

ANALYSIS OF VALUE ADDED TAX POTENTIAL REVENUE USING INPUT-OUTPUT TABLE

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Abstract : Although the number of Value-Added-Tax (VAT) revenue almost increases every year, the government can still optimize VAT revenues. The research aims to calculate the possible VAT revenue by sector from 2016 until 2018. By knowing the possible VAT revenue, government can prioritize specific sector. The analysis used in this research is quantitative descriptive. The calculation of potential VAT revenue uses data from the Indonesian Input-Output Table. VAT revenue not collected due to specific regulations is calculated based on the tax expenditure report issued by the Ministry of Finance. The results showed that the VAT potential revenue always increased every year during the research year, namely Rp745 trillion in 2016, then rose to Rp799 trillion in 2017 and amounted to Rp859 trillion in 2018. During these three years, the potential for VAT revenue came from the manufacturing industry sector. The VAT coverage ratio grew positively during the year of research to 56.5% in 2016, rising to 58.1% in 2017 and 60.6% in 2018.

Keywords : *Coverage ratio, I-O table, VAT Potency.*

1. Introduction

Government expenditure increases every year, encourages the government to explore revenue resources more intensively. Government expenditure is a form of consumption carried out by the government for general expenditure. One of the best-known consumption theories is the Keynesian theory of consumption. Hanantijo (2014) argues that in the 1930s, Keynes made three assumptions about consumption theory, namely: (1) Marginal propensity to consume, the amount consumed per additional dollar of income is between zero and one. This assumption explains that when a person's income increases, his consumption will also increase, but the increase in total consumption will not be as large as an increase in total income; (2) The average propensity to consume, namely because the increase in the amount of income is greater than the increase in the amount of consumption, each increase in income will increase the amount of savings. Or in other words, the proportion of savings for someone with a higher income will be greater than someone with a lower income; (3) Income is the primary determinant of a person's consumption. Other factors influence consumption with less impact.

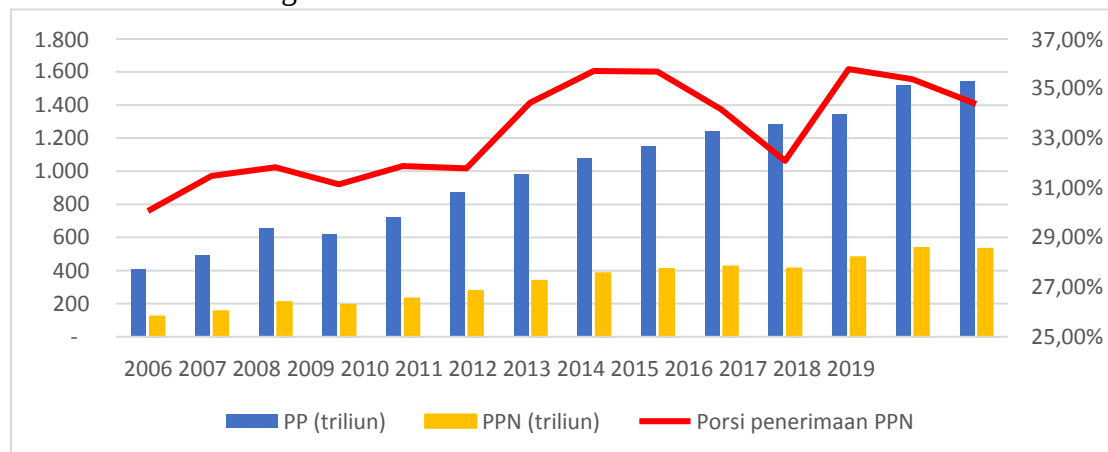
Based on Indonesian budget, tax is one of the most potent sources of state revenue. Tax revenue has become increasingly vital as a source of Indonesia's state revenue after the end of the heyday of oil and gas, which can be seen from the decreasing proportion of state revenues originating from oil and gas. Based on Central Government Financial Report (LKPP) from 1981 to 2014, revenue from taxation to total domestic income ranges from 26.33 percent to

75.23 percent. Since 2014, the contribution of tax revenue had been higher, with an average contribution of 81.49 percent. The highest contribution of tax revenue occurred in 2016, reaching 83.07 percent of total domestic revenue (Kementerian Keuangan, 2019).

One type of tax revenue in Indonesia comes from value-added tax (VAT). The Organization for Economic Co-operation and Development (OECD, 2008) defines value-added tax as a tax on products collected in stages by enterprises; it is a wide-ranging tax usually designed to cover most or all goods and services but producers are obliged to pay to government only the difference between the VAT on their sales and the VAT on their purchases for intermediate consumption or capital formation, while VAT is not usually charged on sales to non-residents (i.e. exports). According to Mardiasmo (2018), the value-added tax is a tax imposed on the added value of goods or services in the circulation flow from producers to end consumers. Waluyo (2009) states that VAT is a tax payable on domestic consumption (within customs areas), both consumption of goods and services utilization.

In Indonesia's tax revenue, the share of VAT revenue compared to total tax revenue tends to increase every year. Based on Figure 1, VAT contributed to the lowest tax revenue of 29.19 percent in 2006, and the highest of 35.78 percent of total tax revenue in 2017 (Kementerian Keuangan, 2019). Apart from being affected by the increase in the amount of consumption each year, the portion of VAT revenue is influenced by regulations. The taxation regulations set by the Government include PP-46 of 2013 (1% Final Income Tax), PP-23 of 2018 (0.5% Final Income Tax), PMK- 35 of 2018 (tax holiday), and the most recent is Constitution Number 2 of 2020 (State Financial Policy and Financial System Stability for Handling the COVID-19 Pandemic).

Figure 1 VAT Revenue to Total Tax Revenue



Source: LKPP

Although the number of VAT revenue almost increases every year, the government can still optimize VAT revenues. One of the most widely used ratios for measuring VAT revenue performance is VAT C-efficiency. It is the ratio of actual VAT collections to the potential revenues estimated from applying the standard VAT rate to Total Consumption Expenditure. A VAT with no exemptions, a single rate, and full compliance should result in ratios close to 100 percent. According to the USAID Collecting Taxes Database, in the period 2006 to 2014, Indonesia's VAT C-efficiency ranged from 47 to 58 percent (USAID, 2019). This figure tends to be small compared to other countries. For comparison, during the same year, Thailand's VAT C-efficiency ranged from 66 to 84 percent, China 62 to 72 percent, and Japan between 66 to 95 percent. This condition implies that there is potential for VAT revenue in

Indonesia that can still be optimized.

VAT is imposed on selling taxable goods and services at each production process that creates added value. One of the elements that affect VAT potential revenue is the size of a country's production. The amount of production of a country is reflected in the gross domestic product (GDP). According to Mankiw (2020), GDP is the market price of goods and services produced in a country during a specific period. GDP represents purchasing power, so any increase in GDP amount increases purchasing power or public consumption because VAT is a consumption tax.

In addition to using GDP data, the calculation of potential VAT revenue can be done by using the Input-Output Table (I-O Table) published by Statistics Indonesia (BPS). The Input-Output Table (Table I-O) is a table that contains essential information that focuses on the flow of products from each business sector as producers, to other business sectors as consumers (Miller & Blair, 2009). I-O table is compiled based on economic observations for a specific geographic area, one country, or a particular province. Rows in the input-output table show the distribution of production output. In contrast, the columns in the i-o table show the composition of the inputs required by business sectors to produce goods or services. An additional column containing final demand shows the sale of goods or services by business sectors to the market for either household consumption (consumption personal purchases) or sales to the federal government. The Input-Output Table (Table I-O) is a table that contains statistical descriptions in the form of a matrix that provides information about transactions of goods or services and the correlation between units of economic activity in a region for a specific period time (BPS, 2015). Table I-O is a quantitative model that describes the state or economic condition of an area in a particular period.

Calculating the potential VAT revenue using the I-O Table can better reflect the potential VAT revenue than GDP. The I-O Table, besides presenting information on the output of a sector, also shows the correlation between related sectors in the economy through the usage of its input. Table I-O tries to provide a comprehensive picture of the economy, covering all goods and services produced through activities in the country or goods and services originating through imports or utilization of services from abroad.

Research on VAT revenue using I-O Table has been done previously by Jenkins & Kuo (2000), Marks (2003), Le Minh (2007), and Sugana & Hidayat (2014). Jenkins & Kuo (2000) develops a model used in policy simulations and VAT revenues. The simulation model makes use of the Nepal Input-Output Table. The results showed that the collected VAT revenue was 45 percent below the potential revenue that should have been collected based on the calculation. In developing countries, the tax policy that is more appropriate to implement and which tends to cause less controversy is to expand the tax basis slightly. The government must aggressively remove the barriers that narrow the VAT tax basis and improve tax compliance.

Marks (2003) explains that VAT revenue is the same as multiplying the amount of consumption with the VAT rate if all sectors are subject to VAT at the same rate. However, for several reasons, some consumption in Indonesia's specific sectors is exempted from VAT or subject to VAT at a rate of 0 percent. This condition will distort the amount of potential VAT revenue, which can be traced using the VAT effective-rate concept. The determination results show that VAT revenues in the year studied are 45 percent lower than the potential VAT receipts, after taking into account consumption in sectors that are not subject to VAT or subject to VAT at a rate of 0 percent.

Using I-O Table to calculate the potential VAT revenue (Le Minh, 2007). The results showed that with the same VAT compliance rate as the previous year (2004), namely 55.4

percent, and a fixed VAT rate of 19 percent, Romania's estimated VAT revenue for 2005 was RON 20.7 billion. Using the I-O model, if the VAT rate is increased to 22 percent, with a fixed level of tax compliance, the estimated VAT revenue is RON 23.8 billion. And if the VAT rate is fixed, but the compliance rate rises from 55.4 percent to 70 percent (a reasonable level of compliance for a country with modern tax administration and management), tax revenue will increase to RON 26.1 billion, higher than the scenario of increasing Romania's VAT rate to 22 percent.

Sugana & Hidayat (2014) intended to create a model for calculating the VAT potential revenue and the gap between collected VAT revenue and the VAT potential revenue and estimating the impact of regulations and special provisions related to VAT revenues. The results showed that in 2013, the level of VAT compliance in Indonesia was 53 percent. Stated in this study that eliminating all VAT facilities (VAT exempt, 0% VAT rates), besides adding administrative costs or burdens, in specific business sectors, it will reduce collected VAT revenues.

Based on regulations, there are goods and services in specific sectors that VAT exempt, 0% VAT rate and not VAT objects, so there are some taxpayers who are not owed VAT on their sales transactions, and also cannot credit VAT that has been paid on the purchase of certain goods or services. The existence of VAT exemptions and facilities will make it difficult to calculate the potential VAT revenue. Besides, VAT exemptions and facilities can also distort the price of goods or products.

The scope of this research will focus on calculating the potential VAT revenue based on data on household consumption and government expenditure utilizing the Input-Output Table sourced from BPS publications. What distinguishes this research from previous studies is using a tax expenditure report published by the Ministry of Finance in calculating the amount of potential VAT lost due to specific regulations and provisions related to VAT (VAT facilities) in each business sector.

2. Research Methods

The analysis used in this research is quantitative descriptive. It aims to describe the conditions and circumstances of the research year, to reveal more about the VAT potential revenue by calculating using a formula adjusted to the statutory regulations regarding VAT in Indonesia. The calculation of the potential in this research uses data processing application in Microsoft Office Excel. The data analysis used are as follows:

a. Calculation of VAT Potential Revenue

The calculation of the VAT potential revenue in this research was carried out based on the Input-Output Table 185 sectors by paying attention to the correlation between each sector in the I-O Table in the form of intermediate inputs and the outputs it produces. The intermediate input is the use of various goods and services by the production sectors. The I-O Table is updated to the research year using technical coefficients, GDP by business sector, and GDP by use. The technical coefficient is the direct effects of change in final demand for a certain commodity. The technical coefficient is used with the assumption that the proportion and the correlation between business sectors in the production process are fixed or the same as the base year in Table I-O (2010). The amount of VAT revenue that is not collected is based on the tax expenditure report from the Ministry of Finance's tax expenditure report.

b. Calculation of VAT Coverage Ratio

The tax coverage ratio is the ratio (in percentage) between the tax revenue that has been

collected and the tax potential revenue that exists in the economy. Marbun (2015) explains that the coverage ratio can be seen in three aspects: (1) in terms of the tax revenue aspect, the coverage ratio is the ratio between the amount of collected tax revenue and the existing tax potential revenue theoretically based on tax law; (2) the aspect of taxpayers, the coverage ratio is defined as the number of registered taxpayers compared to the number of potential taxpayers according to the tax law; and (3) in terms of the tax object aspect, the coverage ratio is defined as the netted object compared to the item that should be taxed. The calculation of the VAT coverage ratio that will be carried out is viewed from tax revenue. The author will compare the collected VAT revenue with the VAT potential revenue based on the calculation results using Table I-O.

$$\text{VAT Coverage Ratio} = \left(\frac{\text{Collected VAT Revenue} - \text{VAT Potential Revenue}}{\text{VAT Potential Revenue}} \right) \times 100\%$$

3. Results and Discussion

Based on the results of updating I-O Table 2016, we get the intermediate inputs (code 1900) of each industry sector. The intermediate input is the use of various goods and services by the production sectors. The business sector with the largest number of inputs is the manufacturing sector, amounting to IDR 4,551 trillion, followed by the construction sector and the transportation and storage sector, namely IDR 2,426 and 838 trillion. The business sector with the lowest number of inputs in a row was water supply; sewerage, waste management and remediation activities of 1.8 trillion rupiahs, the real estate of 72.7 trillion rupiahs, and corporate services of 145.3 trillion rupiahs.

Table 1 Intermediate Input 2016 (billion rupiahs)

Num	Sectors	Intermediate Input
1	Agriculture, Forestry, and Fishery	390,238
2	Mining and Quarrying	320,260
3	Manufacturing	4,551,663
4	Electricity and Gas	464,896
5	Water Supply; Sewerage, Waste Management and Remediation Activities	1,848
6	Construction	2,426,992
7	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	796,566
8	Transportation and Storage	838,180
9	Accommodation and Food Service Activities	434,757
10	Information and Communication	269,953
11	Financial and Insurance Activities	196,432
12	Real Estate Activities	72,727
13	Professional, Scientific and Technical Activities	145,348
14	Public Administration and Defence; Compulsory Social Security	288,183
15	Education	224,114
16	Human Health and Social Work Activities	161,555
17	Other Service Activities	211,680
Total		11,795,391

Household Consumption

One of the characteristics of VAT is that VAT is a consumption tax. Therefore, consumption by households is an integral part of calculating potential VAT. Household consumption (code 3011 and code 3012) is part of the final demand (code 3090) of business sectors in Table I-O. Household consumption data can be seen in Table 2 below:

Table 2 Household Consumption in 2016 (billion rupiahs)

Num	Sectors	Household Consumption
1	Agriculture, Forestry, and Fishery	529,543
2	Mining and Quarrying	-
3	Manufacturing	2,578,783
4	Electricity and Gas	154,298
5	Water Supply; Sewerage, Waste Management and Remediation Activities	24,915
6	Construction	-
7	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	907,969
8	Transportation and Storage	486,300
9	Accommodation and Food Service Activities	600,004
10	Information and Communication	308,588
11	Financial and Insurance Activities	199,285
12	Real Estate Activities	384,544
13	Professional, Scientific and Technical Activities	25,061
14	Public Administration and Defence; Compulsory Social Security	17,060
15	Education	219,488
16	Human Health and Social Work Activities	152,895
17	Other Service Activities	134,256
Total		6,722,990

Government Expenditure

Government expenditure differs from household consumption, in that government expenditure contains personnel expenditure. Personnel expenditures are not an object of VAT, so the personnel expenditure is not included in calculating VAT potential revenue. Based on LKPP, the total personnel expenditure in 2016 was IDR 305.1 trillion. This amount will be deducted from government expenditure in Table I-O 2016 updating in government administration, defense and mandatory social security sectors. The results of calculating the allocation of government expenditure can be seen in Table 3 below:

Table 3 Government Expenditure in 2016 (billion rupiahs)

Num	Sectors	Gov. Expenditure	
		I-O Table	Allocation
1	Agriculture, Forestry, and Fishery	-	-
2	Mining and Quarrying	-	-
3	Manufacturing	24,667	24,666.58

4	Electricity and Gas	-	-
5	Water Supply; Sewerage, Waste Management and Remediation Activities	422	422
6	Construction	-	-
7	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	3,350	3,350
8	Transportation and Storage	-	-
9	Accommodation and Food Service Activities	-	-
10	Information and Communication	409	409
11	Financial and Insurance Activities	12,682	12,682
12	Real Estate Activities	-	-
13	Professional, Scientific and Technical Activities	-	-
14	Public Administration and Defence; Compulsory Social Security	691,014	385,873
15	Education	322,294	322,294
16	Human Health and Social Work Activities	83,606	83,606
17	Other Service Activities	4,471	4,471
Total		1,142,914	837,773

Gross Fixed Capital Formation (GFCF)

The VAT legislation defines that the selling of strategic goods is exempt from the imposition of VAT, including the purchase of capital goods in the form of factory machinery and factory equipment, but does not include spare parts. Based on the description above, some GFCF values are non-taxable. Based on GDP by expenditure, there are six components of GFCF, namely buildings, machinery and equipment, vehicles, other equipment, CBR, and intellectual property products. To calculate the taxable GFCF cost, the authors subtract the value of machinery and equipment and other equipment in the manufacturing and wholesale and retail trade; repair of motor vehicles and motorcycles, assuming machines and factory equipment is the output of the two sectors.

Based on GDP according to usage, the amount of GFCF from machinery and equipment is IDR 364 trillion, from other equipment is IDR 68 trillion, so that the total PMTB component from factory machinery and factory equipment is IDR 433 trillion. This amount is divided proportionally into two sectors, as mentioned earlier. The result of GFCF allocation shows that the construction sector is the business sector with the largest GFCF compared to other sectors. In 2016, this sector required a GFCF of 2,819 trillion rupiahs. The allocation of GFCF for each business sector in 2016 can be seen in Table 4 below:

Table 4 Allocation of GFCF in 2016 (billion rupiahs)

Num	Sectors	GFCF Allocation
1	Agriculture, Forestry, and Fishery	194,828
2	Mining and Quarrying	14,964
3	Manufacturing	174,309
4	Electricity and Gas	-
5	Water Supply; Sewerage, Waste Management and Remediation Activities	-
6	Construction	2,819,930

7	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	51,755
8	Transportation and Storage	-
9	Accommodation and Food Service Activities	-
10	Information and Communication	16,717
11	Financial and Insurance Activities	-
12	Real Estate Activities	-
13	Professional, Scientific and Technical Activities	53,414
14	Public Administration and Defence; Compulsory Social Security	458
15	Education	-
16	Human Health and Social Work Activities	-
17	Other Service Activities	-
Total		3,326,375

Inventory Change

Inventory change is the value of goods inventory at the end of the year minus the inventory value at the beginning of the year, including changes in the finished product, work in progress, and raw materials. Because VAT is imposed at the time of consumption of goods and services, this inventory change is not included as a tax basis for calculating potential VAT revenue in this study.

Export

Another characteristic of VAT is that VAT is a consumption tax of goods and services within the customs area (Republic of Indonesia). Therefore, goods and services exported abroad are not subject to VAT. The VAT regulations stipulate that exports of goods and services are subject to VAT at a zero percent rate. On this basis, the export value of goods and services is not included as a tax basis in calculating the VAT potential revenue in this study.

Import

Under the characteristics of VAT as a tax on consumption of goods and services in the customs area (territory of the Republic of Indonesia), consumption of taxable goods and services originating from import activities is subject to VAT. Based on the 2016 I-O Table, the most massive import value is carried out by the manufacturing sector and the mining and quarrying sector. Unlike the previous final consumption components, the import value shown in Table 5 will reduce the tax basis for calculating the potential VAT in this study.

Table 5 Imports of Goods and Services in 2016 (billion rupiahs)

Num	Sectors	Imports
1	Agriculture, Forestry, and Fishery	81,695
2	Mining and Quarrying	126,376
3	Manufacturing	1,745,784
4	Electricity and Gas	0
5	Water Supply; Sewerage, Waste Management and Remediation Activities	8,844
6	Construction	8,857

7	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	-
8	Transportation and Storage	62,070
9	Accommodation and Food Service Activities	72,950
10	Information and Communication	48,503
11	Financial and Insurance Activities	18,710
12	Real Estate Activities	6,365
13	Professional, Scientific and Technical Activities	61,292
14	Public Administration and Defence; Compulsory Social Security	9,425
15	Education	5,034
16	Human Health and Social Work Activities	9,108
17	Other Service Activities	8,513
Total		2,273,528

Tax Expenditure

The government provides various incentives in taxation to improve the economy and increase industrial competitiveness. The existence of tax incentives through various special provisions and regulations causes less tax revenue collected. Based on the tax expenditure report issued by the Ministry of Finance, there are 36 regulations related to facilities or special VAT treatment. VAT revenue not collected for small entrepreneurs (non-taxable entrepreneurs) will be discussed in the next section due to the large amount compared to other special treatment. The author classifies tax revenues that are not collected on 35 regulations and special treatment of VAT in tax spending into 17 sectors as shown in table 6 below:

Table 6 Tax Expenditure in 2016 (billion rupiahs)

Num	Sectors	Tax Expenditure
1	Agriculture, Forestry, and Fishery	34,661
2	Mining and Quarrying	88
3	Manufacturing	286
4	Electricity and Gas	12,012
5	Water Supply; Sewerage, Waste Management and Remediation Activities	474
6	Construction	512
7	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	206
8	Transportation and Storage	11,850
9	Accommodation and Food Service Activities	50
10	Information and Communication	67
11	Financial and Insurance Activities	9,251
12	Real Estate Activities	58
13	Professional, Scientific and Technical Activities	26
14	Public Administration and Defence; Compulsory Social Security	440
15	Education	8,503
16	Human Health and Social Work Activities	2,948
17	Other Service Activities	9
Total		81,440

Transactions by Small Entrepreneurs (Non-Taxable Entrepreneurs)

Based on the Minister of Finance Regulation Number-197 / PMK.03 / 2013, Taxpayers who are required to register themselves as Taxable Entrepreneurs (PKP) are entrepreneurs who are selling taxable goods and services with business turnover exceeding 4.8 billion rupiahs for one financial year. Taxpayers who have a circulation of below 4.8 billion rupiahs (small entrepreneurs) can choose to become PKP. If they decide to be non-taxable entrepreneurs, they cannot credit VAT that has been collected by other parties for the purchase of taxable goods and services, and do not collect VAT when selling goods and services.

I-O Table shows all transactions carried out by both PKP and Non-PKP. Transactions by non-taxable entrepreneurs will be excluded in calculating the VAT potential revenue in this study. Based on the tax expenditure report, VAT revenue not collected because transactions by non-taxable entrepreneurs were amounting to 32.9 trillion rupiahs. The authors divided it into 17 sectors proportionally based on MSMEs' contribution in the 2010 GDP, which came from the Ministry of Cooperatives and SMEs. The allocation of VAT potential revenue that is not collected on transactions by small entrepreneurs (Non-PKP) is shown in table 7 below:

Table 7 Not-Collected VAT from Transactions by Non-Taxable Entrepreneurs in 2016
(billion rupiahs)

Num	Sectors	Non-Taxable Entrepreneurs
1	Agriculture, Forestry, and Fishery	9,521
2	Mining and Quarrying	1,018
3	Manufacturing	5,613
4	Electricity and Gas	28
5	Water Supply; Sewerage, Waste Management and Remediation Activities	10
6	Construction	2,249
7	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	6,848
8	Transportation and Storage	411
9	Accommodation and Food Service Activities	1,518
10	Information and Communication	1,467
11	Financial and Insurance Activities	1,976
12	Real Estate Activities	-
13	Professional, Scientific and Technical Activities	875
14	Public Administration and Defence; Compulsory Social Security	-
15	Education	1,885
16	Human Health and Social Work Activities	583
17	Other Service Activities	303
Total		34,305

Source: Tax Expenditure Report

VAT Potential Revenue Calculation Results

The basis for the imposition of VAT is calculated by adding up all components the tax basis of output VAT, namely intermediate demand, household consumption, government expenditure, and GFCF allocation, then subtracting by the tax basis of input VAT, namely intermediate input and imports.

$$\begin{aligned} \text{Tax Basis} &= \text{Tax Basis of Output Tax} - \text{Tax Basis of Input Tax} \\ &= \text{Intermediate Demand} + \text{Household Consumption} \\ &\quad + \text{Allocation of Government Expenditure} + \text{PMTB Allocation} \\ \text{Tax Basis of Input Tax} &= \text{Intermediate Input} + \text{Impo} \end{aligned}$$

The VAT tax basis calculation result is multiplied by the VAT rate (10%) then deducted by the amount of tax expenditure. By carrying out the same steps for the year 2017 and 2018, the results of calculating the potential VAT for 2016 - 2018 as in table 8 below:

Table 8 VAT Potential Revenue (billion rupiahs)

Num	Sectors	VAT Potential Revenue		
		2016	2017	2018
1	Agriculture, Forestry, and Fishery	112,512	122,433	134,647
2	Mining and Quarrying	61,606	64,284	65,210
3	Manufacturing	183,235	193,429	187,746
4	Electricity and Gas	(896)	(1,080)	(268)
5	Water Supply; Sewerage, Waste Management and Remediation Activities	3,528	3,808	4,054
6	Construction	62,564	68,007	79,851
7	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	115,946	126,819	139,146
8	Transportation and Storage	180	(6,493)	(4,012)
9	Accommodation and Food Service Activities	27,783	31,785	36,027
10	Information and Communication	42,907	46,313	50,482
11	Financial and Insurance Activities	29,682	32,031	34,128
12	Real Estate Activities	36,246	39,882	44,659
13	Professional, Scientific and Technical Activities	17,205	19,058	19,789
14	Public Administration and Defence; Compulsory Social Security	16,668	19,818	26,528
15	Education	24,090	26,004	28,335
16	Human Health and Social Work Activities	7,136	7,392	7,538
17	Other Service Activities	5,222	5,531	6,050
Total		745,616	799,020	859,910

Based on Table 8, the VAT potential revenue increases every year, growing by 7.2% in 2017 and 7.6% in 2018. The highest VAT potential revenue is found in the manufacturing sector, wholesale and retail trade; repair of motor vehicles and motorcycles, and agriculture, forestry, and fisheries sectors.

Calculation of VAT Coverage Ratio

As previously explained, the tax coverage ratio can be seen from three sides: the amount of tax revenue, the taxpayer, and the tax object. The tax coverage ratio discussed in this study is the limited tax coverage ratio for the type of VAT tax only, based on the amount of tax revenue, by comparing the collected VAT revenue with the potential VAT revenue.

In 2016, the most significant difference between potential and collected VAT was in the agriculture, forestry, and fisheries sectors, reaching 107 trillion rupiahs. The mining and quarrying sector ranks second with the difference 63 trillion rupiahs. The smallest VAT coverage ratio is in the education service sector, with a coverage ratio of 2.1%. The accommodation and food and beverage provision sector is the second smallest coverage ratio with 2.7%. Overall, the 2016 VAT coverage ratio was 56.5 percent. The VAT coverage ratio for 17 sectors is shown in table 9 below:

Table 9 VAT Coverage Ratio 2016 (billion rupiahs)

Num	Sectors	Potency (a)	Collected (b)	Potency - Collected	Coverage Ratio (b) ÷ (a)
1	Agriculture, Forestry, and Fishery	112,512	4,770	107,742	4.2%
2	Mining and Quarrying	61,606	(1,866)	63,472	-3.0%
3	Manufacturing	183,235	170,028	13,207	92.8%
4	Electricity and Gas	(896)	3,306	(4,202)	-368.9%
5	Water Supply; Sewerage, Waste Management and Remediation Activities	3,528	377	3,151	10.7%
6	Construction	62,564	51,965	10,599	83.1%
7	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	115,946	115,744	202	99.8%
8	Transportation and Storage	180	15,882	(15,702)	8817.2%
9	Accommodation and Food Service Activities	27,783	749	27,033	2.7%
10	Information and Communication	42,907	17,222	25,686	40.1%
11	Financial and Insurance Activities	29,682	4,754	24,928	16.0%
12	Real Estate Activities	36,246	8,948	27,298	24.7%
13	Professional, Scientific and Technical Activities	17,205	20,949	(3,743)	121.8%
14	Public Administration and Defence; Compulsory Social Security	16,668	5,192	11,477	31.1%
15	Education	24,090	502	23,588	2.1%
16	Human Health and Social Work Activities	7,136	502	6,634	7.0%
17	Other Service Activities	5,222	2,052	3,171	39.3%
Total		745,616	421,076	324,540	56.5%

For 2017, the most significant difference between potential and collected VAT revenue is in the agriculture, forestry, and fisheries sectors, amounting to 115 trillion rupiahs. The mining and quarrying sector ranks second with the largest difference of 64 trillion rupiahs. The smallest VAT coverage ratio is in the education services sector, with a coverage ratio of 1.8%. The accommodation and food service activities sector is the second smallest coverage ratio, with 2.5%. Overall, the VAT coverage ratio in 2017 was 58.1 percent.

In 2018, the biggest difference between potential and collected VAT revenue was in the agriculture, forestry, and fisheries sectors, amounting to 127 trillion rupiahs. The mining and quarrying sector ranks second with the most considerable difference, with 62 trillion rupiahs. The smallest VAT coverage ratio is in the education services sector, with a coverage ratio of 1.9%. The accommodation and food service activities sector is the second smallest coverage ratio, with 2.2%. Overall, the VAT coverage ratio in 2018 was 60.6 percent. The VAT coverage ratio for 17 sectors for 2017 and 2018 is shown in table 10 below:

Table 10 VAT Coverage Ratio Year of 2017 and 2018 (billion rupiahs)

Num	Sectors	2017		2018	
		Potency - Collected	Coverage Ratio	Potency - Collected	Coverage Ratio
1	Agriculture, Forestry, and Fishery	115,670	5.5%	127,629	5.2%
2	Mining and Quarrying	64,350	-0.1%	62,438	4.3%
3	Manufacturing	635	99.7%	(26,821)	114.3%
4	Electricity and Gas	(7,890)	-630.3%	(5,810)	-2070.6%
5	Water Supply; Sewerage, Waste Management and Remediation Activities	3,321	12.8%	3,408	15.9%
6	Construction	21,367	68.6%	30,746	61.5%
7	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	(3,564)	102.8%	(17,304)	112.4%
8	Transportation and Storage	(24,097)	-271.1%	(24,206)	-503.3%
9	Accommodation and Food Service Activities	30,990	2.5%	35,226	2.2%
10	Information and Communication	29,083	37.2%	35,712	29.3%
11	Financial and Insurance Activities	27,115	15.3%	28,706	15.9%
12	Real Estate Activities	29,320	26.5%	33,850	24.2%
13	Professional, Scientific and Technical Activities	(2,291)	112.0%	(4,269)	121.6%
14	Public Administration and Defence; Compulsory Social Security	14,736	25.6%	21,348	19.5%
15	Education	25,547	1.8%	27,796	1.9%
16	Human Health and Social Work Activities	6,827	7.7%	6,898	8.5%
17	Other Service Activities	3,395	38.6%	3,457	42.9%
Total		334,514	58.1%	338,804	60.6%

4. Conclusion

Conclusion

The research results show that there is still an opportunity to increase VAT revenues. From 2016 to 2018, the highest difference between the collected and the potential VAT revenue comes from the agriculture, forestry, and fisheries sectors and the mining and quarrying sector. The VAT coverage ratio ranges from 56-60 percent, experiencing positive growth every year from 2016 to 2018. The smallest VAT coverage ratio is the education services sector and accommodation services and food and drink.

Limitations

I-O tables are not available every year, so the authors update the I-O tables to make projections for the research year, namely 2016 to 2018. Updating is carried out assuming that the technical coefficients or input coefficients are deemed not to change during the analysis or projection period. The absence of data on Gross Fixed Capital Formation for each sector makes the author calculate the GFCF allocation with the assumption that machinery and factory equipment are the output of the manufacturing industry and wholesale and retail trade; repair of motor vehicles and motorcycles.

The tax expenditure report assumes that the estimates made are static, not taking into account the economic impact, changes in people's behavior, and other government policies' existence. Also, the value of non-collected VAT on small entrepreneurs in the tax expenditure report is the calculation result if the entrepreneur has a turnover of IDR 600 million to IDR 4.8 billion was designated as taxable entrepreneurs. This research also does not explain why the agricultural, forestry, and fisheries business sectors have the most significant difference in potential and collected VAT revenue because no more in-depth research is carried out into each business sector.

Implications

For the Directorate General of Taxes, the low VAT coverage ratio can be increased by expanding the number of taxable entrepreneurs, and the revocation of taxable entrepreneurs for Non-Effective Taxpayers whose existence is unknown with VAT tax return supervision. For further research, research can be organized in a more comprehensive method that describes and explains the factors that cause a significant difference in the potential and collected VAT revenue for each business sector.

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