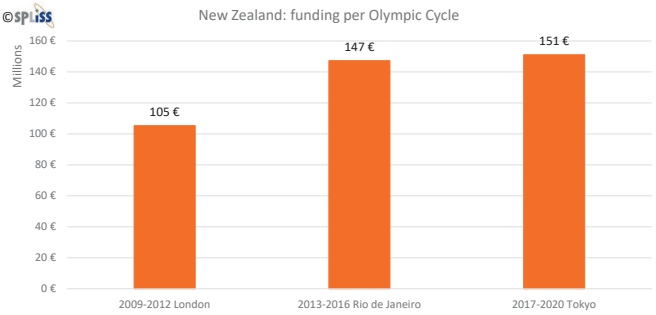
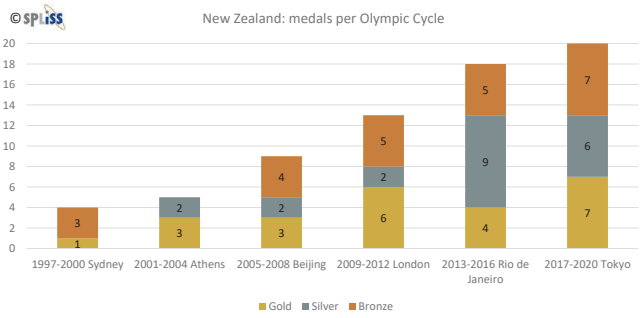
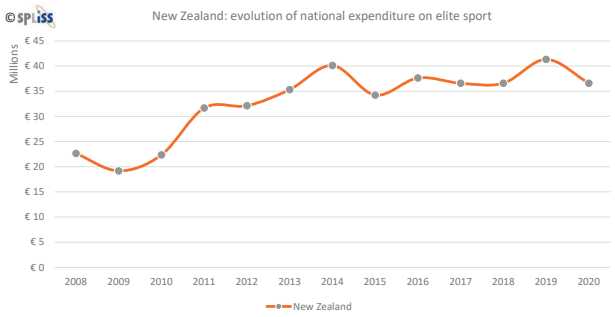
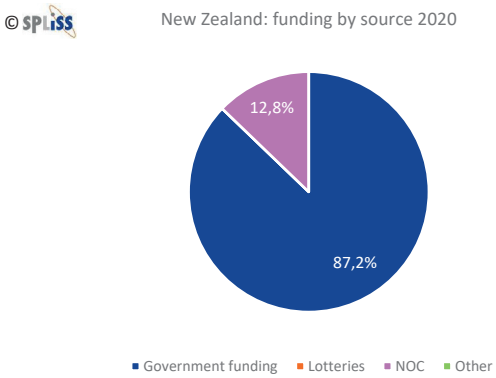
Netherlands: funding by source 2020
18,2%
19,3%
62,6%
Government funding
Lotteries
NOC
Other

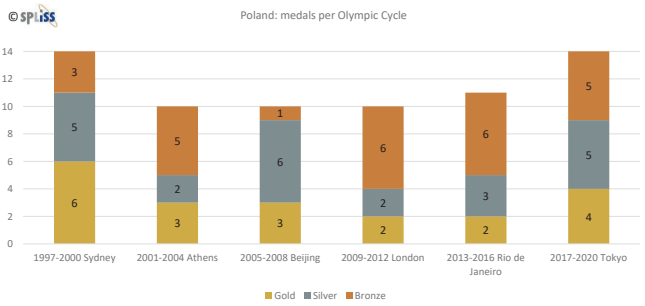

New Zealand: funding per Olympic Cycle
Millions
160 €
140 €
120 €
100 €
80 €
60 €
40 €
20 €
0 €
105 €
147 €
151 €
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo

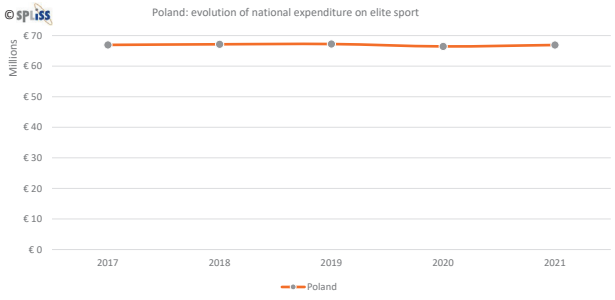

New Zealand: medals per Olympic Cycle
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze

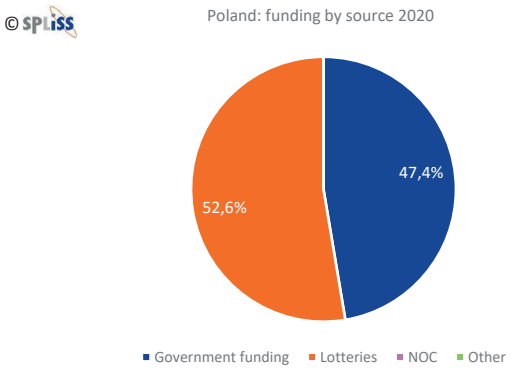

New Zealand: evolution of national expenditure on elite sport
Millions
New Zealand

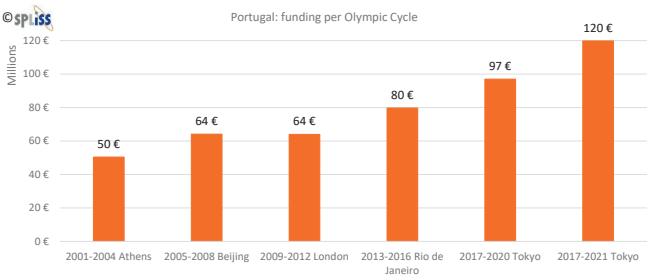

New Zealand: funding by source 2020
12,8%
87,2%
Government funding
Lotteries
NOC
Other


Poland: funding per Olympic Cycle
Millions
268 €
2017-2020 Tokyo


Poland: medals per Olympic Cycle
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze


Poland: evolution of national expenditure on elite sport
Millions
Poland


Poland: funding by source 2020
47,4%
52,6%
Government funding
Lotteries
NOC
Other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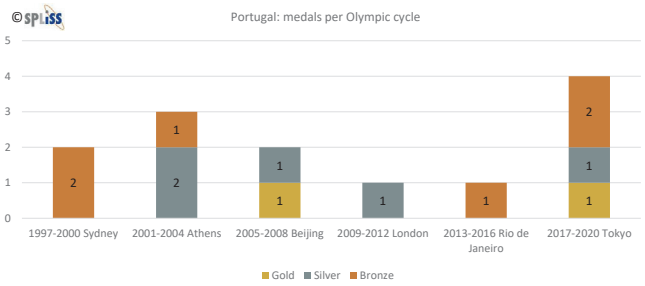
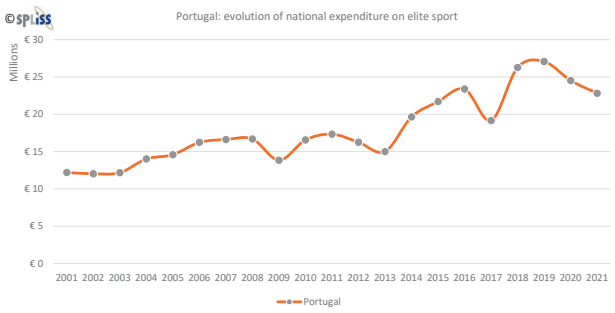
Portugal: funding per Olympic Cycle
Millions
120 €
100 €
80 €
60 €
40 €
20 €
0 €
50 €
64 €
64 €
80 €
97 €
120 €
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
2017-2021 Tokyo


©SPLISS
Portugal: medals per Olympic cycle
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze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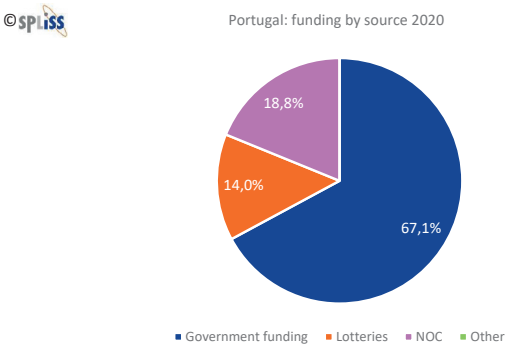
Portugal: evolution of national expenditure on elite sport
Millions
Portugal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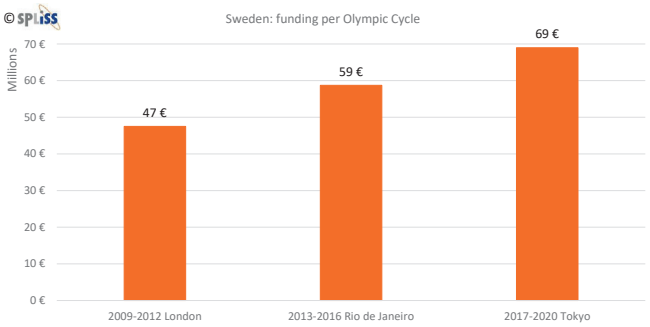
Portugal: funding by source 2020
18,8%
14,0%
67,1%
Government funding
Lotteries
NOC
Other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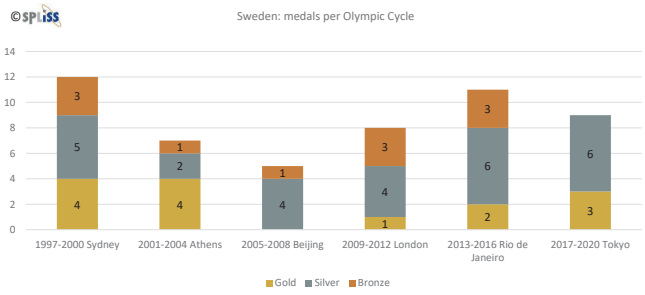
Sweden: funding per Olympic Cycle
Millions
47 €
59 €
69 €
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo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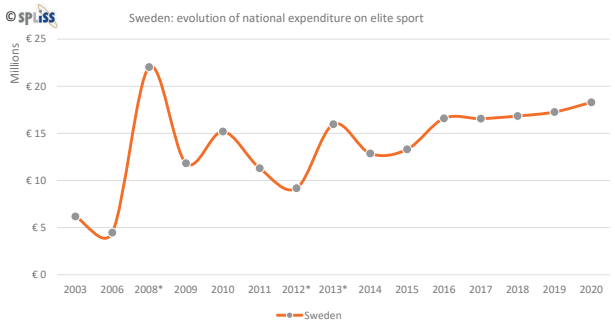
Sweden: medals per Olympic Cycle
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze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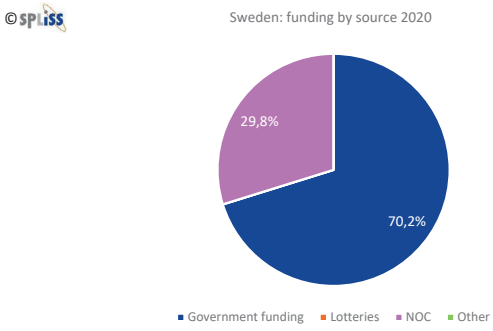
Sweden: evolution of national expenditure on elite sport
Millions
Sweden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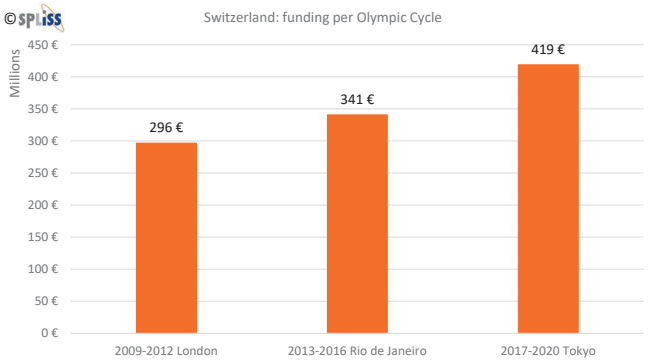
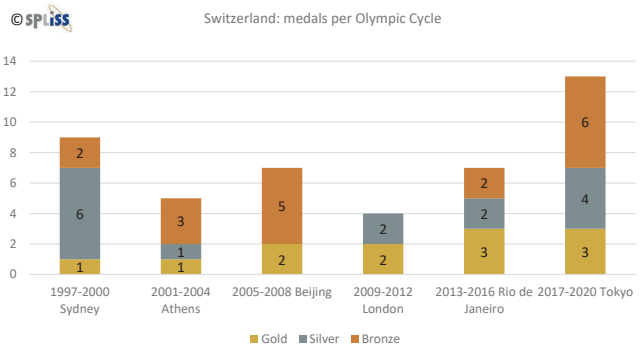
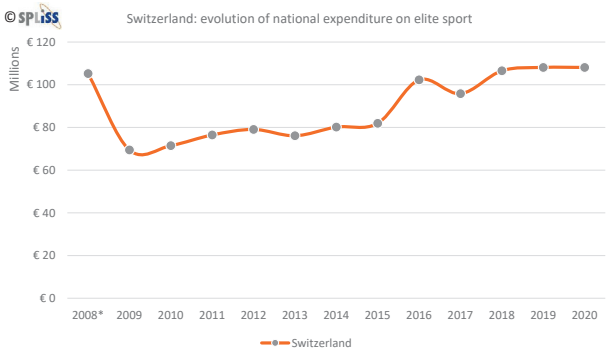
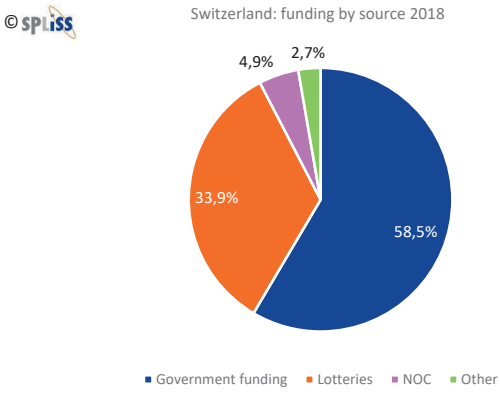
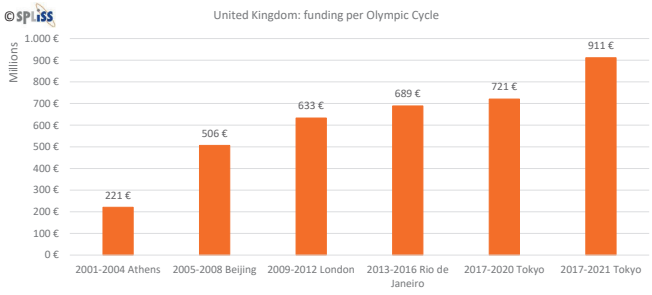
Sweden: funding by source 2020
29,8%
70,2%
Government funding
Lotteries
NOC
Other

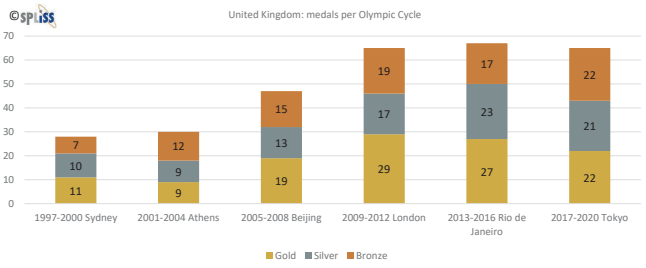

Switzerland: funding per Olympic Cycle
Millions
450 €
400 €
350 €
300 €
250 €
200 €
150 €
100 €
50 €
0 €
296 €
341 €
419 €
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo

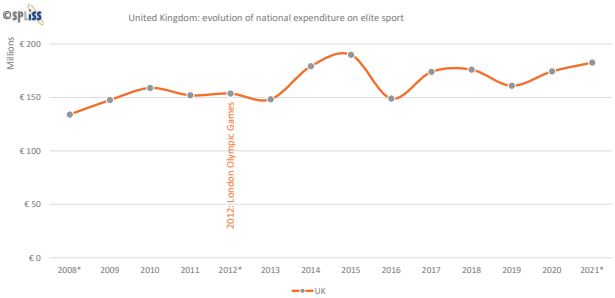

Switzerland: medals per Olympic Cycle
14
12
10
8
6
4
2
0
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze

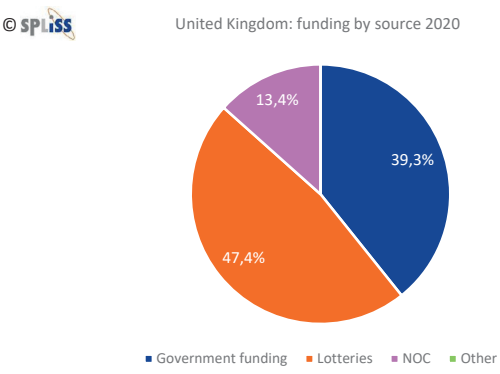

Switzerland: evolution of national expenditure on elite sport
Millions
€ 120
€ 100
€ 80
€ 60
€ 40
€ 20
€ 0
2008*
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Switzerland


Switzerland: funding by source 2018
4,9%
2,7%
33,9%
58,5%
Government funding
Lotteries
NOC
Other


United Kingdom: funding per Olympic Cycle
Millions
1.000 €
900 €
800 €
700 €
600 €
500 €
400 €
300 €
200 €
100 €
0 €
221 €
506 €
633 €
689 €
721 €
911 €
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
2017-2021 Tokyo


United Kingdom: medals per Olympic Cycle
70
60
50
40
30
20
10
0
1997-2000 Sydney
2001-2004 Athens
2005-2008 Beijing
2009-2012 London
2013-2016 Rio de Janeiro
2017-2020 Tokyo
Gold
Silver
Bronze


United Kingdom: evolution of national expenditure on elite sport
Millions
€ 200
€ 150
€ 100
€ 50
€ 0
2012: London Olympic Games
2008*
2009
2010
2011
2012*
2013
2014
2015
2016
2017
2018
2019
2020
2021*
UK


United Kingdom: funding by source 2020
13,4%
39,3%
47,4%
Government funding
Lotteries
NOC
Other


EASTERN

APPENDIX 6: AUTHORS

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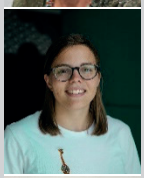
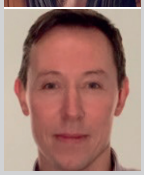
	**Aline Van Roey** CONTACT: Aline.Van.Roey@vub.be	Sport Vlaanderen
	**Kari Descheemaeker** CONTACT: Kari.Descheemaeker@vub.be	BOIC (Olympic committee)
	**Filip Verherstraeten** CONTACT: filip.verherstraeten@sport.vlaanderen	
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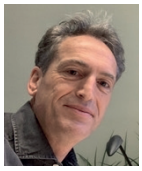
THE NETHERLANDS  	**Jan-Willem van der Roest** CONTACT: j.vanderroest@uu.nl **Maarten van Bottenburg** CONTACT: m.vanbottenburg@uu.nl	Utrecht University
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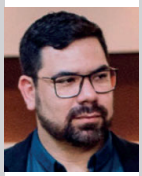
PORTUGAL   	**Pedro Daniel Castelo Branco Miranda Dias** CONTACT: pedro.dias@sportevolutionalliance.com **Tiago Miguel Patrício** CONTACT: tiago.ribeiro@sportevolutionalliance.com **Thiago de Oliveira Santos** CONTACT: thiago.santos@sportevolutionalliance.com **Paulo Jorge de Freitas Gonçalves**	Portuguese Institute of Sport & Youth Sport evolution alliance

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