The Effect Of Oil And Gas Productivity, Oil And Gas Exports, And Labor Force Participation Rate On General Welfare In Indonesia

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Abstract

This study examines the impact of Oil and Gas Productivity, Oil and Gas Exports, and Labor Force Participation Rate on the welfare of the Indonesian people from 2002 to 2021 using BPS data. With a quantitative approach, this study uses the SEM-PLS analysis method using Smart PLS 3.3 to test its hypothesis. This study reveals that oil and gas exports contribute positively to welfare by increasing people's access to various goods and services. In contrast, labor force participation and oil and gas productivity do not show a significant effect on welfare, where labor force participation can have varying impacts depending on productivity, and oil and gas productivity can lead to environmental damage that is detrimental to the quality of life. This study has the potential to provide insights for economic development and policy making by the Indonesian government to improve people's welfare.

Introduction

All countries around the world, whether developed or developing, look to exports as a method of achieving economic growth, which is reflected in increased economic productivity, which is a measure of a country's level of economic performance (Salsabila, 2021). The economic growth of a nation can be measured an increase in real GNP, which shows the achievement of national economic development. In simple terms, increased economic growth reflects the economic progress of a country. Stable and rapid economic growth can affect other economic variables, either by direct or indirect influence, such as welfare (Said, 2018).

The majority nation's foreign currency reserves comes from exports. In general, the goods exported by Indonesia can the division consists of two categories: oil and gas exports, and non-oil and gas exports. The volume and price of exported goods determine the value of exports to destination countries (Yusuf & Chalid, 2014). The number of exported goods has certainly increased as well as the increase in production of these goods. Exported commodities include finished goods and semi-finished goods, clearly more valuable than raw goods (Rangkuty et al., 2019). Therefore, this article focuses on the importance of improving and developing the industrial sector that processes raw materials into products final and intermediate products, as well as considering the quantity of oil and gas exports that should be included.

Indonesia's economy is growing quite steadily. Stable economic growth is expected to reduce the poverty rate. In addition, to stop the increase in poverty, there needs to be a driving factor among them. Earning money to fulfill the needs of life is the main purpose of working (Ishak, 2018). The Labor Force Participation Rate is one of the employment indicators used. An increase in TPAK in a region will have a positive impact on economic growth (Mirah et al., 2021). Therefore, government continues to strive to increase the labor force participation rate,

recognizing the vital role of youth as a motor of development that has a direct and indirect impact on the direction, nature, and success of development.
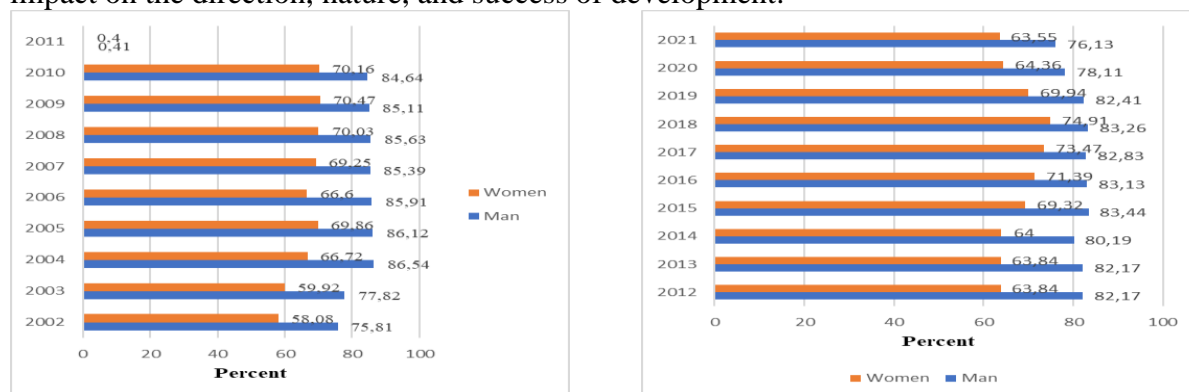

Figure 1. Labor Force Participation Rate. Source : BPS (2021)

The objective of this research is to examine the impact of oil and gas productivity, exports of oil and gas, and the rate of labor force participation on the welfare of the Indonesian population. This study employs a quantitative method, which involves gathering, processing, and analyzing numerical data pertaining to the variables under investigation. Using data from BPS for period 2002 to 2021. The data was then analyzed using the Smart PLS 3.0 statistical tool which consists of two phases, the first and second phases, which include the outer model and the inner model, describing the relationship between the dependent and independent variables. It is hoped that this study will help the advancement of economic science, especially in Indonesia and can help the government to formulate and implement economic policies in accordance with the welfare of the people in Indonesia.

Literature Review

General Welfare

General welfare is an important aspect that reflects the quality of life and progress of a country. Gross Domestic Income (GDP) per capita is an indicator that is always used to measure the welfare of the average income of citizens. A high GDP per capita usually signifies a greater level of wealth and consumption in society. In addition, the Human Development Index (HDI) is also an important benchmark. The HDI measures three main aspects: education, life expectancy, and gross national income per capita (Ryan & Findi, 2013). This index provides a more comprehensive picture of a society's well-being as it focuses not only on economic aspects, but also the quality of life and the ability of citizens to access essential resources. The poverty rate is also an important indicator. A reduction in the poverty rate indicates that fewer citizens are living below the economic minimum standard, which means greater access to essential needs like food, potable water, and suitable housing. High public welfare not only reflects good economic conditions, but also indicates that the population has better access to quality education and adequate health services (Mufti, 2023). This, in turn, creates more and equitable economic opportunities, allowing citizens to actively contribute to the development and progress of their country.

Oil And Gas Exports

Oil and gas exports play an important role in the prevailing economy, especially for countries that have large natural resource wealth. An increase in foreign exchange from oil and gas exports is often considered a positive indicator that shows macroeconomic stability and a country's ability to meet its financial needs on the global stage (Fikri, 2023). When oil and gas exports strong walking, it can have a significant impact on the exchange rate of the

domestic currency. A strengthening local currency means the cost of importing goods and services from abroad becomes cheaper, which in turn can keep inflation rates down. This is an ideal situation where the domestic economy can expand steadily, supported by solid foreign exchange earnings. Strong oil and gas exports can strengthen the exchange rate of the domestic currency, which in turn can lower import costs and inflation. However, over-reliance on oil and gas exports can also lead to economic volatility if global oil and gas prices fluctuate significantly (Khalwat, Risanda, & Sri,. 2020). Previous research proves that oil and gas and non-oil and gas exports together it has been demonstrated to have a positive and significant influence on the economic growth of Indonesia, while foreign investment has a negligible negative impact. (Meiline, Jusmer & Martin., 2021).

Labor Force Participation

The rate of labor force participation is a crucial economic indicator that shows the percentage of individuals of working age who are employed or actively seeking work. When this participation rate increases, it signifies that more people are contributing to the economy, either through the production of goods and services or consumption. Increased labor force participation is often associated with more dynamic economic growth (Meyvi, Paulus & Ita,. 2020). Journal of Economic Development and Regional Finance With more individuals involved in economic activities, there are more opportunities for innovation and exchange of ideas that can boost efficiency and productivity. In addition, when more people work, the government can collect more taxes which can then be used for social investments such as education and health, which in turn can improve the quality of human resources (Melni & Sri,. 2019). A more equitable distribution of income is one of the benefits of increased labor force participation. When employment opportunities are wide open to all walks of life, there is an increase in income for more families, which helps reduce socioeconomic disparities. This can also contribute to a reduction in poverty rates, as individuals who previously lacked employment or a stable income now have access to better sources of income. Previous research proves that the population dependency ratio in Indonesia exhibits a significant negative impact on economic growth, whereas the labor force participation rate demonstrates a positive and significant effect on economic growth (Mala, 2019).

Oil and Gas Productivity

Oil and gas productivity, which includes oil and gas, is one of the key pillars in the global energy economy. The sector not only plays a role in meeting domestic energy needs, but is also a significant source of export earnings. Previous research has indicated a positive correlation between increased oil and gas productivity and a country's growth economic. This is attributed to enhanced efficiency in the oil and gas sector exploration and exploitation can increase national output. Furthermore, increased productivity can strengthen the country's position in the global market as a competitive oil and gas exporter. With the increase in revenue from the export sector, the country can allocate more resources for infrastructure development and investment in other areas, which in turn will encourage further economic growth. In addition, increasing oil and gas productivity can also have a positive impact on job creation, both directly and indirectly (Candra, 2018). A growing oil and gas industry requires a large amount of skilled labor, which means new job opportunities for the community. It also encourages the growth of supporting industries and related services, all of which contribute to a more dynamic and diverse economy (Meiline, Jusmer & Martin., 2021).

Hypothesis Development

From the framework that has been built previously, several hypotheses can be obtained, including:

Effect of oil and gas exports on general welfare

So far, it has been shown the findings suggest that exports of oil and gas hold promise for exerting a positive and substantial influence on Indonesia's economic growth. Foreign investment, however, exerts a minor adverse effect but the analysis shows that exports, whether of oil and gas or other commodities, can profoundly influence economic growth. Likewise, the oil and gas sector contributes to creating employment opportunities, both directly and indirectly, contributing to improving people's welfare and reducing unemployment.

H1: Natural gas exports have a positive impact on the welfare of Indonesian people.

Effect of labor force participation rate on general welfare

The population dependency ratio in Indonesia has a detrimental and noteworthy impact on its economic growth, whereas the rate of labor participation yields a favorable and significant effect on economic growth. (Mala, 2019). Higher involvement of the labor force in the production process not only increases national output but also creates more employment opportunities, which in turn reduces poverty and improves welfare. A rise in the number of individuals employed or seeking employment indicates a positive dynamic in the economy, reflecting optimism and confidence in the emerging economic conditions.

H2: Labor participation has a positive impact on the welfare of Indonesians.

Effect of oil and gas productivity on general welfare

 Increasing the productivity of the oil and gas industry exerts a beneficial impact on public welfare, which is characterized by the opening of new jobs, improving infrastructure, and empowering communities in oil and gas producing areas (Fahmi, 2020). In addition, increasing oil and gas productivity also spurs infrastructure development in oil and gas producing areas. The construction of roads, bridges, and other public facilities becomes faster, which directly improves the accessibility and mobility of citizens. Empowering local communities through training and skills development is also a priority, so that they can actively participate in the industry (Dwi & Eko,. 2013). Thus, the oil and gas industry not only contributes to economic aspects, but also to improving the quality of life and empowering communities in oil and gas producing areas.

H3 : Oil and gas productivity has a positive effect on community welfare
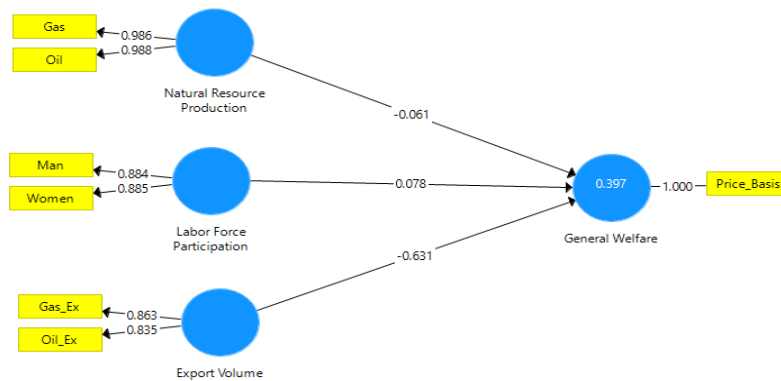
Research Methods

Research utilizes a quantitative methodology, where secondary data from BPS is the main source. This data consists of various indicators related to the Sustainable Development Goals that have been published by BPS. The quantitative approach is a research approach that uses statistical procedures. Then this research was analyzed using the Partial Least Square (PLS) approach in the Structural Equation Modeling (SEM) method, known as SEM-PLS, a variance-based SEM analysis method. This research utilizes the Smart-PLS 3.0 statistical analysis tool. This research is divided into two phases, specifically, the Outer Model and Inner Model phases aims to evaluate the suitability of the research instruments used, while the Inner Model phase is used to test the hypotheses that have been formulated. (Ghozali & Latan, 2015).

Results And Discussion

The research results were segmented into two stages. The first stage includes testing the validity of the data, then the second stage includes drawing conclusions on the hypothesis.

Stage one: Outer model

By calculating using the tool SmartPLS, the results of testing the outer model have been obtained, including:

Graphics 1. Result Outer Model
Source : Smart-PLS 3.0, 2024

Convergent validity

For convergent validity, the outer load value must exceed 0.7, according to the outer model test results (Ghozali & Latan, 2015). Thus, it can be concluded that one stated item of the general welfare variable does not meet the validity criteria in the context of this study. Therefore, the basic price item of the general welfare variable should be deleted.

Discriminant Validity

Table 1. Result Cross Loading

	Export Volume	General Welfare	Labor Force Participation	Natural Resource Production
Gas	-0,462	0,253	0,074	0,986
Gas_Ex	0,863	-0,550	-0,407	-0,738
Man	-0,314	0,226	0,884	0,028
Oil	-0,540	0,273	0,071	0,988
Oil_Ex	0,835	-0,507	-0,069	-0,100
Price_Basis	-0,623	1,000	0,256	0,266
Women	-0,197	0,227	0,885	0,102

If the cross loading a factor is higher that other variables, the it indicates discriminant validity test has been fulfilled (Ghozali & Latan, 2015). The cross loading value with a value of> 0.7 indicates that the discriminant validity criteria on the cross loading value have been met.

Average Variance of Extract (AVE)

Table 2. Result Average Variance of Extract (AVE)

	Average Variance Extracted (AVE)
Export Volume	0,721
General Welfare	1,000
Labor Force Participation	0,783
Natural Resource Production	0,975

Cross loading values are not the only way to determine discriminant validity. The average value of variance extract, also known as AVE, if the value exceeds 0.7, can be considered to meet the criteria for discriminant validity. (Ghozali & Latan, 2015). All variables meet the discriminant validity requirements, according to the data from the table above, because each of the Average Variance Extract values exceeds 0.7.
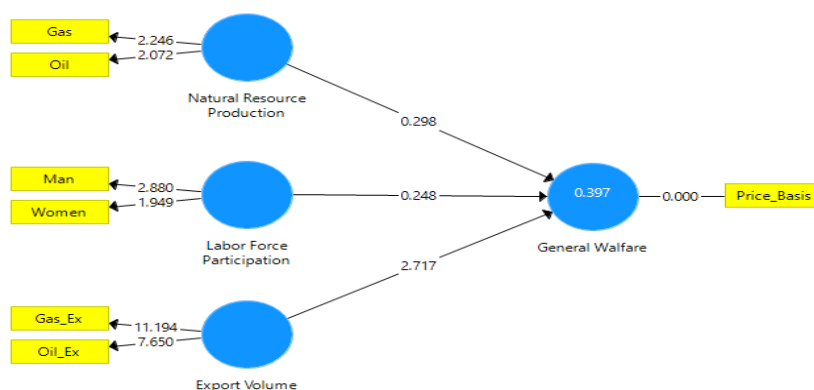
Composite reliability

Table 3. Result Composite reliability

	Composite Reliability
Export Volume	0,838
General Welfare	1,000
Labor Force Participation	0,878
Natural Resource Production	0,987

The composite reliability approach is used to evaluate the consistency of the instrument. If the value exceeds 0.7, it is certain that the conditions are met in composite reliability (Ghozali & Latan, 2015). All variables meet the composite reliability requirements, because the composite value > 0.7.

Stage two : Inner model
Below are the outcomes the Inner model test:

Graphics 2. Rosult Model Inner
Source : pengolahan data menggunakan Smart-PLS 3.0, 2024

R-Square

Tabel 4. Result R-Square

	R Square
General Welfare (Y)	0,397

R-Square is a measure that illustrates how closely the connection between the independent variable and the dependent variable is. Based on standards set by (Ghozali & Latan,. 2015), an R-Square value of 0.75 indicates a strong relationship, a value of 0.50 indicates a moderate relationship, and a value of 0.25 indicates a weak relationship. From the table mentioned, the R-Square value for the General Welfare (Y) variable is 0.397 or 39.7%, which indicates the connection between the independent variable and the dependent variable is feeble. Therefore, it can be concluded that natural resource production, labor participation, and export volume have a weak relationship with General Welfare.

Q Square

$$Q \text{ Square} = 1 - (1 - R^2)$$
$$Q \text{ Square} = 1 - (1 - 0,397)$$
$$Q \text{ Square} = 1 - 0,603$$
$$Q \text{ Square} = 0,397$$

Q-Square is a metric that assesses the effectiveness of the model in predicting the observed data based on the given parameter estimates. If the Q-Square value is positive, it indicates that the model is predictively relevant. Conversely, a negative Q-Square value indicates that the model does not have sufficient predictive relevance (Ghozali & Latan, 2015). The Q-

Square calculation indicates that the value obtained exceeds 0, which indicates that the model in this study has a predictive relevance percentage of about 39.7%. This means that about 62.3% of other variables or factors are not included in this research model. In conclusion, the model used in this study is fairly satisfactory.

F Square

F Square is used to evaluate the impact of the dependent variable on the independent variable. If the f-square value is 0.03, then there is a small impact between the dependent and independent variables. If the f square value reaches 0.15, then there is a moderate influence between the dependent and independent variables, and if f-square value reaches 0.35. Therefore, there is a noteworthy influence between the dependent and independent variables. (Ghozali & Latan, 2015). The following is the f square value:

Table 5. F-Square

	General Welfare (Y)	Conclusions
Export Volume (X1)	0,448	Export Volume has a relatively large impact on General Welfare
Labor Force Participation(X2)	0,009	Labor Force Participation has a relatively small impact on General Welfare
Natural Resource Production (x3)	0,004	Natural Resource Production has little impact on General Welfare

Hypothesis Testing

Hypotheses are tested based on SmartPLS using certain methods, such as bootstrapping, where if the P-values are less than 0.05, the hypothesis is accepted (Ghozali & Latan, 2015).

Table 6. Result Hypothesis Testing

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Export Volume -> General Walfare	-0,631	0,232	2,717	0,007
Labor Force Participation -> General Walfare	0,078	0,315	0,248	0,804
Natural Resource Production -> General Walfare	-0,061	0,203	0,298	0,766

Drawing from the data presented in the table above, the conclusion can be drawn that hypothesis 1 is accepted as the P-values (0.007) are less than 0.05. Thus, It can be inferred that there is a positive impact of Export Volume on General Welfare in Indonesia. While hypothesis 2 is rejected, the P values exceed 0.05 (0.804 > 0.05), therefore, it can be concluded that Labor Force Participation does not affect General Welfare in Indonesia. Likewise, hypothesis 2, hypothesis 3 is rejected because the P values (0.766) exceed 0.05. Therefore, it can be concluded that Natural Resource Production has no effect on General Welfare in Indonesia.

Discussion

Hypothesis 1 has been proven to indicate that Export Volume has a positive effect on General Welfare. Consistent with research conducted by Meiline, Jusmer & Martin, (2021) which explains it has been demonstrated that exports of oil and gas exert a positive and substantial impact on Indonesia's economic growth. The analysis indicates that oil and gas exports significantly impact economic growth. Increased exports can also expand people's access to diverse goods and services. With increased exports, the country can import goods that are difficult to produce locally or have better quality from abroad. This can improve people's standard of living by giving them access to better goods and services.

Hypothesis 2 is rejected, this implies that labor force participation yields a negative effect in general welfare. Labor Force Participation is based on the proportion of the population of working age that is involved in economic activity, in the form of paid work or other economic activities such as looking for work. This figure gives an idea of how much of a country's potential labor force is actively involved in economic activity. While labor force participation in economic activity is important, its impact on the welfare of society can

depend on labor productivity. If labor force participation increases but productivity is low, it may not have a significant impact on the welfare of society. Hypothesis 3 is rejected, which means that natural resource production has a negative effect on general welfare. Natural resource production is often associated with excessive exploitation of the natural environment. The process of extracting and processing natural resources often causes environmental damage such as air and water pollution, deforestation, land degradation, and loss of natural habitats. These negative impacts can reduce the quality of life of people living around natural resource production areas.

Conclusions

From the previous discussion, the conclusion is that hypothesis H-1 is accepted, which shows that exports have a positive impact on general welfare, because they can increase people's access to diverse goods and services. However, H-2 and H-3 are rejected, which means that labor force participation and natural resource production do not have a significantly positive impact on general welfare. Labor force participation can have varying impacts depending on the level of productivity, while natural resource production often leads to environmental damage that can reduce the quality of life of the surrounding community.

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