

THE EFFICIENCY OF THE NATIONAL ECONOMIC RECOVERY PROGRAM IN WITHSTANDING THE IMPACT OF THE COVID-19 PANDEMIC

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Abstract. *This study aims to assess the efficiency of the National Economic Recovery (PEN) program budget launched by the government to reduce the impact of the pandemic on public welfare in 34 provinces in Indonesia. Efficiency measurements computed using Data Envelopment Analysis (DEA) show that only 12 provinces are efficient at holding the increase in poverty and unemployment by implementing the PEN budget. West Papua Province is efficient despite its unemployment and poverty levels being higher than the national average. West Java Province is likely inefficient and can potentially reduce the unemployment rate with the PEN budget implementation if it is efficient. Maluku Province has the potential to further reduce its poverty with the PEN budget if it is efficient. Not all provinces with low unemployment and poverty rates efficiently implement the PEN budget and vice versa. This study evaluates the regional government's performance from an efficiency point of view. The efficient provinces discovered from the research can become a benchmark for other provinces to maximize the decline in welfare indicators by using the available budget.*

Keywords: *efficiency, national economic recovery, poverty, unemployment.*

Abstraksi. *Penelitian ini bertujuan untuk melihat efisiensi dari anggaran program Pemulihan Ekonomi Nasional yang telah digulirkan pemerintah dalam menekan dampak pandemi terhadap kesejahteraan masyarakat di 34 provinsi yang ada di Indonesia. Pengukuran efisiensi dilakukan menggunakan Data Envelopment Analysis (DEA) memperlihatkan bahwa hanya 12 provinsi yang efisien menahan naiknya kemiskinan dan tingkat pengangguran menggunakan anggaran Pemulihan Ekonomi Nasional. Provinsi Papua Barat menjadi provinsi yang efisien kendati tingkat pengangguran maupun kemiskinannya lebih tinggi dari rata-rata nasional. Provinsi Jawa Barat terindikasi tidak efisien dan berpotensi untuk lebih menekan tingkat penganggurannya dengan anggaran yang telah digulirkan apabila efisien. Provinsi Maluku berpotensi menurunkan lebih dalam kemiskinannya dengan anggaran pemulihan ekonomi nasional apabila efisien. Tidak semua provinsi yang memiliki tingkat pengangguran dan kemiskinan rendah efisien dalam merealisasikan anggaran Pemulihan Ekonomi Nasional, demikian pula sebaliknya. Hasil penelitian dapat menjadi evaluasi kinerja pemerintah daerah sehingga provinsi yang terindikasi efisien dapat menjadi tolok ukur bagi provinsi lainnya untuk memaksimalkan penurunan indikator kesejahteraan dengan menggunakan anggaran yang tersedia.*

Kata kunci: *efisiensi, kemiskinan, pemulihan ekonomi nasional, pengangguran.*

BACKGROUND

The pandemic that has hit Indonesia since early March 2020 has had a global and social impact. The government has imposed social restrictions to prevent the spread of COVID-19. The action has caused an economic downturn. The effect of the pandemic on the

economy has been studied by Auzan (2020), Kohlscheen et al. (2020), Hadiwardoyo (2020), Lim (2020), Buheji et al. (2020), and Susilawati et al. (2020). They had all discovered that the COVID-19 pandemic led to an economic downturn. Employers were forced to shut down their operations during

the pandemic, resulting in workers losing their income and poor people becoming more miserable, resulting in an economic downturn. The pandemic has resulted in rising unemployment (Kong & Prinz, 2020). Jalil and Kasnelly (2020) predict that the wave of unemployment will continue to increase if the pandemic does not end soon. The wave of unemployment due to the pandemic was extreme, even exceeding the increase in unemployment in the 2007 recession (Petrosky-Nadeau & Valletta, 2020). The result of this increase in unemployment is deepening poverty. According to Tarigan et al. (2020), the loss of income due to reduced jobs has increased poverty. Han et al. (2020) also revealed that the impact of the pandemic on people's income had increased poverty, especially among the lower middle-class population.

The coronavirus, SARS-CoV-2 or COVID-19, immediately became a pandemic resulting in the worst global crisis (WHO, 2020). The rapid transmission and high mortality rate make the spread of COVID-19 a threat to the survival of humankind. The government enforced lockdown orders to prevent more people from being infected in many countries, including Indonesia. Responding to the growing COVID-19 pandemic, the Indonesian government is moving quickly and trying to contain the increase in poverty and unemployment rates to maintain public welfare. Furthermore, the government launched The National Economic Recovery Program (Pemulihan Ekonomi Nasional/PEN) to address the more profound impact of the pandemic. Therefore, through Government Regulation No. 23/2020 concerning State Financial Policy and Financial System Stability In Handling the 2019 Coronavirus Disease (COVID-19) Pandemic and In Facing Threats That

Endanger the National Economic and Financial System Stability, the government adopted the National Economic Recovery policy named PEN. The program formulates four strategies for strengthening policies: physical distancing, tracing, education and preparation of quarantine, and hospital isolation if quarantine is not carried out. Social restrictions help reduce infection rates and break the emergence of new cases over a more extended period (Omer et al., 2020). This social limitation then changed people's way of life and resulted in shifts in social and economic life. Keeping social distance has proven to save human lives from COVID-19 but results in more significant societal losses due to reduced economic activity. The contraction of economic growth puts low-income workers in jeopardy (Thunström et al., 2020).

The PEN stimulus seeks to boost the welfare of Indonesian citizens from the pressure of the pandemic by targeting the most vulnerable households and Small and Micro Enterprises (SMEs). The PEN program has several packages, including the Family Empowerment Program (PKH), Direct Cash Aid (BLT), Village Funds, Pre-Employment Cards, and other financial assistance. Government intervention is an essential element needed to protect the public from the impact of COVID-19 on welfare. Anwar and Putro (2020) stated that the economic recovery strategy reduced unemployment in Sukamekar Village, Cianjur Regency, West Java. Darmi and Mujtahid (2020) researched that the alignment between the Family Empowerment Program (PKH), Prosperous Rice (Rastra) assistance, and Village Funds is a critical element in the efficiency of poverty reduction policies. Modjo (2020) emphasizes that the efficiency of implementing government policies has an

impact on strengthening the post-pandemic economy.

Dealing with a recession due to the pandemic, the Indonesian government took proactive steps to anticipate further impacts on public welfare. PEN is an arrangement of activities set to restore the economy. The program is part of state fiscal policy to accelerate the response to the COVID-19 pandemic, respond to threats to the national economy and financial system stability, and save the national economy (Kemenkeu, 2020a).

PEN is targeted on recovery from the demand side, namely: (1) to maintain public consumption through subsidies and social assistance for the poor and vulnerable, (2) to encourage investment through tax incentives, loosening credit and financing relief for SMEs, (3) to support export-import through incentives both taxes and customs and simplifying the export-import bureaucracy (Kemenkeu, 2020b).

Indonesia carries out the economic recovery through comprehensive fiscal and monetary policy instruments. In its implementation, local governments have a strategic role in encouraging the acceleration and effectiveness of national economic recovery (DJKN, 2020). The implementation of the PEN program varies in each province. Even though all areas in Indonesia run the same program with the same target, the results do not necessarily make this program successful in all provinces. The government provides incentives through the social assistance program, but the catch of the business incentive program is inadequate (Ahmad et al., 2021). Ignorance of when the pandemic will end makes economic stability filled with uncertainty. The implementation of economic recovery is still being carried out and evaluated. However, the economy is not

the only measure of welfare. The health of the population is of higher value. Without the right policies, more significant economic losses can occur (Yulianto, 2020).

Government spending instruments implemented in the aid program packages are essential in reducing poverty and unemployment. Gavurova et al. (2017), Ningrum et al. (2020), and Prasetyo & Zuhdi (2013) conducted a study on the impact of government spending in improving public welfare, and this study suggests that the spending has impacts on welfare. However, the author has not found any research explicitly addressing the efficiency of the PEN policy on public welfare during the pandemic, especially in poverty and unemployment. Efficiency is associated with measuring work performance by considering input and output (Amirillah, 2010). The efficiency of a firm means success in producing maximum output from a given set of inputs (Farrell, 1957). An activity is efficient if it uses a minimal budget to accomplish the work (money well spent) (Sumenge, 2013). A government that produces maximum outputs with lower inputs is more efficient than a government that produces fewer outputs with the most inputs (Gupta & Verhoeven, 2001).

Uluwiyah (2018) analyzed the effect of government spending on general welfare, but this research has not accommodated the COVID-19 pandemic situation. Maryani et al. (2020) specifically examined the implications of the pandemic on the economy in the West Nusa Tenggara Province. However, this study focuses more on the economic scenario of the West Nusa Tenggara Province with and without economic recovery policies.

As shown in figure 1, the realization of PKH Beneficiary Household (KPM) in West Java Province is the biggest, even though the

percentage of poor people in that province is relatively low. Meanwhile, Bali Province has the lowest poverty percentage, but the

realization of KPM is more than Papua Province, which has a higher poverty percentage than Bali.

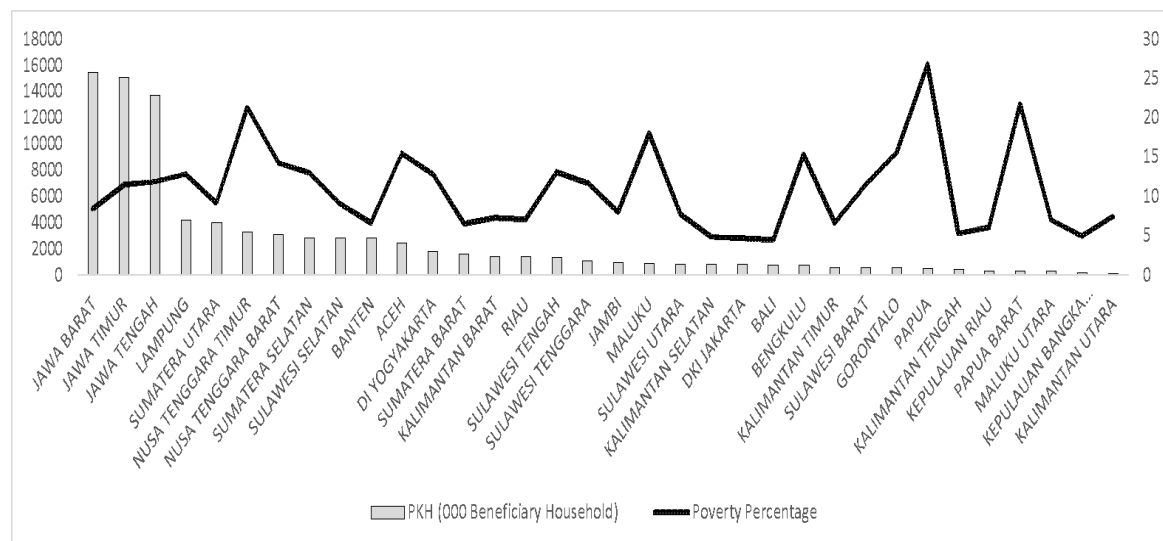


Figure 1. Realization of PKH Beneficiary Household and The Poverty Percentage By Province, 2020

Source: DJPb and BPS (processed)

In Figure 2, the distribution of pre-employment cards does not have a consistent pattern with the Unemployment Rate (TPT). Thus, provinces with the highest TPT do not necessarily have the highest realization of pre-Employment cards and vice versa.

Based on the background described, this study wants to observe to what extent the distribution of PEN program funds is efficient in dealing with the impact of the pandemic on public welfare. Local governments need a tool to measure the efficiency of policy implementation to evaluate and improve their performance, especially in the National Economic Recovery policy. Therefore, this study aims to see the government budget policy's efficiency in reducing the pandemic's impact on public welfare. By performing this research, we expect to analyze the

performance of local governments in economic recovery during the pandemic through the PEN program. Thus, the provinces identified as efficient can become benchmarks for other provinces to evaluate and improve future policies.

Data Envelopment Analysis (DEA) is a standard tool to measure efficiency. Abbott and Doucouliagos (2003) used DEA to explore technical and scale efficiency in evaluating the performance of Australian universities. Li et al. (2018) also chose DEA as a nonparametric method to calculate the relative efficiency and energy-saving potential of 30 provinces in China. Learning from those references, this research would employ DEA to measure the efficiency of the PEN program at the provincial level in Indonesia.

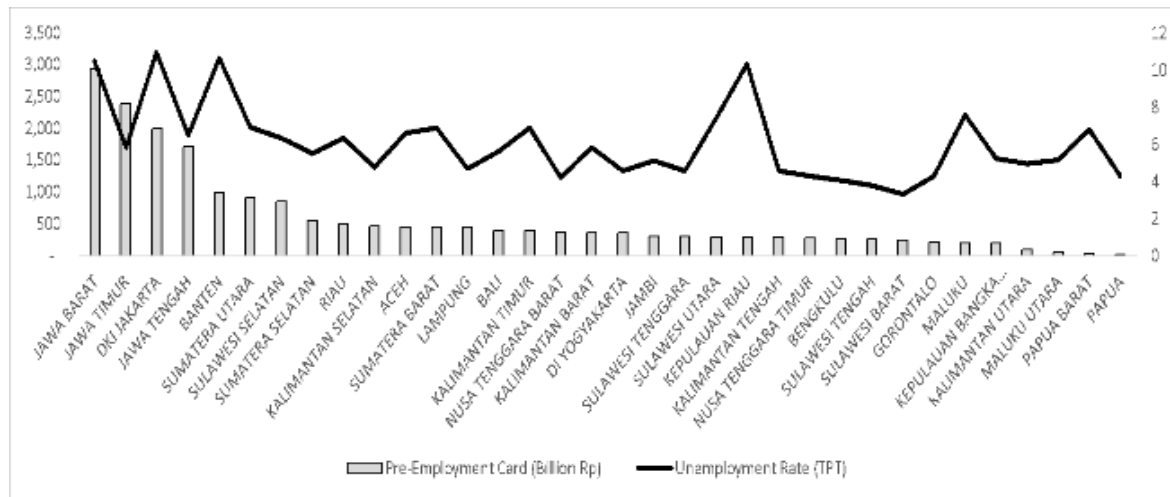


Figure 2. Realization of Pre-Employment Cards and Unemployment Rate (TPT) by Province, 2020

Source: DJPb and BPS (processed)

RESEARCH METHODOLOGY

Data Sources

There are two categories of data in this study, which are input data and output data. The input data used are the realization data of the PEN program from the Directorate General of Treasury, Ministry of Finance (DJPb), and the conditions of realization until 23 November 2020. The output data used in this study are data from Statistics of Indonesia (BPS) on the percentage of poverty in September 2020 and the Unemployment Rate (TPT) in August 2020. Thirty-four provinces in Indonesia are the analysis units observed for the research.

This study analyzes the efficiency of the budget implementation of the PEN program for public welfare. BPS (2020) describes public welfare indicators, including poverty level and unemployment rate. These two indicators are also applied as variables of welfare by Yulianto and Hidayatullah (2014) and Alwi and Hasrul (2018). Therefore, the percentage of poverty and the Unemployment Rate (TPT) is applied in this research as the variables that indicate welfare. This research uses six types of PEN programs as input variables: the Micro Business Productive Aid (BPUM), wage

subsidies, distribution of pre-employment cards, rice aid, Family Empowerment Program (PKH), and non-cash food aid (BPNT) in the form of basic groceries.

Method of Analysis

DEA is commonly applied to assess efficiency, is suitable for small samples, and enables annual comparison (Stefko et al., 2018). This research chose this nonparametric method due to research objectives and the available database. Antic et al. (2020) add that DEA can be a valuable tool for benchmarking. Farrell (1957) represents the concept of technical efficiency, where efficiency is measured by calculating the ratio between the output produced against the various utilized input combinations. The efficiency is more significant when the output is greater than the input (Chansarn, 2014). Thus, the efficiency score will be a value between 0 to 1. The value of 1 describes the maximum efficiency achieved. When the efficiency score is less than 1, it is considered inefficient, and the further it is from 1, the less efficient it is.

Data Envelopment Analysis (DEA) model is used to measure efficiency. This

method generally accommodates the calculation of the efficiency of a Decision-Making Unit (DMU). The DMUs in this study are the 34 provinces in Indonesia. The DEA method takes input and output information from the DMU and forms an envelope for the efficiency frontier. DEA is a fractional programming model that can include many inputs and outputs without determining the weight of each variable. DEA does not require an explicit explanation of the input-output functional relationship (Indrawati, 2009).

The DEA model commonly has two models: Constant Return to Scale (CRS) and Variable Return to Scale (VRS). The CRS model, developed by Charnes, Cooper, and Rhodes in 1978, assumes that the ratio of increase in input to growth in output is the same. On the other hand, the VRS model, developed by Banker, Charnes, and Cooper in 1984, assumes that the ratio between the increase in input by x times can cause the output to be greater or less than x times. Thus, in measuring efficiency, there are two orientations, namely input orientation and output orientation. In the input orientation, the goal is to maximize efficiency by minimizing the input applied while the output is fixed. In output orientation, the situation is reversed. The desired goal is to maximize efficiency by maximizing the output while the input is fixed (Banker et al. in Filardo, Negoro, and Kunaifi, 2017).

To address the research objectives, the model used in this study is VRS with output orientation with 34 provinces as DMU. We adopted this model based on the PEN program's targets, which are to reduce the impact of a pandemic on poverty and the unemployment rate. Therefore, these two variables become the controllable outputs. Thus, the model for calculating technical efficiency can be written in model 1 as

follows (Banker, Charnes, and Cooper, 1984).

Model 1:

subject to θ

$$\begin{aligned} \sum_{j=1}^n \lambda_j X_{ij} &\leq X_{i0}; i = 1, 2, \dots, m. \\ \sum_{r=1}^m \lambda_j Y_{rj} &\geq \theta Y_{r0}; r = 1, 2, \dots, s. \\ \sum_{j=1}^n \lambda_j &= 1 \quad \lambda_j \geq 0, j = 1, 2, \dots, n. \end{aligned} \quad (1)$$

Where θ denotes the efficiency score to measure the technical efficiency from one of the units evaluated for a given set of inputs and outputs, the distance between a DMU and the efficiency frontier is defined as a linear combination of best practice observations. X_{i0} and Y_{r0} are the i th input and the r th output for DMU, respectively. λ is an n -dimensional vector of constants that measures the weights used to compute an inefficient DMU if it were to become efficient. The inefficient DMU would be projected on the production frontier as a linear combination, using those weights of peers of the inefficient DMU. The optimal value of θ^* represents the distance of each province from the efficient frontier. Technically, the most efficient DMU would have $\theta^*=1$ (DMU is lying on the frontier). When $\theta^*<1$ DMU is inefficient and placed inside the frontier.

In addition, the DEA model can calculate slack in terms of both input and output. The input slack illustrates the potential for input reduction applied by the DMU identified as inefficient to achieve the same output. The slack output represents the potential output that an inefficient DMU can still maximize using the same input. The Slack Based DEA Model has been used by Chansarn (2014) to measure the potential to minimize input by countries that are inefficient in achieving

HDI. The Slack-based DEA model expressed in model 2 is as follows:
Model 2:

$$\text{Min} \theta = \frac{1 - \frac{1}{m} \sum_{i=1}^m s_i^- / x_{i0}}{1 + \frac{1}{s} \sum_{r=1}^s s_r^+ / y_{r0}}$$

subject to

$$\sum_{j=1}^n \lambda_j x_{ij} + s_i^- = x_{i0} \quad ; i = 1, \dots, m$$

$$\sum_{j=1}^n \lambda_j y_{rj} + s_r^+ = y_{r0} \quad ; r = 1, \dots, s$$

$$\lambda_j \geq 0, s_i^- \geq 0, s_r^+ \geq 0 \quad ; j = 1, \dots, n \quad (2)$$

Where θ denotes the efficiency score, which will be equal to 1 if all slacks are 0, x_{ij} = amount of input of j th DMU and y_{rj} = amount of output of j th DMU, s_i^- = input slack, s_r^+ = output slack and λ = non-negative weight (Chansarn, 2014).

Table 1 describes the variables in the study because it aims to observe the efficiency of implementing the PEN program budget on welfare. Suparman (2021), Malasari and Abdullah (2017), Purwanto and Makmur (2013), and Hia et al. chose the input and output variables included in the model based on past studies on the link between input and output variables. Performing the DEA model in measuring government spending has been carried out by Prasetyo and Zuhdi (2013). However, the DMU in this study is based on a country with government spending as inputs and education and health indicators as outputs.

Table 1.
Variables in The Research

INPUT VARIABLE	OUTPUT VARIABLE
1. Micro Business Productive Aid (BPUM)	1. Poverty Percentage

2. wage subsidies	2. Unemployment rate (TPT)
3. pre-employment cards	
4. rice aid	
5. Family Empowerment Program (PKH)	
6. non-cash food aid (BPNT)in the form of basic groceries	

Source: DJPb and BPS (processed)

The types of PEN programs are varied and are grouped into several cluster targets. However, in the study, the selected types of PEN programs as inputs were only those directly related to welfare. Poverty and unemployment are selected as outputs because these indicators indicate welfare.

RESULT AND DISCUSSION

The lower the level, the more it indicates the program's success in terms of poverty and unemployment indicators. Therefore, provinces with lower poverty and unemployment rates (TPT) than the national average are seen as having good welfare, and vice versa. Provinces with lower levels of poverty and TPT than the national average are also considered to have more advantages in implementing the PEN program because their welfare indicators are relatively low. The PEN program is being implemented in the hopes that the impact of the COVID-19 pandemic on the economy and people's purchasing power would not result in a significant increase in poverty and unemployment.

Figure 3 grouped provinces by their welfare indicators and the x and y axes represent the national average. Provinces with a lower unemployment rate and poverty percentage than the national average are

West Kalimantan, South Kalimantan, Kalimantan, North Maluku, and Bangka
Central Kalimantan, Jambi, Bali, North Belitung Islands.



Figure 3. Scatter Plot Unemployment Rate and Poverty percentage Provinces of
Indonesia, 2020

Source: BPS(Processed)

The low score of welfare indicators in these eight provinces is thought to reflect their efficiency in implementing the PEN budget. In the opposite position, Maluku, Central Java, Aceh, and West Papua have higher poverty percentages and unemployment rates than the national average. The high score of welfare indicators in these four provinces also does not necessarily indicate the inefficient implementation of PEN. There needs to be more than the interaction of variables in figure 3 to state that the performance of the PEN budget in the province is either efficient or inefficient. The DEA model investigates which provinces are efficient and which are not.

Data processing to measure efficiency was performed using the Stata/SE 12.1. The efficiency score in DEA ranges from 0 to 1, where one is perfectly efficient and 0 is

inefficient. The further the efficiency score from 1 gets, the less efficient it gets. The inefficiency indicates that implementing the PEN program in the DMU could be more optimal. Hence the DMU is unable to withhold the increase in poverty and unemployment. The results show that 12 of 34 provinces in Indonesia were perfectly efficient in implementing the PEN Program budget to overcome the impact of the COVID-19 pandemic on public welfare in 2020.

Bali, North Kalimantan, Gorontalo, West Sulawesi, and North Maluku are the top 5 efficient provinces, as described in table 2.

Table 2.
Efficient Provinces

Province	Technical Efficiency	Rank
Bali	1,000	1

Province	Technical Efficiency	Rank
North Kalimantan	1,000	1
Gorontalo	1,000	1
West Sulawesi	1,000	1
North Maluku	1,000	1
West Papua	1,000	6
South Kalimantan	1,000	7
Bangka Belitung	1,000	8
Central Kalimantan	1,000	9
Papua	1,000	10
West Nusa Tenggara	1,000	11
East Java	1,000	12

Source: processed data (Appendix 1)

Compared to the results of the quadrant analysis in figure 3, it turns out that provinces with good welfare indicators (lower poverty levels and unemployment rates than the national average) are not always efficient. However, the DEA score describes that among the four provinces with welfare indicators above the national average only West Papua Province is counted as efficient. Interestingly, there are a couple of provinces with welfare indicators below the national average but identified as inefficient.

There are provinces with one of the welfare indicators (poverty or unemployment) above the national average but noted as efficient in implementing PEN. Table 3 illustrates that those provinces are Gorontalo, West Sulawesi, Papua, West Nusa Tenggara, and East Java. West Papua Province is efficient in implementing the PEN program even though both indicators of poverty and unemployment are higher than the national average.

Table 3.

Efficient Provinces VS Provinces With Welfare Indicators Below The National Average	
Efficient Provinces	Provinces With Welfare Indicators Below The National Average
Bali	Bali
North Kalimantan	North Kalimantan
Gorontalo	
West Sulawesi	
North Maluku	North Maluku
West Papua	
South Kalimantan	South Kalimantan
Bangka Belitung	Bangka Belitung
Central Kalimantan	Central Kalimantan
Papua	
West Nusa Tenggara	West Kalimantan
East Java	Jambi

Source: processed data (Appendix 1)

The efficiency expresses that the PEN program implemented in those 12 provinces has prevented increased poverty and unemployment. Unfortunately, due to inefficiency, Jambi and West Kalimantan were unable to maximize their performance in implementing the PEN budget despite having lower welfare indicators than the national average.

Based on the Technical Efficiency score, Table 4 shows that Maluku and West Java Provinces are the most inefficient provinces among the others.

Table 4.
Technical Efficiency Score and Output Slack of Inefficient Provinces

Province	Technical Efficiency	Slack for Unemployment Rate	Slack For Poverty Level
DKI Jakarta	0,997	5,083	.
Central Sulawesi	0,995	.	.
Bengkulu	0,992	.	3,113

Jambi	0,991	.	.
East Nusa Tenggara	0,990	.	8,831
South East Sulawesi	0,989	.	.
DI Yogyakarta	0,987	.	0,156
Riau Islands	0,987	3,785	.
Lampung	0,986	.	0,024
West Kalimantan	0,986	.	.
Riau	0,982	.	.
West Sumatera	0,982	.	.
East Kalimantan	0,981	.	.
South Sulawesi	0,978	.	.
South Sumatera	0,978	.	.
Banten	0,977	2,857	.
North Sulawesi	0,974	.	.
North Sumatera	0,973	.	.
Central Java	0,972	.	.
Aceh	0,966	.	0,937
Maluku	0,958	.	1,252
West Java	0,958	0,899	.

Source: processed data (Appendix 1)

Compared to the national average, the unemployment rate in West Java Province is lower, but the percentage of poverty is much higher. As for Maluku, both the unemployment and poverty rates are higher than the national average.

Inefficiency could occur when there is a mismatch between program planning and budgeting (Riswat, 2021). The computation of output slack determines which output efficiency can be maximized in those inefficient provinces. Counting slack will give us an idea of which variable the inefficiency occurs in. Because we are using an output-oriented model, we calculate slack for outputs in the inefficient provinces. The output slack also shows potential improvement, which can refer to the sources of inefficiency.

Table 4 shows the potential output of both the unemployment and poverty levels, which

could still be reduced if the province implemented the PEN program effectively. In August 2020, the unemployment rate in DKI Jakarta Province was 10.95 percent (BPS, 2020). With the implementation of the PEN programs as inputs, DKI Jakarta has the potential to minimize the unemployment rate by another 5.08 percent if it is efficient. Riau Islands Province also has the potential to reduce its unemployment rate by 3.785 percent if it is efficient. Banten Province can potentially reduce its unemployment rate to 2.857 percent with the PEN program, which has been implemented if it is efficient. If only West Java Province implemented the PEN budget efficiently, the province's unemployment rate could be reduced by up to 0.899 percent.

Bengkulu, East Nusa Tenggara, DI Yogyakarta, Lampung, Aceh, and Maluku are inefficient provinces that have the potential to reduce the percentage of poverty by the slack, as stated in table 4, with the same PEN program budget implemented. However, the Slack score in the inefficient provinces indicates that several things need to be addressed and improved in implementing the PEN program in these provinces.

The study results imply that the government can evaluate the performance of the PEN program in administering the impact of the COVID-19 pandemic on public welfare. What should be emphasized is that a hefty budget does not always result in great welfare. Gorontalo, West Sulawesi, West Papua, Papua, West Nusa Tenggara, and East Java are examples that efficiency can be done even though their welfare indicators are still above the national average. The gist is that these six efficient provinces can withhold their poverty level and unemployment rate so that they do not

increase further as an impact of the pandemic.

Bali, North Kalimantan, North Maluku, South Kalimantan, Bangka Belitung, and Central Kalimantan already have low poverty and unemployment rates (below the national average) as advantages. Therefore, the expectation of efficiency in implementing the PEN budget in these provinces is higher. At the same time, Jambi and West Kalimantan were unable to meet expectations due to their inefficiency in implementing the PEN budget.

The research concluded that most of Indonesia's provinces (22 provinces) could effectively implement the PEN budget. The relatively high output slack score for Bengkulu, Riau Islands, DKI Jakarta, Banten, NTT, and Maluku illustrates that the implementation of the PEN program needs to be improved in these provinces to retain public welfare, not the lack of a PEN budget. We encourage further study on what causes the inefficiency in the majority of Indonesian provinces in implementing the PEN program. Marginingsih (2021) stated that the implementation of the PEN Program helped Small and Medium Enterprises (SMEs) to survive during the pandemic. The study emphasized the necessity of efficiency in implementing the PEN Program.

Similar to this research, Sun et al. (2019) also evaluate water use efficiency in 31 provinces in China. They emphasize that the provinces with low efficiency still have much room for improvement. Li et al. (2018) also clarify that benchmarking regions provide information to improve efficiency in inefficient regions. The results of different efficiency scores between provinces indicate that other factors in various regions affect the implementation of the PEN program. Unfortunately, this study has yet to be able to explore the factors that cause this

inefficiency. This research is also limited to discussing the PEN program only related to poverty and the unemployment rate.

CONCLUSION

The research reveals that not all provinces are efficient in implementing the PEN program to reduce the impact of the COVID-19 pandemic on public welfare. Twelve provinces are classified as efficient, and they can be employed as benchmarks by other provinces in evaluating the PEN policies of their regions. The study also shows that a province with a low poverty level or unemployment rate is not guaranteed to be more efficient in implementing the PEN program. As examples of good performance, several provinces with high poverty percentages or unemployment rates could efficiently minimize the input, which are the PEN programs to reduce the outputs, which are poverty and unemployment. There are concerns that poverty and unemployment could have been even worse without this policy. Given that there are no signs of when the pandemic will end, it seems that the extension of the PEN program is still required to recover public welfare so that it does not get weakened. However, the efficiency of the implementation should be considered so that the money can be well spent.

Future studies can examine more profoundly what variables cause the inefficiency in the PEN program implementation in blocking the increase in poverty and unemployment in the affected regions as a result of the pandemic. Future studies can also investigate other types of PEN programs not covered in this study. It is recommended that further research be conducted to assess what factors cause the inefficiency. This research shows which provinces are efficient and inefficient, but it needs to explain what

factors cause these inefficiencies. For provinces that are considered efficient, their performance needs to be maintained. They can also be nominated to receive additional budget incentives to reduce poverty and the unemployment rate. Those provinces identified as an inefficient need to be evaluated to improve their performance in the following programs in response to the pandemic impact.

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Appendix 1. Output Stata/SE 12.1 DEA Data Processing

Province	Rank	Theta	Oslack: Output1	Oslack: Output2
dmu:ACEH	32	0.9662	.	0.936659
dmu:NORTH_SUMATERA	30	0.9728	.	.
dmu:WEST_SUMATERA	24	0.9816	.	.
dmu:RIAU	23	0.9817	.	.
dmu:JAMBI	16	0.9910	.	.
dmu:SOUTH_SUMATERA	27	0.9783	.	.
dmu:BENGKULU	15	0.9922	.	3.11345
dmu:LAMPUNG	21	0.9860	.	0.024218
dmu:KEPULAUAN BANGKA BELITUNG	8	1.0000	0	.
dmu:KEPULAUAN_RIAU	20	0.9866	3.78497	.
dmu:DKI_JAKARTA	13	0.9975	5.08297	.
dmu:WEST_JAVA	34	0.9583	0.899143	.
dmu:CENTRAL_JAVA	31	0.9718	.	.
dmu:DI_YOGYAKARTA	19	0.9871	.	0.155764
dmu:EAST_JAVA	12	1.0000	.	3.20234
dmu:BANTEN	28	0.9772	2.85692	.
dmu:BALI	1	1.0000	.	.
dmu:WEST_NUSA_TENGGARA	11	1.0000	.	4.96091
dmu:EAST_NUSA_TENGGARA	17	0.9901	.	8.83124
dmu:WEST_KALIMANTAN	22	0.9858	.	.
dmu:CENTRAL_KALIMANTAN	9	1.0000	.	.
dmu:SOUTH_KALIMANTAN	7	1.0000	.	.
dmu:EAST_KALIMANTAN	25	0.9811	.	.
dmu:NORTH_KALIMANTAN	1	1.0000	.	0
dmu:NORTH_SULAWESI	29	0.9744	.	.
dmu:CENTRAL_SULAWESI	14	0.9953	.	.
dmu:SOUTH_SULAWESI	26	0.9783	.	.
dmu:SOUTHEAST_SULAWESI	18	0.9887	.	.
dmu:GORONTALO	1	1.0000	.	0
dmu:WEST_SULAWESI	1	1.0000	.	0
dmu:MALUKU	33	0.9584	.	1.25205
dmu:NORTH_MALUKU	1	1.0000	0	.
dmu:WEST_PAPUA	6	1.0000	.	0
dmu:PAPUA	10	1.0000	.	0

Source: processed data from DJPb