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Population, Exchange Rate and Foreign Direct Investment on Openness Trade in Interregional RCEP

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A B S T R A C T

This study aims to determine the effect of population, exchange rates, and investment on international trade in countries that are members of RCEP. With the approach of dynamic panel data analysis method with fifteen countries namely ASEAN, Japan, South Korea, Australia, China, and New Zealand. in 2012-2022, which sourced data from the World Development Indicator (WDI) World Bank with the generalized moment method (GMM). The results showed that the FD-GMM assumption did not fulfill three estimates (arellano-bond test, sargan test, and model specification test) then continued with the SYS-GMM assumption which successfully fulfilled three estimates, then the regression results of the SYS-GMM model will be used in the discussion. The results of the analysis show that an increase in population will increase trade. Likewise, an increase in exchange rate and investmen will also increase trade. This shows that population, exchange rates, and investment have a positive and significant effect on international trade. From the results of this study, it is hoped that the government can provide appropriate policies so that the policies implemented can be realized and the government can also increase population and labor, policies to increase economic competitiveness, and policies to increase economic stability, to increase trade.

Keywords: *Regional Comprehensive Economic Partnership (RCEP), Trade, Generalized Method of Moments (GMM), Interregional, ASEAN*
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INTRODUCTION

The Regional Comprehensive Economic Partnership (RCEP) is the result of a consolidated Free Trade Agreement (FTA) between ASEAN countries and its five trading partners signed on November 15, 2020. The 15 countries participating in RCEP are ASEAN, Japan, South Korea, Australia, China, and New Zealand (Salam, 2022). The objective of the RCEP agreement is to strengthen and expand ASEAN's economic relations with its free trade partners (Can & Hastiadi, 2020). ASEAN plays an important role in the establishment of RCEP as a megaregional trade agreement. ASEAN's central role in the negotiation process shaped the general pattern of provisions in the RCEP agreement. Basically, RCEP is a consolidation of existing trade agreements between ASEAN countries and their partners (ASEAN Plus) (Permana, 2023).

RCEP is the largest regional agreement in the world, covering a market share of 29.6% of the global population, 30.2% of global GDP, 27.4% of international trade, and 29.8% of global FDI (Rahma Meiliza Putri, Amzul Rifin, 2021). By 2020 the total population, economic volume, and trade of RCEP countries reached 30% of the global total, which means that about one-third of the world economy has formed a large market, which marks that the world's largest free trade agreement (FTA) has begun (Xiaoqiang et al., 2023). RCEP cooperation is very interesting because the agreement is comprehensive and covers various aspects, both from the context and commitment ties that have been undertaken by ASEAN. RCEP as a comprehensive economic cooperation agreement, not only covers trade in goods and services, but also aspects of investment, intellectual property, business competition, and e-commerce.

The agreement includes 16 annexes and 20 chapters governing a wide range of matters, from rules of origin, customs procedures, and trade facilities to trade in goods, safeguarding goods, investment, intellectual property, services, finance, telecommunications, and dispute settlement (Muhammad Ferdy Pratama, Palwa Ibnu Sosa, 2022).

There are 3 main economic factors that drive ASEAN to create the RCEP agreement, namely:

First, several ASEAN+1 free trade agreements currently exist, but have not provided optimal market access for ASEAN, so the RCEP has the potential to increase trade liberalization in goods, services, and rules of origin, providing greater opportunities for broader and deeper market access (Can & Hastiadi, 2020).

Second, the existence of different ASEAN+1 free trade agreements creates a "noodle in a bowl" impact situation. It hinders the full utilization of trade preference schemes due to overlapping rules and commitments. RCEP has the potential to alleviate the noodle bowl effect in various rules and commitments in ASEAN+1 trade agreements, not only in rules of origin but also in other rules (Fukunaga & Isono, 2013).

Third, the economic simulation results show that ASEAN could potentially lose its economic benefits if the China-Japan-Korea (CJK) ASEAN agreement is signed, but RCEP is not. This is because ASEAN will lose the preference that it has been enjoying as an intermediary. On the contrary, if RCEP is successfully concluded, ASEAN can reduce the negative impact and open wider economic opportunities (Zoryana Olekseyuk, 2014).

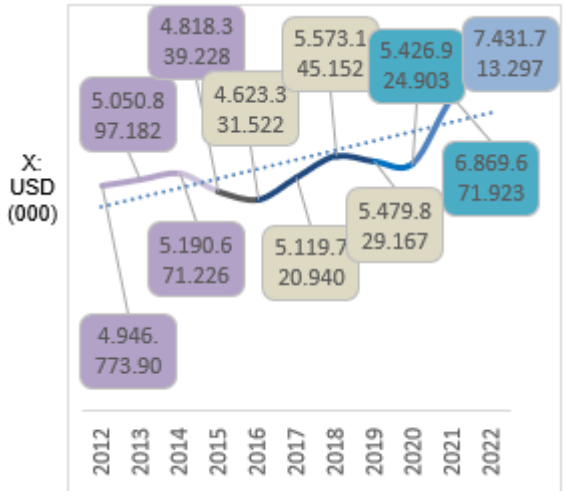
Countries with open economies are vulnerable to global economic turmoil. The more widespread a country's activities in international trade, the greater the risk of economic instability it faces. Maintaining domestic and foreign economic stability is a crucial factor in achieving successful economic development (Suryanto, 2022). Price stability at both the consumer and producer levels in the country is key

to achieving domestic economic stability, while currency stability is a major factor in maintaining economic stability abroad (Pertiwi et al., 2019).

RCEP as a comprehensive economic cooperation agreement, not only covers trade in goods and services, but also aspects of investment, intellectual property, competition, and e-commerce. RCEP consists of 20 chapters that cover various aspects of trade and economy, starting from the following: 1) Initial provisions and general definitions; 2) Trade in goods; 3) Conditions of origin; 4) Customs procedures and trade facilitation; 5) Sanitary and phytosanitary standards; 6) Technical standards and assessment procedures; 7) Instruments of protection against unfair trade; 8) Trade in services, including additional sections on financial services, telecommunications, and professional services; 9) Movement of people; 10) Investment; 11) Intellectual property; 12) Online commerce; 13) Competition; 14) Small and medium-sized enterprises or SMEs; 15) Economic and technical cooperation; 16) Government procurement processes; 17) General provisions and exceptions; 18) Legal and institutional matters; 19) Dispute resolution; and 20) Final provisions.

The classic theory of international trade states that countries should focus on producing goods in which they have a comparative advantage, so with RCEP, instead of just another bilateral or plurilateral free trade agreement, RCEP is considered to be more modern, comprehensive, and high quality. The establishment of RCEP is projected to integrate the largest economies in the world, both in terms of population and gross domestic product (GDP). In terms of population, RCEP will incorporate a market with 3 billion people, equivalent to 45% of the world's population, in terms of GDP, RCEP will have a market with a total of USD 17.30 trillion, which is one-third of the world economy (Can & Hastiadi, 2020). With a large population and GDP, RCEP has the potential to drive positive trade effects and boost significant economic growth (Chaisse & The, 2019). However, RCEP will also face challenges in addressing the significant economic disparities among member countries, which could potentially hinder the implementation and benefits of the agreement.

RCEP is expected to benefit group countries, especially small and medium-sized enterprises (SMEs), and potentially increase employment. Small and medium



Source: Data processed (2024)

Figure 1.
Export Trade of RCEP Region Countries in 2012-2022

enterprises can take advantage of the opportunities offered by RCEP through wider utilization of digital innovation, such as market access through e-commerce. This is reinforced by the momentum of the Job Creation Law (Omnibus Law) which is expected to encourage economic recovery after the pandemic (Syahdani, 2021).

Figure 1 shows that the value of exports in 15 countries that are members of RCEP has increased, although there is a decrease in exports in the period 2012-2022, but the decrease is only small and has no effect. In fact, in 2022, it experienced a high increase, touching 562,041,374.

At this time Singapore is the country with the largest export contribution, then the contribution of Indonesia and Thailand has a percentage of export contribution below 50%. The stability of the export variable is the main factor that determines the level of economic stability of countries in the ASEAN region (Amir et al., 2018).

Indonesia's participation in RCEP is projected to boost goods exports by USD 5.01 billion by 2040. This is supported by (Aprilianti, 2019) which shows a potential increase in exports of up to 7.2% through the utilization of spill-over effects from RCEP members' FTAs with non-RCEP countries. This increase is projected to occur through the expansion of Indonesia's role in the global supply chain. In the short term, 5 years after ratification, it is estimated that exports will increase by 8-11%, investment will increase by 18-22%, and the cumulative GDP of RCEP member countries will increase by approximately USD 137 billion.

This is also supported by research conducted by (Gultom & Donna, 2020) To gain real economic benefits from RCEP, structural changes and policy adjustments are needed. The implementation of the Job Creation Law is key to improving national economic competitiveness data and attracting investors, both local and foreign, especially in the manufacturing sector, especially the digital industry.

Over time, many countries have begun to diversify their exports as a long-term strategy to maintain the stability of their country's economic growth. Export diversification policies implemented by RCEP member countries have similarities and differences, tailored to their respective economic conditions. A successful export diversification policy in one country can be an inspiration or evaluation material for other countries in formulating similar policies.

There have been many studies on RCEP regional trade (Rahma Meiliza Putri, Amzul Rifin, 2021) which analyzes RCEP intra-industry trade in agricultural products so that trade between Indonesia and its trading partners can grow rapidly with the introduction of free trade in the RCEP negotiations. Then (Syahdani, 2021) whose analysis says that RCEP is an important part of Indonesia's leadership in ASEAN and 5 other countries. (Salam, 2022) sees that the magnitude of the opportunity to increase Indonesia's exports will depend on how Indonesia utilizes the facilitative rules in RCEP. (Shimizu, 2021) concluded that RCEP is important for ASEAN and East Asia, and will become even more important amidst the rise of protectionism in the post-pandemic era. (Aprilianti, 2019) from his research concluded that Indonesia's trade realization is more efficient with respect to developed and open countries such as Australia, Singapore, China, and Japan.

The novelty in this study lies in the use of dynamic panel data method with generalized method of moments (GMM) to analyze the influential factors on population, exchange rate, and investment on RCEP regional trade. In order to increase the trade and benefits of RCEP for the 15 countries.

METHODOLOGY

This research is quantitative re-

search, quantitative research is research by looking at numerical data and then testing statistics. The purpose of this research isexplanatory research where explanatory research is a type of research that explains the relationship between one variable and another through hypothesis testing. The object of research is 15 countries, namely ASEAN, Japan, South Korea, Australia, China and New Zealand. The data used includes Trade Opennes, investment, exchange rates, and population using panel data, the data source in this study was obtained from the World Development Indicator (WDI) World Bank.

Population

Population is one of the important aspects of demography that is studied in depth with various theories. One of the theories put forward is the theory of Reverend Thomas Malthus, according to Malthus (Junaidi & Hardiani, 2009), put forward a theory that links population growth with economic development. In his research, he introduced the concept of diminishing returns. Malthus explained that a country's population has a general tendency to grow at a rate of twofold every 30-40 years, describing growth that follows a quantitative series. Malthus also expressed the view that population plays two key roles in economic development, both from the demand and supply side.

From a demand perspective, the population plays a central role as consumers who influence economic flows with their consumptive activities. On the other hand, in the context of supply, the population acts as producers who contribute to the production of goods and services in the economic structure (Khamimah, 2021). Therefore, rapid population growth is not always an obstacle to the progress of economic development, provided that the population has a high capacity to create and absorb production. This means that an increase in population in line with high income levels can act as an impetus for economic development. Conversely, population growth with low income levels may not be considered to provide significant benefits to economic progress.

Exchange Rate

The exchange rate between two countries is the price level that residents of the two countries agree to trade with each other (Anshari et al., 2017). If the exchange rate weakens, it is called depreciation or a decrease in the value of the domestic currency against foreign currencies. If the exchange rate strengthens, it is called an appreciation, or an increase in the value of the domestic currency. In general, the exchange rate is determined by the intersection of the market demand curve and the supply curve of the foreign currency. Exchange rates are influenced by several factors such as domestic interest rates, inflation rates, and central bank intervention in the money market.

Foreign Investment

Basically, investment has a very important role in supporting development. Investment is one of the factors that increase income and create employment opportunities (Pratama et al., 2016). (Mankiw & Reis, 2018) defines investment as the use of money to generate income. Economic theory defines investment as state spending on the purchase of capital goods and production facilities with the aim of replacing and especially adding to capital goods that will be used for the production of goods and services in the future. According to (Mutsanna & Sukirno, 2020) investment is carried out to provide funds for business actors to purchase capital goods and means of production in order to increase economic potential to provide products and services in the future. (Mankiw & Reis, 2018) investment is spending on expanding businesses and new equipment that causes an increase in capital stock. However, since capital stock can change over time, such changes can lead to economic growth.

This research discusses the use of dynamic panel data methods to examine the factors that influence trade opennes, investment, exchange rates, and population on RCEP regional trade. Various econometric approach techniques have been proposed to estimate dynamic panel data models.

Arellano & Bond, (1991) The GMM (Generalized Methot of Moments) method was originally used to address the problem of endogeneity in the explanatory variables, this approach utilizes the lagged variables as instruments to generate a GMM of the corresponding moment conditions. The main principle is to eliminate individual fixed effects before using the lagged variables as inputs for the endogeneity variables. This method has a “weak instrument” problem in small samples resulting in low precision.

First Difference Common Moment Method (FD-GMM)

The First Difference GMM (FD-GMM) method was developed with the aim of producing unbiased, consistent, and efficient estimates. This method is applied in a simple dynamic panel data model without involving exogenous variables. In this model, the lagged dependent variable is added as an independent variable. The dynamic model equation is defined as follows:

$$y_{i,t} = \delta y_{i,t-1} + \beta x'_{i,t} + u_{i,t}$$

where $y_{i,t}$ is dependent variable value for the i-th cross-section unit at a certain time period, δ is intercept value that shows the group/individual effect of unit i at time period t, A is a constant vector of size K x 1 where K represents the number of independent variables in the model, $x'_{i,t}$ is i-th observation of the vector of independent variables for time period t, with size 1 x K, ui,t is disturbance component.

So the variable instrument matrix used to identify the first difference model variables is as follows:

$$y_{i,t} - y_{i,t-1} = \delta(y_{i,t-1} - y_{i,t-2}) + (u_{i,t} - u_{i,t-1})$$

where i = 1,2,....N dan t = 1,2,....T. Then the variable instrument matrix used in the first difference model is:

$$Z_{diff} = \begin{bmatrix} [\Delta y_{i,2}] & 0 & \cdots & 0 \\ 0 & [\Delta y_{i,2}] & \vdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & 0 & [\Delta y_{i,T-2}] \end{bmatrix}$$

The GMM method developed by Arellano and Bond, produces consistent model parameter estimates by minimizing the quadratic function so that δ

$$\hat{\delta} = \left[\left(N^{-1} \sum_{i=1}^{N} Z_i \Delta y'_{i,t-1} \right) \hat{W} \left(N^{-1} \sum_{i=1}^{N} Z_i \Delta y_{i,t-1} \right) \right]^{-1} \left[\left(N^{-1} \sum_{i=1}^{N} Z_i \Delta y'_{i,t-1} \right) \hat{W} \left(N^{-1} \sum_{i=1}^{N} Z_i' \Delta y_i \right) \right]$$

Based on the moment conditions and variable instrument matrices that have been defined for the first differencing model, the estimates obtained are δ

$$\hat{\delta}_{\text{diff}} = \left[\left(N^{-1} \sum_{i=1}^{N} \Delta y'_{i,-t} Z\text{diff} \right) \hat{W} \left(N^{-1} \sum_{i=1}^{N} Z'_{diff} \Delta y'_i \right) \right]^{-1} \left[\left(N^{-1} \sum_{i=1}^{N} \Delta y'_{i,-t} Z\text{diff} \right) \hat{W} \left(N^{-1} \sum_{i=1}^{N} Z'_{diff} \Delta y'_i \right) \right]$$

The above δ estimates obtained using the one-stage GMM Arellano-Bond method are consistent, this consistency does not depend on the distribution of the weight matrix W, but choosing the optimal weights can improve the estimation efficiency, (Arellano & Bond, 1991) the optimal weights are δWˆ.

$$\hat{W} = \hat{\Lambda}^{-1} = N^{-1} \sum_{i=1}^{N} Z\text{diff}\, \Delta\hat{v}_i \Delta\hat{v}_i' Z\text{diff}$$

In order to obtain a consistent estimate for δ (two-step efficient estimator), it is necessary to use optimal weights. The Arellano-Bond GMM estimation results then become as follows. Wˆ∧ˆ(-1)

$$\delta\text{diff} = \begin{bmatrix} \left(N^{-1}\sum_{i=1}^{N}(\Delta y_{i,t-1}\text{Zdiff})\right)\hat{\wedge}^{-1} \\ \left(N^{-1}\sum_{i=1}^{N}(\Delta y_{i,t-1}\text{Zdiff})\right) \end{bmatrix}^{-1} \begin{bmatrix} \left(N^{-1}\sum_{i=1}^{N}(\Delta y_{i,t-1}\text{Zdiff})\right)\hat{\wedge}^{-1} \\ \left(N^{-1}\sum_{i=1}^{N}Z'_{diff}\Delta y_i\right) \end{bmatrix}$$

The equation above is a consistent, efficient, and unbiased Arellano-Bond GMM estimation.

System Generalized Moment Method (Sys-GMM)

In the context of dynamic panel data with a limited number of observations, the utilization of initial conditions becomes crucial to obtain efficient estimators, the system GMM method that combines first difference moments and level moments is used to estimate the system equation. The GMM estimator is obtained by minimizing the weighted squared function J (as shown in equation δδ).

$$\frac{\partial J(\hat{\delta})}{\partial\hat{\delta}} = 2 + 2\begin{bmatrix} \left(N^{-1}\sum_{i=1}^{N}\varphi'_{i,-1}Z_{sys}\right)\widehat{W} \\ \left(N^{-1}\sum_{i=1}^{N}Z'_{sys}\varphi_i\hat{\delta}\right) \end{bmatrix} = 0$$

Z_{sys} is Matrix of relevant variables.
$\hat{W}$ is Unbiased and consistent estimates for, where L denotes the number of instrumental variables $W_{(LxL)}$.

After further analysis, it was possible to obtain a one-step consistent estimate for the system, namely :

$$\hat{\delta} = \begin{bmatrix} \left(N^{-1}\sum_{i=1}^{N}\varphi'_{i,-1}Z_{sys}\right)\hat{W} \\ \left(N^{-1}\sum_{i=1}^{N}Z'_{sys}\varphi_i\right) \end{bmatrix}^{-1} \left[\left(N^{-1}\sum_{i=1}^{N}\varphi'_{i,-1}Z_{sys}\right)\hat{W}\left(N^{-1}\sum_{i=1}^{N}Z'_{sys}\varphi_i\right)\right]$$

Although the choice of weights does not affect the consistency of the one-step estimator, choosing the optimal weights will improve the estimation efficiency. To further improve efficiency, δ obtained in the one-step estimator can be adapted by substituting =δ̓W̓W̓W̓Wˆ ψ̂(-1)

$$\hat{\psi}^{-1} = N^{-1}\sum_{i=1}^{N}Z'_{sys}\hat{q}_i\hat{q}'_iZ_{sys}$$

Thus, the two-step efficient Blundell and Bond GMM System estimates obtained are:

$$\hat{\delta} = \begin{bmatrix} \left(N^{-1}\sum_{i=1}^{N}\varphi'_{i,-1}Z_{sys}\right)\hat{\psi}^{-1} \\ \left(N^{-1}\sum_{i=1}^{N}Z'_{sys}\varphi_{i,-1}\right) \end{bmatrix}^{-1} \left[\left(N^{-1}\sum_{i=1}^{N}\varphi'_{i,-1}Z_{sys}\right)\hat{\psi}^{-1}\left(N^{-1}\sum_{i=1}^{N}Z'_{sys}q_i\right)\right]$$

The estimates produced by the Bundell and Bond two-step efficient GMM System Estimator, shown in the equation above are more efficient than the Arrelano and Bond two-step efficient estimators.

Sargan Test

The Sargan test is used to test the validity of instrument variables in econometric models. This test is set when the number of instrument variables exceeds the number of parameters to be estimated (overidentifying condition).
The Sargan test hypothesis is as follows :
H_0 : Over-identification restriction conditions in model estimation are valid.
H_1 : Over-identification limiting conditions in model estimation are invalid.

$$S = \hat{v}'Z\left(\sum_{i=1}^{N}Z'_i\hat{v}_i\hat{v}'_iZ_i\right)^{-1}Z'\hat{v}\sim X^2_{L-(k+1)}$$

where Z is Instrument variable matrix, vˆ is Model estimation error component.

The null hypothesis is rejected if the Sargan test statistic (S) > the critical value of the chi-square distribution (or P value < (0.05) or s >). H_o $X^2)\alpha X^2_{(L-(k+1)}$

Model Specification Test

Dynamic panel regression models require thorough evaluation to ensure proper specification. The Arellano-Bond test is used to test the consistency of the model, while the Sargan test assesses the validity of instrument variables under overidentifying conditions (the number of

instrument variables exceeds the number of estimated parameters). In addition, the model must meet randomness criteria to ensure accurate and reliable results.

Arellano-Bond test hypothesis as follows :

H_0 : No autocorrelation in 2nd order first difference errors.

H_1 : There is autocorrelation in the 2nd order first difference error.

$$m(2) = \frac{\Delta\hat{v}'_{i,t-2}\,\Delta\hat{v}_*}{(\Delta\widehat{v})^{\frac{1}{2}}} \sim N(0,1)$$

where $\Delta v^{\wedge}_{(i,t-2)}$ is Lagging error vector of order q on the 2nd leg = $\sum^{N}_{(i=1)} T_i$ -4

$\Delta v^{\wedge}_{*}$ is Transformed truncated error vector $\Delta v^{\wedge}_{(i,t-2)}$ size q x 1

If the value of the Arellano-Bond test statistic > the crisis value then the null hypothesis is rejected. It is shown that the GMM model is inconsistent, which is indicated by the insignificant value (fails to reject in m(2).H_o Z_count Z_table H_o).

Unbiased Test

In dynamic panel regression analysis, Ordinary Least Squares (OLS) estimation can produce biased and inconsistent results due to the correlation between the lag of the dependent variable and the confounding error. As a solution, Generalized Method of Moments (GMM) estimation is used, which produces unbiased, consistent, and efficient estimates. The unbiasedness of the GMM estimator is obtained by comparing with the Fixed Effect Model (FEM) which tends to produce downward biased estimates and Pooled Least Squares (PLS) which tends to produce upward biased estimates. The unbiased GMM estimator is between the FEM and PLS models.

This method uses a two-equation system. The first equation uses the lagged difference as the instrumental variable for the level equation, while the second equation uses the lagged level as the instrumental variable for the difference equation. This system allows the GMM method to overcome various problems that often arise in regression, such as endogeneity, which is the relationship between dependent variables; measurement error, which is inaccuracy in the measurement of variables; omitted variables, which are important variables that are not included in the model; multicollinearity, which is high correlation between independent variables; and unobserved country heterogeneity, which is differences between countries that cannot be measured directly.

As a result, it is recommended to use the one-step GMM system for models with a limited number of countries and a longer time period, while the two-step GMM system is more suitable for models with a large number of countries and a shorter time period. In this study using data from 15 countries over 10 years, it is more appropriate to use the two-step GMM system. This is because the two-step GMM system is more effective in overcoming endogeneity problems that often arise in panel data, therefore, this study chose to use the results of the two-step GMM system because this method is more effective in overcoming unavoidable endogeneity problems. (Ullah et al., 2018) Using the Generalized of Moments (GMM) method to address endogeneity issues in panel data analysis, the approach is superior to Ordinary Least Squares (OLS) and Fixed Effect Model (FEM) in dealing with endogeneity issues.

Roodman (2009) The two-step GMM method uses lagged variable values as “internal instruments” to overcome the endogeneity problem, so it can produce more accurate and reliable estimates, thereby improving the quality of research findings.

RESULTS AND DISCUSSION

Based on the presentation of Table 1 shows the average trade (Y) of 4.437117

percent with a variability of 0.6455079 percent, the lowest value of 3.19418 percent and the highest value of 6.08068 percent, the average population (X1) of 17.2981 percent with a variability of 1.88167 percent, the lowest value of 12.81235 percent and the highest value of 21.06853 percent. The average exchange rate (X2) is 4.320094 percent with a variability of 3.574012 percent, the lowest value is -0.0347974 percent and the highest value is 10.05497 percent. The average investment (X3) amounted to 22.66357 percent with a variability of 1.823624 percent, the lowest value was 17.13766 and the highest value was 26.56413 percent.

While the probability value is below 0.05, it is declared influential. In table 1, the trade variable Y L1. has a probability value of 0.000, which means that the test results have an influence on the FD-GMM model, population (X1) has a probability value of 0.021, it can be concluded that the population variable has a negative and significant effect on trade. The exchange rate variable (X2) has a probability value of 0.120 so it can be concluded that the exchange rate has a negative and insignificant effect on trade. The investment variable (X3) has a probability value of 0.040, it can be concluded that investment has a negative and significant effect on trade.

Table 1.
Descriptive Statistical Test Results

Variable	Obs	Mean	Std. dev.	Min	Max
ltrade	246	4.4371	0.6455	3.1942	6.081
lpop	270	17.298	1.882	12.8124	21.0685
ler	268	4.3201	3.5740	-0.0348	10.0550
lfdi	261	22.6636	1.8236	17.1377	26.5641

Source: Data processed (2024)

At this stage, the dynamic panel data regression model is estimated using the first-difference GMM two-step estimators approach. The intercept and slope values for each independent variable with the FD-GMM approach are shown in table 2 and table 3.

Based on the test results in table 2, it shows that the intercept and slope values for each exogenous variable using the FD-GMM approach, if the probility value is above 0.5, it is declared to have no effect.

Based on the test results in table 3, it shows that the intercept and slope values for each exogenous variable using the SYS-GMM approach, if the probability value is above 0.05, it is declared to have no effect. While the probability value is below 0.05, it is declared influential. In table 1, it is presented that the trade variable Y L1. has a probability value of 0.000, which is successfully tested to have an influence on the SYS-GMM model. Population (X1) has a probability

Table 2.
Parameter Estimation of FD-GMM Approach

ltrade	Coefficient	Std. err.	z	P > | z |	[95% conf.	interval]
ltrade L1.	0.6331	0.0662	9.56	0.000	0.5033	0.7629
lpop	-0.3272	0.1422	-2.30	0.021	-0.6058	-0.0486
ler	0.1049	0.0674	1.56	0.120	-0.0271	0.2370
lfdi	0.0194	0.0094	2.05	0.040	0.0008	0.0379
_cons	6.4226	2.4551	2.62	0.009	1.6107	11.2345

Source: Data processed (2024)

Table 3.
Parameter Estimation of SYS-GMM Approach

ltrade	Coefficient	Std. err.	z	P > | z |	[95% conf.	interval]
ltrade						
L1.	0.7237	0.0951	7.61	0.000	0.5374	0.9102
lpop	-0.1491	0.1945	-0.77	0.443	-0.5303	0.2322
ler	0.0795	0.0977	0.81	0.416	-0.1120	0.2711
lfdi	0.0111	0.0079	1.40	0.161	-0.0044	0.0267
_cons	3.2286	3.6217	0.89	0.373	-3.8698	10.3271

Source: Data processed (2024)

value of 0.443, it can be concluded that the population variable has a positive and significant effect on trade. The exchange rate variable (X2) has a probability value of 0.416, it can be concluded that the exchange rate has a positive and significant effect on trade. the investment variable (X3) has a probability value of 0.161 so it can be concluded that investment has a positive and significant effect on trade.

c) Model Specification Test

Model specification test, a series of tests including Sargan test, Arellano-Bond test, and unbiased test were conducted as follows :

Sargan Test

According to (Arellano & Bond, 1991) The Sargan test is used to assess the validity of the instrument in the model specification by comparing the second order p value with = 5%. If the p value > 5% then there is no autocorrelation.

Based on the estimation of table 4, the statistical value of the Sargan test results on both the FD-GMM and SYS-GMM models is 12.76611 and 12.71027. With the α significance level used of 0.05, the probability value of 1.0000 and 1.0000 which shows more than the significant value of 0.05 means that there is no correlation between errors and the results of overidentifying restrictions indicate that the instruments used in the model are valid and there is no problem with overidentifying conditions.

Arellano-Bond Test

The Arellano-Bond test is used to detect autocorrelation in dynamic panel data models by comparing the second order p value with = 5%, if the p value > 5% then, there is no autocorrelation.

The results of table 5, show the value of the Arellano-Bond test statistics on the FD-GMM and SYS-GMM models of -1.6218 and -1.6043. With a significant level α of 0.05, the probability value of 0.1048 and 0.1086 is greater than the significance value of 0.05, indicating that there is no autocorrelation in the second-order first difference error, so the estimation used can be considered consistent.

Unbiasedness Test

The results of table 6 show that the unbiased test shows that the FD-GMM and SYS-GMM models are not biased, because the values are between FEM and PLS. The value of FD-GMM is not between FEM and PLS, the value of FEM (0.7117) > FD-GMM (0.5705) < PLS (0.97021362) means that the FD-GMM model is biased. While the value of SYS-GMM is between FEM and PLS, the

Table 4.
Sargan Test of FD-GMM and SYS-GMM

FD-GMM	P value	SYS-GMM	P value
12,76611	1,0000	12,71027	1,0000

Source: Data processed (2024)

Table 5.
Arellano test of FD-GMM and SYS-GMM

Model	Statistical Values	P value
FD-GMM	-1,6218	0,1048
SYS-GMM	-1,6043	0,1086

Source: Data processed (2024)

Table 6.
Unbiasedness Test of FD-GMM and SYS-GMM

Parameter	Coefficient of FEM	Coefficient of FD-GMM	Coefficient of SYS-GMM	Coefficient of PLS
ltrade L1.	0,71165388	0,57049903	0,72373249	0,97021362

Source: Data processed (2024)

value of FEM (0.71165388) < SYS-GMM (0.72373249) < PLS (0.97021362) means, the SYS-GMM model is unbiased.

Based on the results of the Arellano FD-GMM and SYS-GMM tests, the SYS-GMM model is the best model because it meets all testing criteria. The SYS-GMM model is also more efficient than FD-GMM, especially in dynamic panel data with a small number of time series, because it produces more efficient estimators.

Interpretation Of Results

Based on the analysis conducted, the SYS-GMM model was selected as the best model. The resulting model equation is as follows :

$Y_{(i,t)}=3.228643 + 0.7237325\, Y_{(i,t-1)}$ -0.149068 X1 + 0.0795209 X2 + 0.0111297 X3 + ε_i

The following is the interpretation of the above equation :

1. The constant value of 3.228643 indicates the value of population (X1), exchange rate (X2), and investment (X3) is equal to 0, then trade (Y) will increase by 3.228643%.
2. The value of Y L1. of 0.7237325 explains that if there is an increase in trade in the previous period by 1%, it will have an impact on increasing trade by 0.7237325%.
3. The coefficient value of X1 of -0.149068 explains that if there is an increase in population by 1%, it will have an impact on increasing trade by 0.149068%.
4. The X2 coefficient value of 0.0795209 explains that if there is an increase in the exchange rate by 1%, it will have an impact on increasing trade by 0.0795209%.
5. The X3 coefficient value of 0.0111297 explains that if there is an increase in investment of 1%, it will have an impact on increasing trade by 0.0111297%.

The regression shows that population, exchange rate, and foreign investment have a positive and significant effect on RCEP regional trade.

Population Influence on Trade

The analysis shows that population has a positive and significant effect on regional trade. This shows that an increase in population will lead to an increase in

Table 7.
Arellano test of FD-GMM and SYS-GMM

Criteria	FD-GMM	SYS-GMM
Sargan Test	Fulfilled	Fulfilled
Arellano-Bond Test	Fulfilled	Fulfilled
Unbiased	Unfulfilled	Fulfilled

Source: Data processed (2024)

trade. The results of this study are in accordance with previous research conducted by (Amin, 2016) stated that population has a positive and significant effect on the value of imports in ASEAN.

The increase in population that increases every year will increase the demand for goods and services, such as food, consumer goods, raw materials, capital equipment and others. Population has two roles, namely in terms of consumers (demand) and in terms of producers (supply). This shows that population can encourage an increase in exports and imports.

The Effect of Exchange Rates on Trade

The analysis shows that the exchange rate has a positive and significant effect on international trade. This shows that an increase in the exchange rate will cause an increase in trade, meaning that if the value of the domestic currency appreciates, it will increase the price of domestic goods, while the price of goods outside the country becomes cheaper. This condition inhibits export activities. However, the balance of trade (terms of trade) can improve if exports are not affected by the increase in exchange rates.

The results of this study are in accordance with previous research conducted by (Situmeang et al., 2021) The results of the study state that changes in exchange rates have an influence on stock trading volume.

Effect of Investment on Trade

The analysis shows that investment has a positive and significant effect on regional trade. This shows that increasing investment will lead to increased trade, which is also related to exchange rates. The high value of the currency encourages investors to invest (Situmeang et al., 2021) in addition to increasing the number and quality of exports, both goods and services to meet the import needs of trading partner countries, build collaboration, and attract investment (Taufiqqurrachman & Handoyo, 2021). The results of this study are in accordance with previous research conducted by (Can & Hastiadi, 2020) and (Darain et al., 2023) the results of this study state that investment affects exports.

In addition, investment is also a company's capital investment expenditure or spending to purchase capital assets and production equipment to increase the production of goods and services.

The results of this study are consistent with previous research conducted by (Amin, 2016), which states that population has a positive and significant effect on the value of imports in ASEAN. However, the results of this study differ from previous research conducted by (Situmeang et al., 2021), which states that changes in exchange rates have an influence on stock trading volume. This difference may be due to differences in analysis methods, data used, or time periods analyzed.

CONCLUSIONS

Based on the analysis, it can be concluded that population has a positive and significant effect on regional trade. This means that an increase in population will lead to an increase in trade. Then the results show that the exchange rate has a positive and significant effect on regional trade. This shows that an increase in exchange rates will lead to an increase in trade, meaning that if the value of the domestic currency appreciates then prices will also rise. And the results show that investment also has a positive and significant effect on regional trade. So it shows that increasing investment will cause an increase in trade, it is also related to the exchange rate that experiences appreciation and depreciation of the exchange rate.

So that the government can make policies related to increasing population and labor, policies to increase economic competitiveness, and policies to increase economic stability, to increase international trade in countries that are members of RCEP, namely ASEAN, Japan, South Ko-

rea, Australia, China, and New Zealand. As well as making policies to increase foreign direct investment (FDI) in RCEP member countries, these policies can facilitate the investment process, improve infrastructure, and improve the quality of human resources.

This study is only limited to the RCEP region, and only uses the GMM dynamic panel method with a period of 2005 - 2022.

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