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Measuring the role of trade in maintaining employment stability: evidence from Indonesia's experience

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ABSTRACT

The importance of employment stability is a noble goal of national economic development. This is based on the link between employment opportunities in achieving the level of welfare and prosperity of society. This has become an important discussion in recent times, but the potential risks originating from the external sector as a consequence of an open economy is an important unanswered urgency in building more sustainable employment stability. By using the *Vector Error Correction Model* (VECM) and the *Johanssen Cointegration Test*, this research aims to analyze the influence of international trade, which in this research is proxied by the export and import variables with employment stability, which in this research is proxied by the unemployment rate variable with annual data starting from 1991 – 2020 in Indonesia. The research results show that in the long term, export performance is proven to increase the unemployment rate, while import performance has the effect of reducing the unemployment rate in Indonesia. We propose policy recommendations regarding policies for developing labor-intensive industries in national leading sectors and commodities as an effort to increase employment stability through increasing export performance. Apart from that, increasing imports of technological goods needs to be increased in order to create output that is more efficient and has high competitiveness in increasing people's purchasing power

Keywords: Employment stability, Unemployment, Export, Import

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INTRODUCTİON

Prosperity is a noble goal of national economic development. The level of welfare shows the community's ability to meet both basic and additional needs. Increasing people's income is an important measure in measuring the government's performance to improve the welfare of the population which is in line with the success of policy makers in the national development strategy. This can be reflected in the maintenance of conducive levels of employment in the economy.

Maintained employment levels indicate a sustainable reduction in the level of community unemployment. This explains the increase in absorption of labor requirements towards the level of participation of the productive age workforce in the economy which increases total community income. Thus, a conducive level of employment will improve the welfare of society in general. Apart

from that, increasing the conduciveness of employment opportunities in society also has a positive impact on reducing the dependency ratio which has been a challenge for economic development in developing countries.

Employment conditions experience dynamics in their development, this is caused by several conditions which are primarily closely related to the performance of macroeconomic variables. Labor is a production factor needed in economic activities, especially the production of goods and services. An increase in demand for goods and services in the economy will increase the income of economic actors, both business owners and employees. The level of total consumption is an important factor that determines the amount of demand for goods and services resulting from domestic economic activities. Apart from national consumption, the level of consumption of goods and services from the external sector also has an influence in determining the amount of demand for domestic goods and services that will be used for consumption, production and investment. Thus, demand for external sector goods and services will also drive the value of international trade, both in exports and imports.

Exports are the activity of moving goods and services originating from within and then leaving the customs area. As a return, economic actors will receive foreign exchange from exports which has a positive influence on both business economic activities in the micro and macroeconomic sectors. Exports of goods and services will have a positive impact on national economic conditions. An increase in external demand for economic goods abroad will increase the income of business owners and workers. This has implications for increasing community income. In addition, an increase in demand from the external sector will increase the national production capacity of goods and services which will increase the use of production factors, including labor. This fact is supported by research conducted by Orbeta (2002) which explains the increase in demand for labor caused by increased exports. In addition, research conducted by Tandogan (2019) juga menunjukan adanya pengaruh yang positif dari ekspor terhadap permintaan tenaga kerja di Turki.

Meanwhile, imports are activities of moving goods and services originating from outside into the customs area. Importing goods activities will bring in goods and services from abroad which will be used as economic goods in national economic activities. Import activities of goods and services will provide positive imports to the national economy. This happens when there is an increase in goods and services originating from abroad, especially high-tech commodities, which will increase the skills and knowledge of economic actors and workers in economic activities more effectively and efficiently. This will increase profits for business activities producing goods and services which will have implications for improving the quality and competitiveness of domestic goods production. This is supported by research conducted by Köllner (2016); Sangur et al., (2024); Terzi (2011). More than that, the openness of a country in terms of international trade will increase a more even distribution of income (Egger & Etzel, 2012).

On the other hand, there are concerns regarding the negative impact of the flow of imported goods on the stability of the domestic workforce. This condition is caused by a decrease in demand shifts and wage disparities in countries that tend to have a large share of imports, this mainly occurs in imports of manufactured products. These results are supported by research conducted by Malgouyres (2017) which explains the negative impact of import flows from China on local employment and total labor income in the manufacturing and non-manufacturing sectors. In addition, research conducted by White (2008) shows the weakening of employment in the manufacturing sector caused by import penetration which is not balanced by import substitution industrial policies in the United States.

This is a challenge for the Indonesian economy which continues to show dynamic growth in the Asian region. The increasing population growth in Indonesia causes the share of the workforce to continue to grow every year. This makes it a challenge to face improving community welfare as the main goal of economic development. On the other hand, the existence of economic turmoil and uncertainty originating from the external sector also adds to the potential risks that may threaten the

stability and security of the domestic workforce.

Through the discussion above, it becomes an important discussion to prove the importance of the role of international trade which in this research uses a variable approach of exports and imports in its influence on the condition of labor stability in Indonesia which has the potential for a workforce both in quality and quantity which has the potential to support economic development. national.

METHOD

Types and Sources of Data

The type of research used in this research is quantitative descriptive research. The type of data used in this research is secondary data obtained through World Bank publications. This research focuses on analyzing the relationship and influence between Export and Import variables as an approach to International Trade and the Unemployment Rate as an approach to employment variables in Indonesia for the period 1991 - 2020. The data used in this research uses time series data which include: Export Data, Import Data and Unemployment Rate Data obtained from World Bank publications (www.worldbank.org).

Research Model Specification

This research uses time series data regression analysis using the *Vector Error Correction Model* (VECM) analysis method. The stages of model testing in Stata 15 are:

Unit Root Test

Unit Root testing is the first step in testing time series data with the aim of knowing and ensuring that the data being tested is stationary data so that it will produce optimal test results. Testing the level of data stationarity uses the Augmented Dickey-Fuller (ADF) method.

Optimum Lag Test

Optimal lag testing is carried out by determining the level of the number of arterisk signs (*) that are in the lag using criteria, such as SC (Schwarz Criterion), HQ (Hanna Quinn Criterion) and AIC (Akaike Information Criteria).

Stability Test

The stability test is a test by determining the characteristics of the roots of a polynomial. In the stability test, if all the roots of the characteristic polynomial on the unit circle < 1, then the VAR model is stable.

Cointegration Test

The Cointegration Test was carried out to determine whether there was a cointegration relationship in the variable data tested in this research. In the cointegration test there are two statistics used, namely the Trace Test and the Maximum-Eigen Test. In the cointegration test, a variable is said to be cointegrated if the Trace Test and Maximum-Eigen Test values are > 0.05 critical value.

Vector Error Correction Model (VECM)

The Vector Autoregressive (VAR) model is tested on variable data that is stationary at level level, while variable data that is stationary at first difference level and there is a cointegration relationship is tested using the Vector Error Correction Model (VECM). Testing the level of stationarity and cointegration on variable data is carried out before testing the VECM model in order to obtain an appropriate model. In the VECM Model Test, to find out whether there is a long-term and short-term relationship between the variables being tested by comparing the CointEq1 t-statistic value with the t-table. If the t-statistic value > t-table value, then there is a long-term and short-term relationship.

The model estimates are as follows:

$UNPt = a + \beta 1EKPt + \beta 2IMPt + et.....$

Where:
UNPt : Unemployment
a : Constanta
βn : Coefisien
EKPt : Export
IMPt : Import
et : *Error Term*

Impulse Response Function (IRF) Test

The Impulse Response Function (IRF) test is a method with the aim of knowing the response of a variable to a certain shock or shock. IRF testing focuses on the response of the variable itself or other variables contained in the VECM model. The results of Impulse Response Function (IRF) testing will show the positive or negative response of a variable to a shock or shock from another variable. Impulse Response Function (IRF) testing also explains the response to shocks that may occur in other variables in the future.

Forecast Error Variance Decomposition (FEVD) Test

Forecast Error Variance Decomposition Test is carried out to test the influence of a variable on other variables. The Variance Decomposition test will provide a percentage idea of how much contribution the independent variable makes to the dependent variable.

RESULTS

Through a series of tests and data analysis, both in general and VECM analysis will illustrate the patterns and relationships between trade variables and employment variables in Indonesia. In the general overview analysis, the development of the variables analyzed in this research will be explained. Meanwhile, in the *Vector Error Correction Model* (VECM) analysis, several data tests were carried out including: Unit Root Test, Optimal Lag Test, Stability Test, Johanssen Cointegration Test, VECM Test, Variance Decomposition Test and Impulse Response Function (IRF) Test.

Descriptive Analysis

In general, an overview of the development of the performance of macroeconomic variables which is the focus of this research, namely international trade which is expressed through the export, import and employment variables which are expressed through the unemployment variable in Indonesia, experienced fluctuations in the period 1991 - 2020.

Indonesia's export and import performance relatively has a fluctuation pattern that is in line with its course, showing an increasing trend. In 1990, the performance of both variables increased until they decreased when they entered 1998, in which year the Asian Financial Crisis occurred which caused a decline in the performance of exports and imports. The strengthening of export and import performance occurred again until it experienced a decline again when we entered 2009, when the Subprime Mortgage Crisis occurred in the United States. Apart from that, the economic recession in 2016 and the Covid-19 pandemic outbreak at the end of 2019 again reduced global consumption and demand, which also resulted in a decline in export and import performance.

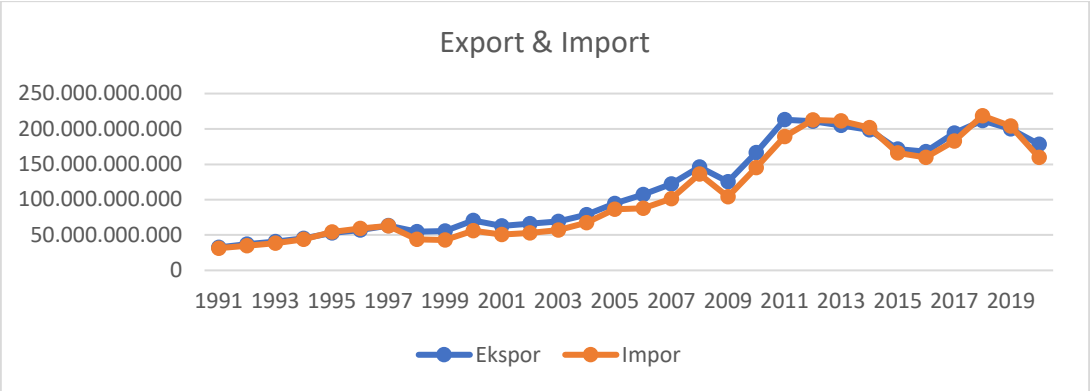

Figure 1. Export and Import Performance in Indonesia

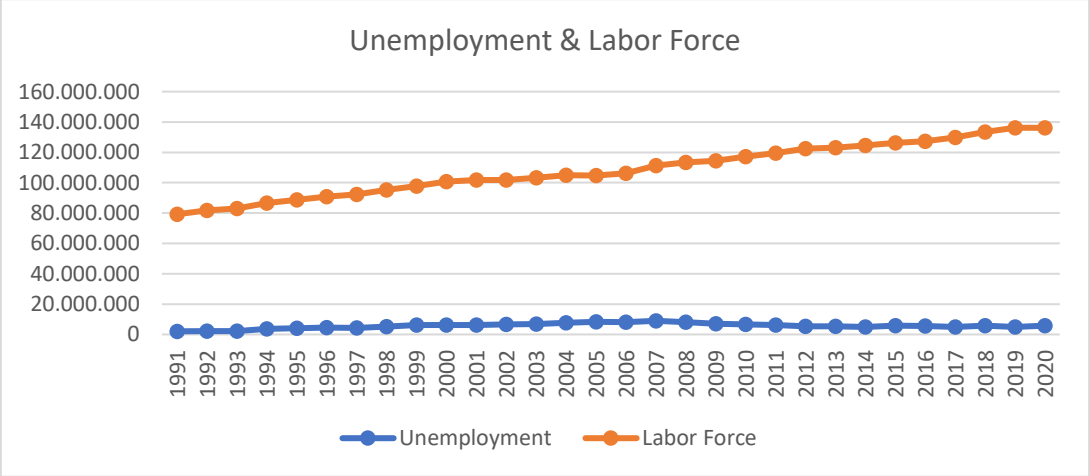

Figure 2. Unemployment and Labor Force in Indonesia

Meanwhile, in terms of employment stability, it tends not to fluctuate too much in its development. The highest increase in unemployment occurred in 2007 with an increase of 11.9% from the previous year. Entering 2009, the number of unemployed decreased and tended to stabilize. When compared with the total workforce, the unemployment ratio in Indonesia is relatively small due to the absorption of the workforce into the national labor market, so it can be concluded that the performance of the employment sector in Indonesia is progressing.

Unit Root Test

Unit Root testing is the first step in testing time series data with the aim of knowing and ensuring that the data being tested is stationary data so that it will produce optimal test results. Testing the level of data stationarity uses the Augmented Dickey-Fuller (ADF) method. The testing process with ADF is carried out with a predetermined significance level of 5%.

Table 1. Unit Root Test Result

Variable	Level		1st Difference		Level Stasioner
	t-stat	p-Value	t-stat	p-Value	
Export	-0.977	0.7615	-4.063	0.0011	1st Difference
Import	-1.090	0.7191	-3.830	0.0026	1st Difference
Unemployment	-2.203	0.2052	-4.972	0.0000	1st Difference

Based on the unit root test shown in table 1 above, it was found that all the variables tested had a stationary level at the 1st difference level. Therefore, the stationary level used in this research is First Difference.

Lag Optimum Test

Optimal lag testing is carried out by determining the level of the number of arterisk signs (*) that are in the lag using criteria, such as SC (Schwarz Criterion), HQ (Hanna Quinn Criterion) and AIC (Akaike Information Criteria).

Table 2. Lag Optimum Test Result

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-1577.3				3.1e+53	131.692	131.731	131.839
1	-1524.07	106.46	9	0.000	7.9e+51	128.006	128.162	128.595
2	-1515.18	17.777	9	0.038	8.3e+51	128.015	128.288	129.046
3	-1507.44	15.478	9	0.079	1.0e+52	128.12	128.511	129.593
4	-1493.93	27.027	9	0.001	8.9e+51	127.744	128.252	129.658
5	-1471.29	45.275	9	0.000	4.4e+51	126.607	127.233	128.964
6	-1438.03	66.524*	9	0.000	1.4e+51*	124.586*	125.328*	127.384*

Based on the optimal lag test shown in table 2 above, it can be explained that lag 6 is the best lag choice because it is significant as indicated by an asterisk in the Final Prediction Error (FPE), and Hannan Quinn Information Criterion (HQ) and Schwarz Information Criterion (SBIC).

Stability Test

Based on the stability test results in the table, it is known that the model is stable and has passed the stability test. This can be seen from the modulus value which is still below one. After carrying out the stability test, the next step is cointegration testing.

Table 3. Stability Test Result

Eigenvalue			Modulus
-.9014888	+	.1203717i	.90949
-.9014888	-	.1203717i	.90949
.3464995	+	.840898i	.90949
.3464995	-	.840898i	.90949
-.3464995	+	.840898i	.90949
-.3464995	-	.840898i	.90949
.5549893	+	.7205264i	.90949
.5549893	-	.7205264i	.90949
.9014888	+	1203717i	.90949
.9014888	-	1203717i	.90949
-.5549893	+	.7205264i	.90949
-.5549893	-	.7205264i	.90949
.4292642	+		.429264
.2146321	-	.3717537i	.429264
.2146321	+	.3717537i	.429264
-.4292642	-		.429264
-.2146321	+	.3717537i	.429264
-.2146321	-	.3717537i	.429264

Cointegration Test (Johanssen Cointegration Test)

This cointegration test aims to determine the long-term relationship of each variable tested in this research.

Table 4. Cointegration Test Result

Miximum Rank	Eigenvalue	Trace Statistic	0.05 Critical Value
0		96.9319	29.68
1	0.93580	31.0328	15.41
2	0.62161	7.7087	3.76
3	0.27472		

Based on the Max-Eigenvalue Statistics probability value, there is 1 cointegration that has a value below 5% or the Trace and Max-Eigenvalue Statistics values are > 0.05. The results of the cointegration test show that the variables in this model are interconnected, meaning that long-term estimates can be carried out (S. Wang et al., 2018). So the model used in this research is the Vector Error Correction Model (VECM).

Vector Error Correction Model (VECM)

Table 5. VECM Test

	Long Term		Short Term	
Variabel	Coeficient	t-statistic	Coeficient	t-statistic
D(UNP	1	-	.2556237	0.726
D(EKP	.0000493	0.393	-.0000169	0.818
D(IMP	-.0000824	0.168	.0000293	0.610

Relationship Between Export Variables and Unemployment

Based on the results of the Vector Error Correction Model (VECM), in the long term Exports (EXP) have a positive and insignificant influence on the Unemployment Rate (UNP) with a coefficient value of 0.0000493. In the short term, Exports (EXP) have a negative and insignificant influence on the Unemployment Rate (UNP) with a coefficient value of -0.0000169.

Relationship Between Import Variables and Unemployment

Based on the results of the Vector Error Correction Model (VECM), in the long term Imports (IMP) have a negative and insignificant influence on the Unemployment Rate (UNP) with a coefficient value of -0.0000824. In the short term, Imports (IMP) have a positive and insignificant influence on the Unemployment Rate (UNP) with a coefficient value of 0.0000293.

Impulse Response Function (IRF) Test

Impulse Response Function (IRF) analysis is used to explain how a shock to a variable affects the variable itself and other variables in the equation. Impulse Response Function (IRF) analysis explains predictions regarding the impact of a shock in one variable on other variables, so that it can be known how the impact of the shock between these variables is felt and the dynamics of the response of each variable to the shock.

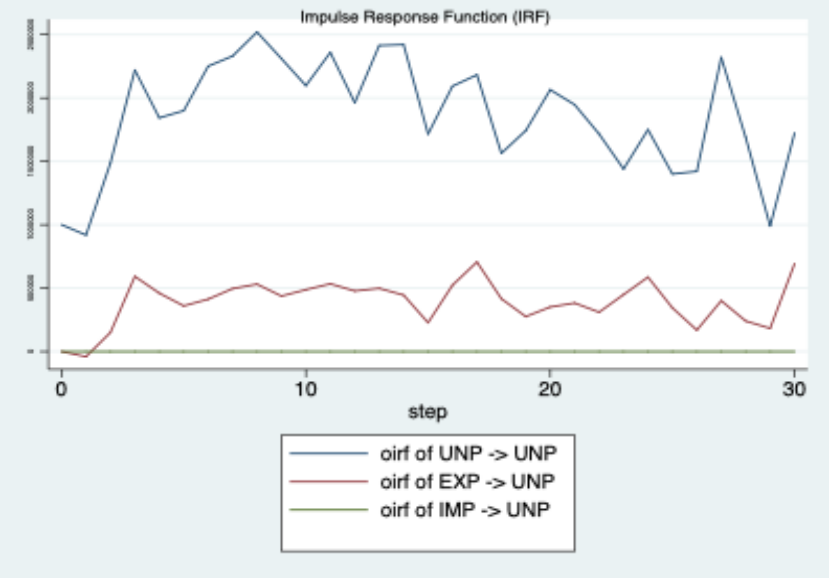

Figure 3. Impulse Response Function (IRF)

The results of the Impulse Response Function (IRF) analysis in the graph show the response of Unemployment due to shocks that occurred in the Export and Import variables during the period 1990 to 2020.

1. The blue line on the graph shows the response of the unemployment variable to shocks from the unemployment variable itself. In general, it appears that the response of the unemployment variable to shocks from the unemployment variable was very fluctuating during the research period. In the first to second periods, the response of the unemployment variable to shocks from the unemployment variable decreased, but in period 3 the response increased and continued to fluctuate until it increased again in the 30th period.
2. The red line on the graph shows the response of the unemployment variable to shocks from the export variable. In general, it appears that the response of the unemployment variable to shocks from the export variable was also very fluctuating during the research period. In the first to second periods, the response of the unemployment variable to shocks from the export variable decreased, but in period 3 the response increased and continued to fluctuate until it increased again in the 30th period.
3. 3. The green line on the graph shows the response of the unemployment variable to shocks from the import variable. In general, it appears that the response of the unemployment variable to shocks from the import variable is relatively stable during the research period with the highest increase in response in the 2nd period.

Forecast Error Variance Decomposition (FEVD) Test

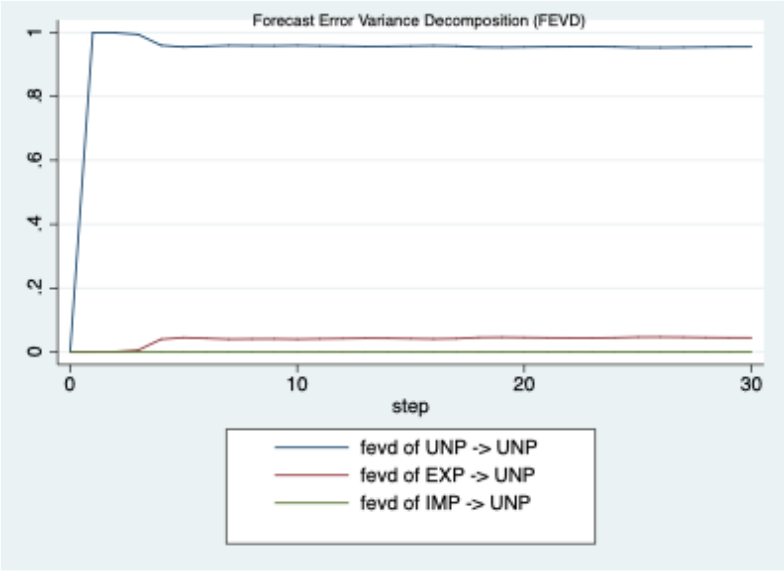

Figure 4. Forecast Error Variance Decomposition (FEVD)

The FEVD test is used to analyze the variance of a variable, determined by the contribution of the variable itself and the contribution of other variables in the research. In VECM modeling, the FEVD results displayed in the graph explain the contribution of Exports and Imports to Unemployment. In general, fluctuations in the number of unemployed in Indonesia during the dominant research period were more influenced by the contribution of the unemployment variable itself.

In the first period, unemployment fluctuations were influenced by the contribution of the unemployment variable itself by 100 percent. In the second period, the influence of the contribution of the unemployment variable began to decrease relatively by 99.9 percent and the contribution of the relative export variable showed an increase, although relatively small, at 0.008 percent. This condition

persisted until entering the fourth period, where the contribution of the unemployment variable fell to 95.9 percent and the contribution of the export variable was 4 percent, while the contribution of the import variable was 0.01 percent. The contribution figures for each variable in influencing fluctuations in the unemployment variable continue to remain relatively stable until entering the 30th period, where the contribution of each unemployment, export and import variable in influencing fluctuations in unemployment in Indonesia is 95.5 percent, 4.4 percent and 0. 01 percent.

DISCUSSION

This research aims to examine the influence of international trade through the export and import approach on employment stability conditions through the unemployment rate in Indonesia from 1991 to 2020. The VECM estimation technique is used in this research considering the results of testing the value of variables that are known to be stationary at the first level which indicates the existence of cointegration relationship. The VECM estimation results in the table show that the export variable has a coefficient value of 0.0000493 and a calculated t value of 0.393 which explains that the export variable has a negative influence by increasing the number of unemployed. Meanwhile, the import coefficient value is -0.0000824 with a calculated t value of 0.168 which shows that there is a positive, although not significant, influence of the import variable in reducing the number of unemployed in Indonesia.

In the VECM estimation results in the short term, it can be seen that the export variable coefficient value is -0.0000169 and the import value is 0.0000293 with a t statistic value of 0.818 and 0.610 respectively, which shows that in the short term, an increase in export performance has a positive influence on The development of employment stability conditions and import performance have a negative influence in increasing the number of unemployed in Indonesia even though the role of each of these variables is not significant.

In the Impulse Response Function (IRF) analysis, the condition of the number of unemployed in Indonesia as a response to shocks caused by each of the unemployment variables themselves, export variables and import variables which show that there is turmoil or fluctuations that occur in the number of unemployed in Indonesia is more dominant. caused by shocks that occurred in the unemployment and export variables.

Furthermore, the results of the Forecast Error Variance Decomposition (FEVD) analysis also show that there is a strong influence of the contribution of unemployment and export variables on movements and fluctuations in unemployment conditions in Indonesia.

CONCLUSION

The results of this research show that the stability of employment in Indonesia is influenced by many factors and not only from the external economic sector, which in this research refers to the influence of international trade. Economic turnover originating from the domestic economy is thought to play an important role in maintaining the stability of the national economy which will clearly have an impact on people's welfare.

The important urgency in discussing this research is the importance of increasing the role and absorption of labor in the national economy, which is very important in maintaining the continuity and resilience of employment opportunities. This is reflected in the results of the FEVD analysis which shows the magnitude of the response shown by the unemployment condition which is caused by shocks originating from unemployment itself. This makes it important to maintain the continuity of community welfare development through achieving progressive economic growth performance in Indonesia in the Asian and Global Regions which still have many challenges in their development. The condition of the Indonesian labor force which is abundant and continues to increase every period

makes it important to maintain the level of labor absorption in the market which is based on the potential demographic structure of the Indonesian population. Apart from that, improving the quality of human resources through increasing knowledge, especially capacity in managing technology, can spur demand for quality and efficient labor Gesti (2014) and Pasuria & Triwahyuningtyas (2022).

This condition is quite important in the challenges of national economic development which covers many aspects of conditions, one of which is region. The broad and strategic territorial coverage in the international economic route makes the function and power of international trade important in helping to drive economic movements originating from the external sector. The development of the national economy will be more secure when national economic activities receive sustainable support from the performance of the external sector.

Recommendations

In maintaining and building community welfare through stable national employment opportunities, intervention and a strong role from policy makers is needed in compiling and producing policy packages that stimulate the empowerment of labor-intensive industries in leading business sectors that will absorb a large number of workers.

Apart from that, improving the quality of the workforce through training and technology transfer needs to be improved so as to increase efficiency and productivity, which of course will have a positive impact on the quality of national product competitiveness. Increasing the competitiveness of production results will increase positive perceptions regarding the management of national economic activities and improve community welfare.

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