The Impact of Asian Games 2018 on Indonesian Economy

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Article Information	Abstract
	Organizing the 18th Asian Games 2018 in Indonesia, specifically in DKI Jakarta, South Sumatra, West Java, and Banten spent a large amount of state and regional budget (APBN and APBD), amounted to more than Rp10 trillion in the 2018 fiscal year. The government policy to host the mega event and expend a large amount of budget in terms of government consumption and investment was expected to have an impact on the Indonesian economy, both directly and indirectly. Thus, this study aims to identify the impact of government expenditure using the 2010 Input-Output table issued and updated by the Central Bureau of Statistics in July 2019 with 17 sectors. The study found that the multiplier effect on the economy is greater than government expenditure with the manufacturing sector being the most affected sector with a value of six point seven trillion rupiah. In addition to the multiplier effect, this study also calculated the estimated Value Added Tax of government spending. The result of the estimated Value Added Tax potential is one point sixty one trillion rupiah. It can be concluded that the Asian Games 2018 brought positive impact on economy and government revenue in the form of taxation

INTRODUCTION

Asian Games is one of the major international sports mega-events that has ever been held in Indonesia. Indonesia has extensive experiences in holding international sports events, for instance the Asian Games (1962, and 2018) the Sea Games (1979, 1987, 1989, 1997, and 2011), Thomas Cup (1961, 1967, 1973, 1979, 1986, 1994, 2004 and 2008), Uber Cup (1975, 1986, 1994, 2004, and 2008), the AFC Asian Cup (2007 as cohost), and World Surf League (2008, 2010, and 2019). The 18th Asian Games in 2018 was the latest and the greatest international sport event which was held in 4 provinces, specifically DKI Jakarta, South Sumatra, West Java and Banten.

Sport mega events provide economic and non-economic benefits to the host country. The economic benefits obtained are the promotion and publication of locations that can increase the number of tourists, tourism infrastructure, and visitor expenditures (Kang and Perdue, 1994; Gibson, 1998; Fourie and Santana-Gallego, 2011; Luo and Lu, 2014) as well as reduce poverty and disparity through tourism development (Khairunnisa, 2020). The non-economic benefits obtained are image, a symbol of success, and diplomatic (Knott, Fyall and Jones, 2017).

The positive economic impact of the mega-event on the economy is certainly expected to exceed the costs incurred. One example is the 1988 Calgary Olympics which brought in more than $ 130 million in profits (Whitson and Horne, 2006) and the 1984 Los Angeles Olympics with a profit of $ 215 million (Matheson, 2006; McBride, 2018). However, if the planning for the organization of the event is not well-carried out, the event can have a significant negative impact on the organizing country. The Montreal Olympics held in 1976 recorded a loss of Ca $ 2 million (Whitson and Horne, 2006) and had a debt of Ca $ 1.6 million (Cohen, 2016) which was paid off 30 years later (Matheson, 2006; McBride, 2018). Organizing the World Student Games in Sheffield, England suffered a loss of 180 million pounds (Horne, 2007).

The government expenditure is one of the main instruments to fund sports mega-events. At the 2014 Sochi Olympics, the involvement of the private sector was only 3.7%. The remainder came from the public sector, consisting of government spending (57.7%), state-owned enterprises (22.5%), and debt (16.1%) guaranteed by the state (Müller, 2014). Related to the 1996 Atlanta Olympics spending on construction which reached $ 650 million, the private sector only bore $ 72 million while the rest must have been met by the public sector (Newman and Hellerman in Burbank, Andranovich and Heying, 2002).

Based on the data from Bappenas in (Hidayat and Maula, 2019), the 2018 Asian Games utilized the 2018 state budget (APBN) and regional budget (APBD) funds with a total value of IDR 10,045,623,119,324. Of this total value, funds originating from the APBN amounted to IDR 4,851,907,961,819, while funds originating from APBD, specifically from DKI Jakarta amounted to IDR 5,193,715,505. Figure 1 depicts the significance of government spending, both APBD and APBN associated with the 2018 Asian Games. This sizeable government expenditure was supposedly to have an impact on the economy (Wu, Tang and Lin, 2010; Dudzevičiūtė, Šimelytė and Liučvaitienė, 2018; Gupta, 2018).

The total impact, both direct and indirect from holding the 2018 Asian Games on the economy, according to (Hidayat and Maula, 2019), was worth 42.2 trillion rupiah. This study exploited a Computed General Equilibrium (CGE) model with big data from all aspects of the 2018 Asian Games. The value of the total monetary impact was the sum of government expenditure for the period 2015 - 2018 and visitor spending. Unfortunately, (Hidayat and Maula, 2019) did not provide information on the value of the multiplier impact of government spending on various economic sectors. In fact, it is important to know the difference between the multiplier effect and government spending so that the value of the benefits of holding the 2018 Asian Games can be obtained. In addition, (Hidayat and Maula, 2019) did not calculate the potential tax

revenue, specifically Value Added Tax (PPN) related to the implementation of the 2018 Asian Games.
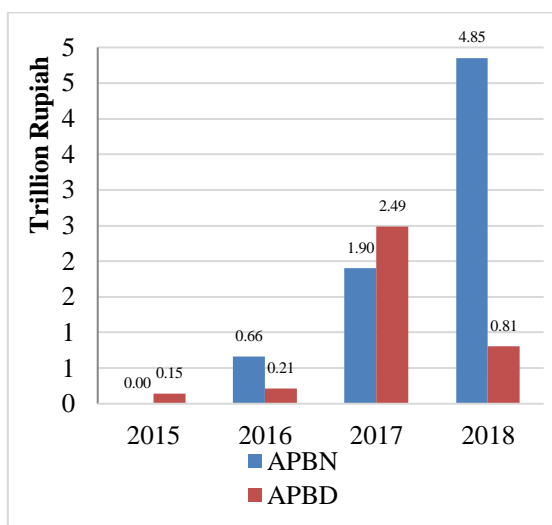
Figure 1. Government expenditure data
Source: calculated from Bappenas

One model to measure the economic impact of government spending is Input-Output (I/O) model invented by (Wassily, 1986). Although this model tends to produce a larger multiplier effect than the CGE, the I/O model has several significant advantages over the CGE model. I/O model does not require complete and comprehensive statistical data (Dwyer et al., in Luo and Lu, 2014). In addition, the I/O model is also more suitable for analyzing short-term economic impacts than the CGE model (Chen *et al.*, 2016) since in the short run, there are many static assumptions so that the use of dynamic and complex data models such as the CGE model becomes ineffective and inefficient (West, 1995). Short-term impact analysis is important considering that the economic contribution of organizing events such as the Asian Games will disappear over time so that it is difficult to separate the changes that have occurred due to the event or other reasons (Malfas, Theodoraki and Houlihan, 2004). Since this study aims to predict the short-term impacts of government expenditure on the year the sport event took place, this study only utilizes government expenditure data in one fiscal year, namely 2018. Thus, this study attempts to measure the short run impact of government expenditure on Asian Games 2018 using I/O model. Furthermore, by using the direct and indirect impacts, the authors also try to calculate the estimated value added tax from the mega sport event to capture the potential taxation.

RESEARCH METHODS

This research is a quantitative study using the 2010 I/O Model updated and issued by Central Bureau of Statistics (BPS) in July 2019 to determine the impact of the 2018 Asian Games on the Indonesian economy. The data in this study were obtained from government expenditure data available at Bappenas. The analysis of this research is divided into two major parts, specifically the analysis on the impact of the economy and the estimation of VAT by considering taxable goods and services.

The analysis began by categorizing the goods / services in the 2010 I/O model into 17 sectors according to the Central Bureau of Statistics. Based on this table, an analysis of the demand structure, distribution, multiplier, and the impact of primary input-output was carried out in both the first and second parts.

By using standard I-O model by Miller and Blair (2009), the conventional demand-driven IO model can be acquired, which is then formulated in the form of matrix algebra:

$$x = Ax + f \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

$$(I-A)\,x = f \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

Where x and f are the column vectors of total output and final demand correspondingly; A in the open economy is considered as the input coefficients matrix (Hewings and Oosterhaven, 2021); and I is the identity matrix. The matrix resulting from solving (I-A) is identified as the Leontief matrix. From the formula (1) and (2), we can generate the following:

$$x = (I-A)-1\,f = L\,f \dots\dots\dots\dots\dots\dots\dots\dots(3)$$

where L=(I-A) -1 is known as the Leontief inverse matrix of the total requirements (lij). From this matrix, we can obtain the simple output multipliers, m(o)j:

$$m(o)\,j = \sum lij\,n\,i=1 \dots\dots\dots\dots\dots\dots\dots\dots(4)$$

The indicator in the equation (4) explains the direct and indirect impacts that variations of a certain sector's final demand can have on the overall economic system, which in this study is identified as the impact of the government spending shock. The impact of the economic shock from government spending was calculated with the assistance of Microsoft Excel to obtain the value of the direct and indirect impacts of government spending. In the second part, by adding taxable goods and services factors to the table, the potential value of Value Added Tax could be obtained.

RESULTS AND DISCUSSION

Mentinoed in (Hidayat and Maula, 2019), that Indonesian government expenditure in Asian Games was divided into two major parts, namely consumption and investment. To avoid confusion, the concept of government expenditure here is the amount of government consumption and investment. The data from the National Development Planning Agency (Hidayat and Maula, 2019) which was aggregated into 17 categories is different from the categories in the Central Bureau of Statistics (BPS) which are the reference for this study. More detailed data, either by type of program, type of activity, or type of expenditure, could not be obtained because it is confidential according to the Information Management and Documentation Officer of Bappenas. Therefore, the authors transformed the obtained data from Bappenas categories into the BPS categories.

Furthermore, investment means government spending that will provide revenue for the government in the future, for example, the budget allocation for the construction of the Jakarta International Velodrome venue in Rawamangun. The building will provide revenue for the government in the future, one of which is the entrance ticket and parking fees. Therefore, the budget was included in government investment in the "arts and entertainment" sector. Government expenditure that was calculated as an economic shock in this study was all government spending for the 2018 fiscal year, whether included in the categories of government consumption or government investment, both from State budget (APBN) and regional budget (APBD).

In the 2018 Asian Games, the government, both central and regional, spent a total of more than thirty-six trillion rupiah from 2015 to 2018. In 2018, the year of the implementation, the government spent more than ten trillion rupiah or 28% of the total budget spent from the period of 2015-2018.

Table 1. Government Expenditure in DKI Jakarta Province (in million rupiah)

No	Sectors	Government Expenditure		Investment	
		Value	Percentage	Value	Percentage
1	Construction	97,382	1.60%		
2	Transportation			2,328,301	38.21%
3	Communication	48,147	0.79%		
4	Hotel	86,006	1.41%		
5	Consumption	77,245	1.27%		
6	Other services	2,469,457	40.53%		
7	Broadcasting	274,640	4.51%		
8	Arts and Entertainment	505,374	8.29%	206,764	3.39%
	Total	3,558,252	58.40%	2,535,065	41.60%

Source: Data Bappenas Processed (Hidayat and Maula, 2019)

Table 1 provides information on government spending for DKI Jakarta Province, which was one of the main locations for holding the 2018 Asian Games. The largest allocation of government spending in 2018 was "other services" category, with a value of 40.53% of the total government spending for that year. "Other services" contains items that cannot be included in the other 16 categories of government spending according to Bappenas. The value of "other services" consisting of a variety of services that could not be defined as one of the 17 sectors implied that this value could be categorized as operational expenditures for holding the Asian Games. In addition, the selection of DKI Jakarta as the venue for the opening of the 2018 Asian Games also resulted in high government spending in this sector.

The second largest expenditure was "transportation" with a value of 38.21% from total expenditure. All expenditures in this sector fell into the investment category so that in the future it will provide revenue for the government. This expenditure is related to the development and improvement of transportation modes in DKI Jakarta which in the future will provide revenue for the government in the form of tickets.

The third largest expenditure was "arts and entertainment" with a percentage of 11.69% from the total expenditure. The allocation for government consumption was 8.29%, while for investment was 3.39% of total expenditure. The expenditures in this sector were related to the construction of sports venues and the operation of events. The allocation of spending to the sectors other than the mentioned ones above was only less than 5% of the total budget.

Table 2 provides information on government expenditure in South Sumatra Province, which was another main venue for the 2018 Asian Games. The largest allocation for government spending in the South Sumatra was the "transportation" sector with a value of 43.17% of all expenditure for that year. All government spending on the "transportation" sector was categorized as investment meaning that in the future, government spending in this sector will provide income to the government. The huge amount of government spending in this sector was because South Sumatra has already had good sports infrastructure in the Jakabaring sports complex so that spending on the "arts and entertainment" and "construction" sectors was not significant. One of the major government spending in South Sumatra was the construction of the Mass Rapid Transit (MRT).

Table 2. Government Expenditure in South Sumatera Province (in million rupiah)

		Government Expenditure		Investment	
No.	Sectors	Value	Percentage	Value	Percentage
1	Construction	985,789	25.48%		
2	Transportation			1,670,400	43.17%
3	Communication	20,635	0.53%		
4	Hotel	34,507	0.89%		
5	Consumption	41,826	1.08%		
6	Other services	657,376	16.99%	72,124	1.86%
7	Broadcasting	117,703	3.04%		
8	Arts and Entertainment	234,835	6.07%	33,733	0.34%
	Total	2,092,671	54.09%	1,776,257	45.91%

Source: calculated by authors from Bappenas data.

The second largest expenditure was the "construction" sector, which consumed 25.48% of the total budget for the Province of South Sumatra. The sizeable amount of the budget on this sector was because South Sumatra was also the main host besides DKI Jakarta, so that many improvements on public facilities were required, such as buildings, public roads and bridges. Other information that could be obtained was the absence of toll road construction or other facilities that could generate revenue for the government in the future. It could be seen from the inclusion of all government spending in the "construction" sector as government expenditure.

The third largest expenditure was the "other services" sector, which used 16.99% of the total budget for the Province of South Sumatra. The significant amount of spending in this sector was due to the fact that this province was the

venue for the closing of the 2018 Asian Games so that many items could not be included in the other 16 sectors (Hidayat and Maula, 2019). In addition, this province accommodated venues for 18 sports, which was the second largest after DKI Jakarta. Therefore, government spending was quite large in this sector.

West Java and Banten provinces were also the venues for the 2018 Asian Games, although they were not the main venues. Therefore, the allocation of government spending in these two provinces was not as big as in South Sumatra and DKI Jakarta. The government has spent nearly nine point seven trillion rupiah for the "arts and entertainment" sector. West Java itself only hosted five sports, namely Mountain Bike and Roadrace, Paragliding, Kano Slalom, and Football. On the other hand, Banten organized one sport, namely the Penthatlon.

Table 3. Clusterization of Government Expenditure Sector

No	Sectors in Bappenas Data	Category	I/O Sectors in the Study
1	Construction	Government Expenditure	Construction
2	Transportation	Investment	Manufacturing
3	Communication	Government Expenditure	Information and Communication
4	Hotel	Government Expenditure	Accommodation, Food and Beverages
5	Food and Beverages	Government Expenditure	Accommodation, Food and Beverages
6	Other services	Government Expenditure	Other services
7	Other services	Investment	Other services
8	Broadcasting	Government Expenditure	Information and Communication
9	Art and Entertainment	Government Expenditure	Other services
10	Art and Entertainment	Investment	Construction

Source: Processed Data

In this study, eight sectors of government expenditure were clustered into five sectors in the input-output table which can be seen in table 3. Regarding the government spending, table 4 indicates the sector receiving the most budget was the "manufacturing" sector with the budget spent of almost 4 trillion rupiah (39.81% of the total budget). The shock value in the "manufacturing" sector was almost the same as

the "other services" sector with a value of almost Rp. 3.95 trillion (39.31% of the total budget). The government spending to hold Asian Games 2018, consisting of government consumption and investment, was calculated as an economic shock to the economy using the input-output table.

Table 4. Economic Shock of Government Spending

Sectors	Economic Shocks	% to Total Budget
Construction	1,397,356,722,210	13.91%
Information and Communication	461,124,836,256	4.59%
Accommodation, Food and Beverages	239,584,199,228	2.38%
Other services	3,948,856,391,150	39.31%
Manufacturing	3,998,700,970,480	39.81%
Total	10,045,623,119,324	100%

Source: Processed Data, 2021

The result of the inverse matrix after the integration with economic shock is illustrated in table 5. Economic shock is also known as the direct impact of government spending on the economy. The economic shock then has a multiplier effect on other sectors which is then called indirect impact. The total value of the indirect impacts obtained was IDR 8,455,060,694,387. Furthermore, the result of the study also indicated that from table 5, the total impact value was greater than the total government expenditure. The results obtained were consistent with the research from Bappenas using the CGE model (2019). The study concluded that the "arts and entertainment" sector, which in this study was categorized in the "other services" sector, was the most affected sector by the government expenditure in 2018 Asian Games. Thus, it could be specified that the total impact of government spending on the economy was greater than the government spending.

Table 5. Economic Shock Structure (in million rupiah)

No	Sectors	Shock	Impact	Initial Output	% to Output
1	Agriculture, Forestry, and Fisheries	-	1,062,119	1,187,980,135	0.09%
2	Mining and quarrying	-	705,985	941,316,835	0.07%
3	Manufacturing	3,998,701	6,763,965	4,370,817,026	0.15%
4	Electricity and Gas	-	248,147	309,493,126	0.08%
5	Water Supply, Waste Management, Waste and Recycling	-	28,845	23,812,591	0.12%
6	Construction	1,397,357	1,512,691	1,724,302,569	0.09%
7	Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles	-	782,032	1,369,971,416	0.06%
8	Transportation and Warehousing	-	250,449	550,887,835	0.05%
9	Accommodation, Food and Beverages	239,584	301,455	440,129,504	0.07%
10	Information and Communication	461,125	774,269	409,067,568	0.19%
11	Financial Intermediation	-	216,359	333,056,561	0.06%
12	Real Estate	-	26,702	246,307,998	0.01%
13	Company Services	-	150,336	202,971,523	0.07%
14	Public Administration, Defense; and Compulsory Social Security	-	40,210	418,489,319	0.01%
15	Education	-	5,286	311,211,157	0.00%
16	Health and Social Work	-	180,467	149,315,231	0.12%
17	Other Services	3,948,856	5,451,367	119,990,088	4.54%

Source: Processed Data, 2021.

The calculation of the estimated Value Added Tax (VAT) due to the holding of the 2018 Asian Games was illustrated in table 6. VAT increased by 0.57% of the total VAT revenue prior to the 2018 Asian Games. The total VAT revenue was Rp1.61 trillion, explicitly the amount of VAT derived from consumption on taxable goods and services from holding the 2018 Asian Games. However, this calculation had two limitations, specifically this study used the assumptions that all business actors affected by this government expenditure were taxable entrepreneurs (PKP) and those taxable entrepreneurs were compliant in reporting and paying VAT.

In fact, in accordance with the Regulation of the Minister of Finance No. 197/PMK.03/2013 concerning amendments to the Regulation of the Minister of Finance No. 68/PMK.03/2010 concerning the limitation of Value Added Tax on small businessmen, confirmation to become taxable entrepreneurs is not mandatory for entrepreneurs who have a turnover below Rp4,8 billion. In addition, not all taxable entrepreneurs are compliant in reporting and paying their tax obligations coupled with the limitations of the Directorate General of Taxes in conducting supervision so that the value obtained in this calculation was only a theoretical calculation (Sugana and Hidayat, 2015).

Table 6. Calculation of Estimated Value Added Tax (in million rupiah)

	Taxable Goods	Taxable Services	Non-Taxable Goods	Non-Taxable Services
Direct Impact (Shock)	5,396,058	4,409,981	-	239,584
Indirect Impact	4,038,093	2,267,954	1,207,353	560,315
Impact	9,434,151	6,677,936	1,207,353	799,899
Initial Output	7,579,876,118	1,133,117,533	2,186,902,933	2,209,223,838
VAT on Initial Output	757,987,612	113,311,753	-	-
VAT on Total Impact	943,415	667,794	-	-
% Increase	0.12%	0.59%	-	-

Source: Processed Data, 2021.

CONCLUSION

Researches on the impact of Asian Games 2018 on Indonesian economy and potential addition on the tax revenue were quite limited. Thus, this study attempted to enrich the analysis on the economic impact of mega event the 2018 Asian Games in Jakarta and South Sumatra by using Input-Output model. Furthermore, this research also calculated the estimated value added tax.

The study concluded three main findings based on the research objectives. First, this study provided information regarding the sectors most affected by the 2018 Asian Games. The "manufacturing" sector was the most affected by

the government spending with an impact value of Rp6,700,000,000,000. However, when measured as a percentage of the initial output value, the "manufacturing" sector only ranked second after "Other Services" with a value of 0.15% of the initial output. The "Other Services" sector was the second most affected by government spending with an impact of Rp5.45 trillion. However, akin to the relative increase to the initial output, the "Other Services" sector was the sector with the highest increase with a value of 4.54% of the initial output.

Furthermore, the "Education" sector was the least affected by the government expenditure with an impact value of Rp5.29 billion or 0.002% of relative increase compared to the initial output

value. On the other hand, the "Electricity and Gas" sector has the highest output multiplier with a value of almost 2.6 so that the reallocation of the budget to this sector might have a greater impact on the economy compared to the current structure of government spending at the 2018 Asian Games.

Second, this study also analyzed the direct and indirect impact of government spending on the 2018 Asian Games. The direct impact of the 2018 Asian Games on the economy was about Rp10 trillion which was the total value of government spending. Furthermore, the indirect impact of holding the 2018 Asian Games on the economy was around Rp8,455 trillion, specifying the multiplier effect of government spending.

Third, this study also calculated the estimated Value Added Tax (VAT). The estimated VAT resulting from holding the 2018 Asian Games is about Rp1.61 trillion.

However, this study has several limitations, specifically related to the calculation of VAT. The calculation of estimated VAT did not consider the factor that not all taxpayers were taxable entrepreneurs who were obliged to collect and report VAT. In addition, the classification of 17 sectors into taxable and non-taxable goods and services employed an optimistic approach. The assumption the study utilized wass that all goods and services bought during Asian Games 2018 are taxable ones. It caused the calculation of the estimated VAT to be overestimated. Thus, it is suggested that the future research can calculate the estimated VAT by measuring the number of taxpayers confirmed to be taxable entrepreneurs in each economic sector. Furthermore, to have more precise and detail analysis, the impact of the mega event such as Asian Games 2018 should be examined using inter-regional input-output tables.

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