Jurnal Anggaran dan Keuangan Negara Indonesia
https://anggaran.e-journal.id/akurasi

ECONOMIC IMPACT ASSESSMENT OF VILLAGE FUND IN INDONESIA USING INTER-REGIONAL INPUT OUTPUT ANALYSIS

Ilham Tohari[1]

Info Artikel

[1]Hiroshima University, Hiroshima, ilham.tohari@kemenkeu.go.id

Riwayat Artikel :
Diterima 30-04-2022
Direvisi 15-06-2022
Disetujui 27-06-2022
Tersedia online 27-06-2022

JEL Classification: C67, H72, R15

Abstract

The economic development of a region/country is marked by development in various sectors and regions through private or public spending. In 2017, village fund (as one of government expenditure) has induced and supported sectors such as public administration, human health and social works, education, manufacturing industries and other service activities in any region. This study aims to analyze the impact of the 2017 village fund program realization on the Indonesian economy, such as the impact on final demand, household income, and employment coverage. The method used in this research is Inter-Regional Input Output (IRIO) analysis using the IRIO Indonesia Table in 2016 domestic transactions on producer prices classification 102 x 102 sectors (6 regions and 17 sectors). The results of this study show Indonesia's total domestic output in 2017 for the realization of the village fund budget of IDR 98 trillion. Meanwhile, Village Fund 2017 program stimulated a total salary increase of IDR 26.980 trillion or 648,132 additional workers or contributed to employment increase during 2017 as 13.12%. The results of the analysis of the output multiplier and the income multiplier show that, if we viewed in sectoral details, the electricity and gas sector and the manufacturing industry sector have more roles in increasing output compared to other sectors.

Keywords: *Village Fund, IRIO, Input Output Analysis*

Abstrak

Pembangunan ekonomi suatu daerah/negara ditandai dengan pembangunan di berbagai sektor dan daerah melalui belanja swasta atau publik. Pada tahun 2017, dana desa (sebagai salah satu pengeluaran pemerintah) telah mendorong dan mendukung sektor-sektor seperti administrasi publik, kesehatan manusia dan pekerjaan sosial, pendidikan, industri manufaktur dan kegiatan jasa lainnya di setiap daerah. Penelitian ini bertujuan untuk menganalisis dampak realisasi program dana desa tahun 2017 terhadap perekonomian Indonesia, seperti dampaknya terhadap permintaan akhir, pendapatan rumah tangga, dan cakupan lapangan kerja. Metode yang digunakan dalam penelitian ini adalah analisis Inter-Regional Input Output (IRIO) dengan menggunakan Tabel IRIO Indonesia tahun 2016 transaksi domestik pada klasifikasi harga produsen 102 x 102 sektor (6 wilayah dan 17 sektor). Hasil kajian ini menunjukkan realisasi dana desa 2017 menginduksi output domestik Indonesia sebesar Rp 98 triliun. Sementara itu, program Dana Desa 2017 mendorong total kenaikan gaji sebesar Rp26,980 triliun atau tambahan 648.132 tenaga kerja atau berkontribusi terhadap peningkatan lapangan kerja selama tahun 2017 sebesar 13,12%. Hasil analisis pengganda output dan pengganda pendapatan menunjukkan bahwa jika dilihat secara sektoral, sektor listrik dan gas serta sektor

industri pengolahan lebih berperan dalam meningkatkan output dibandingkan dengan sektor lainnya.

Kata kunci: Dana Desa, IRIO, Analisis Input Output

1. INTRODUCTION

Based on Law No. 2 of 2015 concerning the Second Amendment to Law No. 23 of 2014 concerning Regional Government and the issuance of Law No. 6 of 2014 concerning Villages, the delegation of authority from the central government can not only be carried out to the provincial government and district/city governments . Still, it can be made to the village level government. The transfer reinforces this to the village level. One form of delegation of authority is fiscal decentralization. Fiscal decentralization in terms of expenditure (expenditure) is defined as a process of channelling the budget from the central government to local governments to support government functions in terms of public services.

As mandated by Law Number 6 of 2014, the Village Fund came into effect during the Jokowi-Jusuf Kalla presidency, emphasizing village development and the empowerment of rural communities. Village development manifests the government's mission to develop Indonesia "from the periphery," President Joko Widodo's signature phrase to emphasize his priorities on marginalized and less developed regions.

According to Government Regulation Number 60 of 2014, Village Funds are intended for villages and transferred directly from a central cash account to village cash accounts to finance village government administration, village development implementation, village community development, and village community empowerment. Therefore, the village government has to report the village fund program implementation directly to the central government, not to the provincial or municipal government. In other words, the village funds are not reconciled in district or local level reports. Consequently, the village funds are not considered in the computation of final consumption expenditure by the government in the 2016 Input-Output Table, which covers all of the spendings in municipal and provincial level governments (about 1,094.75 trillion IDR) according to the 2016 local budget. However, the village funds are treated as part of the central government expenditure (about 1,350 trillion IDR in 2016).

The regional development approach is a crucial factor that needs to be applied to prepare the national development strategy. The geographical condition of Indonesia, which consists of large islands and archipelagos, requires an effective, synergistic, and optimal regional development strategy. The differences in each region's potential and character needs require an effective development strategy so that each area can grow independently. Meanwhile, to face the global market, the synergy of cooperation between regions is vital to increase national competitiveness. In contrast, optimization considerations are needed concerning efficient use of resources, the efficiency of the span of control (spatial optimization), and economies of scale.

Concerning regional optimization, apart from local resources, spatial efficiency and spatial economies of scale are important factors that need to be considered. Economic area units that are geographically too broad and do not have a hierarchy of sub-regional relations tend to face internal transaction costs. On the other hand, a region's economic scale that is too small will not function effectively to become independent, fulfill its own basic needs while simultaneously developing trade between areas that are mutually beneficial. The economic scale of the region is large enough to increase the attractiveness of the region and at the same time strengthen the

bargaining position of the region concerned in interregional trade. For this reason, in addition to considering location and distance efficiency, regional aggregation needs to be carried out to increase economies of scale in order to function effectively as a regional economic entity.

The present research aimed to analyze forward linkage and backward linkage among sectors and regions in the national economy and to analyze the impact of village funds on the creation of output, household income, and employment by sectors and regions. This study brings input for the Ministry of Villages, Development of Disadvantaged Regions, and Transmigration, especially for Directorate General of Village and Rural Development to design and launch regulations together with the Ministry of National Development Planning and the Ministry of Finance related to optimum village fund expenditure which drives much more induced output, household income and job creation as well on regions and sectors with schemes and guidances enacted by regulations. This research may also provide a reference material for further research related to government expenditure (village fund program) on sectors and regions.

2. LITERATURE REVIEW

2.1 Intergovernmental Transfer

Essential sources of revenue for local governments are tax revenues and intergovernmental transfers (Bergvall et al., 2006). The purpose of this transfer between levels of government is for vertical equity, horizontal equity, overcoming the problem of public service effects, directing priorities, experimenting with new ideas, stabilization, and the obligation to realize the achievement of minimum service standards in each region (Fuad, 2004). Rosen and Gayer (2009) divide transfers between levels of government into two types of transfers, namely unconditional transfers and conditional grants. Unconditional grants/general purpose grants/block grants are transfers that have no restrictions on the use of fund allocations by local governments but are still under the supervision of the central government.

Village Fund policies in Indonesia, in general, can be categorized as conditional non-matching grants. The central government transfers some amounts to local governments where the central government has set a specific purpose for using the funds. The existence of a transfer will cause an income effect (Stiglitz, 2015). For local governments, these transfers can be seen as the additional budget that can provide public goods accessible to local communities. Rosen and Gayer (2009) explained that there might be a change in the consumption pattern of public goods due to additional transfers from the central government.

2.2 Village Fund

In Indonesia, there have been several studies related to villages and their relationship to poverty. Ekayuliana et al. (2019) analyze the effect of village funds on poverty levels in East Lombok Regency. The population of this research are villages in East Lombok Regency. The study results show that government policies in the form of Village Funds do not affect poverty levels because Village Funds for infrastructure are used more than for empowerment, where empowerment directly touches the target of the poor to reduce poverty. In addition, Arifin et al. (2020) found that village fund is more likely to increase the number of village-owned enterprises with a similar trend. However, there is no evidence that village-owned enterprises provide more opportunities for the villager to work.

On the other hand, Anam (2017) research analyzed the impact of the distribution of Village Funds on reducing the poverty level of rural communities in the Bangkalan Regency. The dependent variable in this study is the poverty level of the village community and uses the

independent variable of the Village Fund per capita. Using cross-section data in 80 sampling villages in 2016, the author found that the Village Fund variable significantly affects poverty reduction.

Furthermore, Sigit Angga (2018) analyzes the influence of the Village Fund on Poverty in Indonesia. The dependent variable in this study is the number of poor people, and the independent variable is the Village Fund (in a million). According to the regression results, the panel data for all districts/cities in Indonesia from 2015 to 2017 shows a negative effect. This study shows that when the Village Fund increases, the number of poor people will decrease.

Based on the empirical literature, most of the existing research is case studies that are limited to the study of Village Funds in certain areas. There is one study related to the Village Fund, which covers all districts/cities in Indonesia. Still, this research has not discussed the linkage of village funds and creating job opportunities with an input-output approach. With the investigation with local and regional coverage in Indonesia, it is accepted that it could enrich insight and information regarding the effect of the village fund policy on increasing income levels and labour levels as inputs in Indonesia.

3. DATA AND METHODOLOGY

3.1 Data Collection

3.1.1 Inter-Regional Input-Output (IRIO) Table

An essential aspect of the IRIO model is its ability to measure and model economic interrelationships between regions. IRIO is suitable for tracking the effects of exogenous changes on a region's economy. In IRIO, we can see the movement of goods flows between sectors and between regions and estimate the impact of these movements on how many areas. IRIO analysis contains multiple aggregations, and production is broken down by commodity and region.

This study uses data from IRIO Indonesia in 2016 published in May 2021 by Statistics Indonesia, consisting of 6 regions, each region consisting of 17 sectors (matrices 102x102).

According to the 2016 IRIO Table, the total final consumption expenditure by the government is about 1,094.18 trillion which is relatively the same as the total expenditure by local government, which is about 1,094.75 trillion IDR. The central government expenditures (non-transfer to local government) are not included in the computation. Therefore, the village fund realization would create the new final demand leading to other input factors would be increasing as well.

Table 1. Regions and Sectors in The 2016 IRIO Table

No	Regions	No	Sectors
1	Sumatera	1	Agriculture, forestry, hunting and fisheries
2	Java	2	Mining and quarrying
3	Bali & Nusa Tenggara	3	Manufacturing Industry
4	Kalimantan	4	Electricity and Gas
5	Sulawesi	5	Water supply, sewage, waste management
6	Moluccas & Papua	6	Construction
		7	Wholesale and retail trade; repair of motor vehicles and motorcycles
		8	Transportation and Storage
		9	Accommodation and food services activities

10	Information and communication
11	Financial and Insurance Services
12	Real Estate Activities
13	Business activities
14	Public Administration and defence; compulsory social security
15	Education
16	Human health and social work activities
17	Other services activities

Source: The 2016 IRIO Table (Statistics Indonesia, 2021)

3.1.2 Village Fund

In this study, I use the allocation of village funds among regions based on the budget realization for the fiscal year of 2017. The data itself comes from the details of the Financial Statistics of Village Government 2018 published by Statistics Indonesia in 2019. To compare and to introduce the shock of the village fund into the IRIO table, I then aggregate 33 provincial-level data in the village fund into six regions (as seen in Table 2) as follows:

a. Sumatra Region- 10 Provinces (Aceh, North Sumatra, West Sumatra, Riau, Riau Islands, Jambi, Bangka Belitung, South Sumatra, Bengkulu, Lampung)
b. Java Region- 5 Provinces (Banten, West Java, Central Java, SR Yogyakarta, East Java)
c. Bali&Nusa Tenggara Region- 3 Provinces (Bali, West Nusa Tenggara, East Nusa Tenggara)
d. Kalimantan Region- 5 Provinces (North Kalimantan, West Kalimantan, Central Kalimantan, South Kalimantan, East Kalimantan)
e. Sulawesi Region- 6 Provinces (North Sulawesi, Central Sulawesi, South Sulawesi, West Sulawesi, Southeast Sulawesi, Gorontalo)
f. Moluccas and Papua Region- 4 Provinces (Moluccas, North Moluccas, Papua, and West Papua).

Table 2. Aggregation Provincial Level Village Fund into Regional Level

No	Province	Provincial Level 2017 Village Fund (in Billion IDR)	Region	Regional Level 2017 Village Fund (in Billion IDR)
1	Aceh	4,776.01	Sumatera	17,688.08
2	North Sumatera	4,075.46		
3	West Sumatera	764.44		
4	Riau	1,282.90		
5	Riau Islands	223.51		
6	Jambi	1,095.41		
7	South Sumatera	2,205.02		
8	Bengkulu	1,049.09		
9	Lampung	1,954.49		
10	Bangka Belitung	261.75		
11	West Java	4,509.85	Java	18,477.96

No	Province	Provincial Level 2017 Village Fund (in Billion IDR)	Region	Regional Level 2017 Village Fund (in Billion IDR)
12	Central Java	6,342.94		
13	SR Yogyakarta	367.92		
14	East Java	6,272.49		
15	Banten	984.76		
16	Bali	538.58	Bali & Nusa Tenggara	3,779.86
17	West Nusa Tenggara	876.13		
18	East Nusa Tenggara	2,365.16		
19	West Kalimantan	1,582.26	Kalimantan	5,183.89
20	Central Kalimantan	1,139.71		
21	South Kalimantan	1,398.63		
22	East Kalimantan	699.02		
23	North Kalimantan	364.27		
24	North Sulawesi	1,149.01	Sulawesi	6,676.26
25	Central Sulawesi	1,370.77		
26	South Sulawesi	1,804.68		
27	Southeast Sulawesi	1,395.37		
28	Gorontalo	506.62		
29	West Sulawesi	449.82		
30	Moluccas	945.95	Moluccas & Papua	5,754.72
31	North Maluku	814.56		
32	West Papua	802.08		
33	Papua	3,192.13		
	TOTAL	57,560.77		57,560.77

Source: Financial Statistics of Village Government (Statistics Indonesia,2019)

After we aggregate and calculate the regional level village fund, we then aggregate and calculate the provincial level of village expenditure into the regional level data to obtain the percentage of each expenditure type and to classify the expenditure type into 17 sectors in the 2016 IRIO table based on their characteristics according to the guidance in the Financial Statistics of Village Government 2018. We obtain the village fund allocation into the 17 sectors and six regions, as seen in Appendix A.

3.1.3 Employment Data

Tables 3 and 4 represent the employment data period 2016 and 2017 by sector calculated from Labor Force Situation Indonesia (Statistics Indonesia, 2021). Averaging working people data obtain the data in the working people in the 2016 column in February and Augustus 2016. The data in the right column are obtained by calculating changes between two periods, February 2018 and February 2017. In general, table 4 implies that the majority of the population in Indonesia are working in the three sectors: agriculture, forestry, hunting, and fisheries;

wholesale and retail trade; and manufacturing industry. Meanwhile, table 4 shows that more than 75% of working people in Indonesia are residents in the Java and Sumatera region.

Table 3. The Employment Data Period 2016 and 2017 by Sector

Sectors	Working People in 2016 (Workers)	% share	Employment Increase/ decrease in 2017 (Workers)
Agriculture, forestry, hunting and fisheries	38,034,912	31.82%	86,432
Wholesale and retail trade; repair of motor vehicles and motorcycles	22,851,638	19.12%	657,493
Manufacturing Industry	16,171,097	13.53%	1,097,734

Table 4. The Employment Data Period 2016 and 2017 by Region

Regions	Working People in 2016 (Workers)	% share	Employment Increase/ decrease in 2017 (Workers)
Java	68,092,491	56.97%	1,286,801
Sumatera	25,254,474	21.13%	1,805,164

3.2 Data Analysis

The analytical tool used to study the role of village funds, both sectorally and regionally, is the Inter-Regional Input-Output Table. The IRIO model can determine the impact of village funds on output, income, employment opportunities and gross added value based on the Leontief inverse matrix. As mentioned in Ichihashi (1995), the Leontief inverse matrix has a quantitative view which is reflected by the summation of the balanced output of the sector analysed. Meanwhile, to find out the role of each sector, we can learn it based on linkage analysis and multiplier analysis. From the equations presented as follows:

$$x_{11} + x_{12} + \ldots + x_{1n} + F_1 = X_1$$
$$x_{21} + x_{22} + \ldots + x_{2n} + F_2 = X_2$$
$$x_{n1} + x_{n2} + \ldots + x_{nn} + F_n = X_n \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

and in general the above equation can be reformulated into:

$$\sum_{j=1}$$

Where:

x_{ij} : the number of sector i outputs used as input by sector j

F_i : final demand of sector i

X_i : total output sector i.

If we know the technical coefficient matrix $a_{ij} = x_{ij}/X_j \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$

then if equation (2) is substituted into equation (1), the following equation will be obtained:

$$a_{11}X_1 + a_{12}X_2 + \ldots + a_{1n}X_n + F_1 = X_1$$
$$a_{21}X_1 + a_{22}X_2 + \ldots + a_{2n}X_n + F_2 = X_2$$

$a_{n1}X_1 + a_{n2}X_2 + ...+ a_{nn}X_n + F_n = X_n$ . . . . . .(3)

in matrix form, equation (3) can be written as follows:

A . X + F = X

or F = X - AX If there is a change in final demand, then there will be a change in the pattern of national income. If written in the form of an equation to be:

$AX + F = X$ atau $(I-A)\ X = F$ atau $X = (I-A)^{-1}\ F$ ……(4)

I : Identity matrix of size n x n whose elements contain one on the diagonal and zero on the other

F : Final Demand

X : Output

(I-A) : Leontief Matrix

$(I-A)^{-1}$: Leontief Inverse Matrix

4. RESULTS AND DISCUSSION

4.1 Linkage Analysis

The linkages between sectors, both forward and backward links, are two important things that are often used when we want to find and analyze leading sectors in the economy of a region. By studying the forward or backward linkages, we can realize how strong the relationship between a sector is with other sectors, both in terms of providing input to other sectors (forward linkage) as well as in terms of input needs from other sectors (backward linkage).

If a sector has a large value of forward and backward linkage, it means that the linkage of that sector with other sectors is getting closer. Therefore, policies aimed at influencing the amount of economic output do not need to come from every sector in the economy, but only from sectors that have forward and backward linkages so that the government can save development costs.

To simplify the analysis, according to Rasmusen, forward and backward linkage analysis can be shown by the index of forward linkage/IFL (which is commonly referred to as indices of the sensitivity of dispersion or index of sensitivity degree) and index of backward linkage/IBL (commonly referred to as indices of dispersion). The power of dispersion or index of dispersion). The two indices are a form of normalization of forward and backward linkages-that is, after being normalized to the average global intensity value. IFL is a value that shows the relative effect of an increase in the output of a sector to the encouragement of an increase in the output of other sectors (through the distribution of the output of that sector to become inputs for other sectors). Meanwhile, IBL is a value that shows the relative effect of an increase in the output of a sector, which will cause an increase in the output of other sectors (through the need for additional inputs from that sector which comes from the output of other sectors). If the IFL or IBL value of a sector is greater than 1, it means that the relative effect of increasing the output of the sector in question is greater than the average, so that the sector is considered to have a large forward linkage or backward linkage.

If a sector has an IBL and IFL value greater than 1, then the sector can be categorized as a key sector (leading sector) of an economy, whereas if it only has an IBL value greater than 1, then the sector is included in the sector with high intensity. Large backward linkage, and vice versa, if it only has an IFL value greater than one, then the sector is said to be included in the sector that has a large intensity of backward linkage.

The table below shows the IBL and IFL values for each economic sector and region in Indonesia. From the table, it can be seen that there are several sectors in the Indonesian economy that can be categorized as key sectors, including the electricity and gas sector, manufacturing industry, construction, transportation and storage, mining and quarrying, and business activities. These sectors are included in the top 10 key sectors and regions in the Indonesian economy, especially for the electricity and gas sector, which shows very large IBL and IFL values in any region. This indicates that the electricity and gas sector is a very fundamental sector in all regions of Indonesia.

Table 5. Top 10 Sectors-Regions in Backward and Forward Linkage

No	Sectors	Regions	IBL	No	Sectors	Regions	IFL
1	Electricity and Gas	Bali&Nusa Tenggara	2.15531	1	Electricity and Gas	Bali& Nusa Tenggara	1.87576
2	Electricity and Gas	Kalimantan	1.83393	2	Electricity and Gas	Java	1.87053
3	Electricity and Gas	Moluccas& Papua	1.79640	3	Electricity and Gas	Kalimantan	1.79621
4	Electricity and Gas	Sumatera	1.75951	4	Electricity and Gas	Moluccas& Papua	1.76250
5	Electricity and Gas	Sulawesi	1.74107	5	Electricity and Gas	Sumatera	1.72505
6	Electricity and Gas	Java	1.71012	6	Electricity and Gas	Sulawesi	1.69678
7	Manufact. Industry	Bali&Nusa Tenggara	1.16820	7	Mining and quarrying	Java	1.55689
8	Construction	Bali&Nusa Tenggara	1.15360	8	Business activities	Kalimantan	1.54295
9	Transport. and Storage	Bali&Nusa Tenggara	1.13660	9	Mining and quarrying	Sumatera	1.49268
10	Construction	Kalimantan	1.13116	10	Business activities	Sumatera	1.46521

4.2 Induced Output

In general, the allocation of 57.56 trillion IDR of the 2017 village fund would generate 98 trillion IDR in the induced output. Table 6 shows the induced output of Indonesia's economic sectors by the 2017 village fund. Based on the classification of 17 sectors, it can be seen that the sector that has the largest induced output value and is ranked first among other economic sectors is the human health and social work activities sector of 25,101.90 (in billion IDR). Furthermore, the public administration and defence sectors, the manufacturing industry sector, the education sector, and the wholesale and retail trade sectors each have an induced output value of 16,741.87; 16,032.87; 5,215.49; 5,090.47 (in billion IDR). The results of the induced output analysis show that when viewed in detail, the sectors of human health and social work activities, public administration and defence, manufacturing industry and education have more

roles in increasing output compared to other sectors in line with the portion of village funds spent on these sectors. However, the wholesale and retail trade sector could be in the top 5 of highest induced output sectors even though the portion of village fund allocation for this sector is relatively small.

Table 6. The Induced Output of 2017 Village Fund by Sector

Sectors	Village Fund Allocation (in Billion IDR)	% share	Induced Output (in Billion IDR)	% share
Human health and social work activities	24,549.16	42.65%	25,101.90	25.61%
Public Administration and defense; compulsory social security	16,230.64	28.20%	16,741.87	17.08%
Manufacturing Industry	4,534.19	7.88%	16,032.87	16.36%
Education	4,984.49	8.66%	5,215.49	5.32%
Wholesale and retail trade; repair of motor vehicles and motorcycles	771.35	1.34%	5,090.47	5.19%
Financial and Insurance Services	2,386.52	4.15%	4,290.36	4.38%
Transportation and Storage	134.90	0.23%	4,247.98	4.33%
Other services activities	2,959.74	5.14%	3,633.38	3.71%
Agriculture, forestry, hunting and fisheries	-	0.00%	3,505.25	3.58%
Business activities	1.01	0.00%	2,687.58	2.74%
Information and communication	695.83	1.21%	2,581.11	2.63%
Electricity and Gas	0.14	0.00%	2,498.13	2.55%
Accommodation and food services activities	20.63	0.04%	2,123.88	2.17%
Mining and quarrying	0.28	0.00%	1,724.18	1.76%
Construction	0.02	0.00%	1,212.98	1.24%
Real Estate Activities	0.21	0.00%	943.69	0.96%
Water supply, sewage, waste management	291.65	0.51%	369.14	0.38%
Total	57,560.77	100.00%	98,000.23	100.00%

Looking at the regional side, Table 7 shows that the rank position remains the same, except for Kalimantan and Moluccas & Papua regions. Java is the only region that generates the induced output share more than the village fund allocation share. It implies that Java is the most vital region in Indonesia, where the majority of economic activities are. Both areas hold more than 65% of the induced output generated through the 2017 Village Fund realization in joining the Sumatra region.

Table 7. The Induced Output of 2017 Village Fund by Region

Regions	Village Fund Allocation (in Billion IDR)	% share	Induced Output (in Billion IDR)	% share
Java	18,477.96	32.10%	37,144.73	37.90%
Sumatera	17,688.08	30.73%	28,351.77	28.93%
Sulawesi	6,676.26	11.60%	10,082.28	10.29%
Kalimantan	5,183.89	9.01%	9,004.62	9.19%
Moluccas&Papua	5,754.72	10.00%	7,895.41	8.06%
Bali&Nusa Tenggara	3,779.86	6.57%	5,521.42	5.63%
Total	57,560.77	100.00%	98,000.23	100.00%

4.3 Induced Salary

Overall, the 2017 village fund would generate 26.98 trillion IDR for the induced wage. Table 8 shows the induced wage of Indonesia's economic sectors by the 2017 village fund. Based on the classification of 17 industries, we can expect that the top four induced wages were generated by those sectors that received the significant four village fund allocations: human health and social work activities, public administration and defence, education and manufacturing industry. However, again, the wholesale and retail trade sector could be in the top 5 of highest induced wages sectors even though the portion of village fund allocation for this sector is relatively small. Still, actually, it already generated quite good induced output on the rank fifth.

Another astonishing thing is Agriculture, forestry, hunting and fisheries sectors. Even though this sector did not directly obtain 2017 village fund allocation, the other sectors have transactions with this sector. This sector also contributes 3.58% for the national induced output and 4.3% for the national induced wage.

Table 8. The Induced Wage of 2017 Village Fund by Sector

Sectors	Village Fund Allocation (in Billion IDR)	% share	Induced Output (in Billion IDR)	% share	Induced Wage (in Billion IDR)	% share
Human health and social work activities	24,549.16	42.65%	25,101.90	25.61%	7,544.02	27.96%
Public Administration and defence; compulsory social security	16,230.64	28.20%	16,741.87	17.08%	6,466.41	23.97%

Sectors	Village Fund Allocation (in Billion IDR)	% share	Induced Output (in Billion IDR)	% share	Induced Wage (in Billion IDR)	% share
Education	4,984.49	8.66%	5,215.49	5.32%	2,730.56	10.12%
Manufacturing Industry	4,534.19	7.88%	16,032.87	16.36%	1,988.23	7.37%
Wholesale and retail trade; repair of motor vehicles and motorcycles	771.35	1.34%	5,090.47	5.19%	1,536.90	5.70%
Financial and Insurance Services	2,386.52	4.15%	4,290.36	4.38%	1,427.15	5.29%
Agriculture, forestry, hunting and fisheries	-	0.00%	3,505.25	3.58%	1,160.76	4.30%
Other services activities	2,959.74	5.14%	3,633.38	3.71%	1,073.77	3.98%
Business activities	1.01	0.00%	2,687.58	2.74%	788.74	2.92%
Transportation and Storage	134.90	0.23%	4,247.98	4.33%	622.03	2.31%
Information and communication	695.83	1.21%	2,581.11	2.63%	451.52	1.67%
Accommodation and food services activities	20.63	0.04%	2,123.88	2.17%	444.09	1.65%
Mining and quarrying	0.28	0.00%	1,724.18	1.76%	286.03	1.06%
Construction	0.02	0.00%	1,212.98	1.24%	221.14	0.82%
Electricity and Gas	0.14	0.00%	2,498.13	2.55%	117.90	0.44%
Water supply, sewage, waste management	291.65	0.51%	369.14	0.38%	63.31	0.23%
Real Estate Activities	0.21	0.00%	943.69	0.96%	57.48	0.21%
Total	57,560.77	100%	98,000.23	100%	26,980.04	100%

Jump to regional perspective; Table 9 shows that the rank order of the induced wage remains the same with the rank order of the induced output. Based on the classification of 6 regions, Java, Sumatera, and Sulawesi would share more than 75% of the induced wage to the national induced wage by the 2017 village fund.

Table 9. The Induced Wage of 2017 Village Fund by Region

Regions	Village Fund Allocation (in Billion IDR)	% share	Induced Output (in Billion IDR)	% share	Induced Wage (in Billion IDR)	% share
Java	18,477.96	32.10%	37,144.73	37.90%	9,407.48	34.87%
Sumatera	17,688.08	30.73%	28,351.77	28.93%	7,967.18	29.53%
Sulawesi	6,676.26	11.60%	10,082.28	10.29%	3,280.44	12.16%
Kalimantan	5,183.89	9.01%	9,004.62	9.19%	2,405.23	8.91%
Moluccas & Papua	5,754.72	10.00%	7,895.41	8.06%	2,207.19	8.18%
Bali&Nusa Tenggara	3,779.86	6.57%	5,521.42	5.63%	1,712.51	6.35%
Total	57,560.77	100%	98,000.23	100%	26,980.04	100%

4.4 Contribution to Job Opportunity

Table 10 represents employment coverage of the 2017 village fund by sectoral approach. In this section, the induced wage would be faced with the annual wages per capita in 2016. Because of that, it is not always true that the more induced wages would lead to more job opportunities in that sector. For example, the agriculture, forestry, hunting and fisheries sector, which has an induced wage of 1.16 trillion IDR, could cover the new employment number as much as 70,651 workers; meanwhile, the manufacturing industry sector, which has an induced wage of 1.98 trillion IDR (bigger than the previous one) could only cover the new working people as much as 33,527 workers (less than previous one).

Table 10. The Employment Coverage of 2017 Village Fund by Sector

Sectors	2016 Salary & Wages per Capita/ year (in Million IDR)	Induced Wage by 2017 Village Fund (in Million IDR)	Employment Coverage by the Induced Wage (Workers)	Employment Increase/ decrease in 2017 (Workers)	% Contribution to Employment Increase in 2017
Human health and social work activities	48.94	7,544,017	154,138	204,124	75.51%
Public Administration and defence; compulsory social security	62.41	6,466,414	103,619	428,397	24.19%
Agriculture, forestry, hunting and fisheries	16.43	1,160,761	70,651	86,432	81.74%
Education	52.78	2,730,561	51,734	24,182	100.00%
Wholesale and retail trade; repair of motor vehicles and motorcycles	32.43	1,536,905	47,387	657,493	7.21%
Other services activities	28.33	1,073,765	37,900	705,480	5.37%
Manufacturing Industry	59.30	1,988,229	33,527	1,097,734	3.05%
Transportation and Storage	46.03	622,026	13,515	244,954	5.52%
Accommodation and food services activities	35.78	444,093	12,411	1,113,671	1.11%
Financial and Insurance Services	139.29	1,427,152	10,246	(78,356)	0.00%
Business activities	122.61	788,736	6,433	156,854	4.10%

Sectors	2016 Salary & Wages per Capita/ year (in Million IDR)	Induced Wage by 2017 Village Fund (in Million IDR)	Employment Coverage by the Induced Wage (Workers)	Employment Increase/ decrease in 2017 (Workers)	% Contribution to Employment Increase in 2017
Water supply, sewage, waste management	18.40	63,314	3,441	83,688	4.11%
Construction	69.61	221,141	3,177	33,267	9.55%
Information and communication	208.80	451,522	2,163	160,071	1.35%
Mining and quarrying	140.58	286,027	2,035	36,379	5.59%
Electricity and Gas	110.06	117,897	1,071	49,561	2.16%
Real Estate Activities	137.15	57,481	419	(63,239)	0.00%
Total	41.63	26,980,043	648,132	4,940,692	13.12%

In general, by utilizing the induced wage of 26.98 trillion IDR and considering 41.63 million IDR per capita/year, the new employment that would be expected is about 648.132 workers. It implies that the 2017 village fund would contribute 13.12% to employment increase during period 2017. In addition, table 11 shows how induced wage would cover the new employment in each region by considering the regional income per capita/year. In this case, the Moluccas and Papua region could share the employment coverage on the 4th rank since the area has a lower regional income per capita than the Kalimantan region has. It implies that the induced wage created by the 2017 village fund would cover much more new employment in the Moluccas & Papua region, after the Bali & Nusa Tenggara region.

Table 11. The Employment Coverage of 2017 Village Fund by Region

Regions	2016 Salary & Wages per Capita/ year (in Million IDR)	Induced Wage by 2017 Village Fund (in Million IDR)	Employment Coverage by the Induced Wage (Workers)	Employment Increase/ decrease in 2017 (Workers)	% Contribution to Employment Increase in 2017
Java	45.35	9,407,485	207,440	1,286,801	16.12%
Sumatera	40.84	7,967,184	195,078	1,805,164	10.81%

Regions	2016 Salary & Wages per Capita/ year (in Million IDR)	Induced Wage by 2017 Village Fund (in Million IDR)	Employment Coverage by the Induced Wage (Workers)	Employment Increase/ decrease in 2017 (Workers)	% Contribution to Employment Increase in 2017
Sulawesi	34.21	3,280,442	95,889	626,938	15.29%
Moluccas & Papua	28.01	2,207,195	78,809	273,422	28.82%
Bali& Nusa Tenggara	25.44	1,712,513	67,319	547,869	12.29%
Kalimantan	40.01	2,405,225	60,117	400,498	15.01%
Total	41.63	26,980,043	648,132	4,940,692	13.12%

5. CONCLUSION

This paper aims to assess the economic impact of the village fund in the Indonesian economy, utilizing the inter-regional input-output approach. The input-output result shows that the electricity and gas sector got the highest score in the backward and forward linkages effect among other sectors in any region. Based on the analysis results of the role of village funds in the Indonesian economy, the conclusions obtained are as follows. Firstly, the results of the induced output analysis show that when viewed in detail, the sectors of the human health and social work activities, public administration and defence, and the manufacturing industry are more instrumental in increasing output than the other sectors. The Java, Sumatra, and Sulawesi regions dominate more than 75% of the total induced output by region. Secondly, the results of the induced wage analysis show that when viewed in detail, the sectors of the human health and social work activities, public administration and defence, and education play a more critical role in increasing induced wages than the other sectors. By region, the Java, Sumatra, and Sulawesi regions dominate more than 75% of the total induced wages. Then, the results of the employment coverage analysis show that when viewed in detail, the sector of the human health and social work activities; public administration and defence; and agriculture, forestry, hunting, and fisheries have more roles in increasing employment coverage compared to other sectors. By region, the Java, Sumatra and Sulawesi regions are the top three regions that are dominant among the others to cover the new employment; however, the Moluccas and Papua, Java and Sulawesi regions have played more roles in contributing to the employment increase during 2017. Lastly, total induced output by 2017 village fund is 98 trillion IDR, the total induced wage is about 26.98 trillion IDR, annual income per capita is about 41.63 million IDR and 648,132 for employment coverage or contributed to employment increase during 2017 as 13.12%.

REFERENCES

Anam, Choirul. (2017). Analisis Dampak Transparansi dan Akuntabilitas Pengelolaan Dana Desa Terhadap Tingkat Kemiskinan: Studi Kasus Kabupaten Bangkalan. University of Indonesia. https://doi.org/10.36217/ier.v2i2.62

Arifin et al. (2020). Village fund, village-owned enterprises, and employment: Evidence from Indonesia. Journal of Rural Studies 79 (pp. 382-394). https://doi.org/10.1016/j.jrurstud.2020.08.052

Bergvall, D., Charbit, C., Kraan, D-J., & Merk, O. (2006). Intergovernmental Transfers and Decentralized Public Spending. OECD Working Papers on Fiscal Federalism, 3. Paris: OECD Publishing. https://doi.org/10.1787/5k97b11z2hxw-en

Ekayuliana, B., Santoso, B., & Hidayati, S. A. (2019). Village Fund Allocation and Village Fund to Reduce Poverty Rate Using Good Village Governance as Moderation in East Lombok Regency. 8(7), 283–291. https://doi.org/10.21275/ART20199317

Fuad, Noor. (2004). Dasar-Dasar Keuangan Publik. Jakarta. LPKPAP-Badan Pendidikan dan Pelatihan Keuangan.

Ichihashi et al. (1995). A Means of Graphical Analysis for Input-Output Tables. Kochi University Review, 54, 193-226.

Miller, R.E.; Blair, Peter D., 2009. Input-Output Analysis: Foundations and Extensions. Cambridge. GBR: Cambridge University Press. https://doi.org/10.1017/CBO9780511626982

Rosen, H. S., and Gayer, T. (2009). Public Finance, 9th edition. *McGraw-Hill International Editions.*

Sigit Angga, T. (2018). Pengaruh Dana Desa Terhadap Kemiskinan: Studi Tingkat Kabupaten/Kota Di Indonesia. Indonesia Treasury Review Jurnal Perbendaharaan, Keuangan Negara Dan Kebijakan Publik, 3(4), 296–311

Statistics Indonesia. 2019. Financial Statistics of Village Government 2018. Jakarta, Indonesia

Statistics Indonesia. 2021. The 2016 Indonesia IRIO Table. http://bps.go.id

Statistics Indonesia. 2021. Labor Force Situation In Indonesia 2021.

Stiglitz, J. E., & Rosengard, J. K. (2015). Economics of The Public Sector Fourth Edition. W. W. Norton Company, Inc.

APPENDICES

Appendix A. Village Fund Allocation by Region and Sector

	2017 Village Fund Allocation (in Billion IDR)						
Sectors\ Regions	**Sumatera**	**Java**	**Bali&Nusa Tenggara**	**Kalimantan**	**Sulawesi**	**Moluccas & Papua**	**Total by Sector**
Agriculture, forestry, hunting and fisheries	-	-	-	-	-	-	-
Mining and quarrying	0.00	0.03	0.00	0.00	0.00	0.24	0.28
Manufacturing Industry	1,877.16	1,554.80	238.30	272.75	446.88	144.31	4,534.19
Electricity and Gas	0.00	0.14	-	-	-	-	0.14
Water supply, sewage, waste management	76.27	88.71	22.75	32.72	37.21	33.99	291.65
Construction	0.01	0.00	0.00	0.00	0.00	-	0.02
Wholesale and retail trade; repair of motor vehicles and motorcycles	264.60	283.23	48.43	24.87	69.25	80.97	771.35
Transportation and Storage	41.13	52.72	11.54	3.97	12.41	13.14	134.90
Accommodation and food services activities	10.03	2.70	1.99	0.73	1.98	3.21	20.63
Information and	155.64	334.57	50.37	37.39	59.73	58.13	695.83
Financial and Insurance	466.13	1,485.51	80.00	88.30	152.50	114.08	2,386.52
Real Estate Activities	0.18	0.02	0.01	-	-	-	0.21
Business activities	0.26	0.42	0.11	0.04	0.10	0.06	1.01
Public Administration and defense; compulsory social security	4,644.01	5,745.63	1,086.15	1,585.41	1,868.03	1,301.41	16,230.64
Education	1,495.49	1,179.35	366.37	377.10	674.95	891.23	4,984.49
Human health and social work activities	7,702.07	7,000.79	1,603.04	2,431.26	3,056.48	2,755.51	24,549.16
Other services activities	955.08	749.34	270.79	329.35	296.74	358.44	2,959.74
Total by Region	17,688.08	18,477.96	3,779.86	5,183.89	6,676.26	5,754.72	57,560.77

Source: Own Computation based on Financial Statistics of Village Government 2018