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EMPLOYMENT ABSORPTION CONDITIONS IN THE CAPITAL CITY OF NUSANTARA: AN ANALYTICAL

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Abstract

There have been few studies examining the link between open economic and demographic policies and the integration of socio-economic indicators into employment, particularly in developing markets. To address this gap in the literature, this scientific paper investigates the relationship between foreign investment capital and population growth on labor force participation, considering the moderating roles of minimum wages, economic growth, and human development. The study focuses on the Capital City of Nusantara (IKN) as a representation of a new economic growth center in Indonesia. Time-series secondary data from official government sources covering the period 2011–2024 were calculated using moderated regression analysis (MRA). The empirical results reveal that foreign investment capital (FIC) has a negative and significant effect on minimum wages (MW) and the human development (HD), while population growth (PG) shows a positive association with regional economic growth (REG). Statistically, the interaction terms reveal that MW significantly moderate the relationship between FIC and labor force participation (LFP), whereas REG strengthens the effect of PG on LFP. These findings suggest that additional macroeconomic components beyond the current model warrant the attention of policymakers and further research.

Keywords: Foreign investment capital, Population growth, Minimum wage, Regional economic growth, Human development, Labor force participation

A. INTRODUCTION

The relocation of the capital from Jakarta to East Kalimantan was prompted by a combination of ecological, demographic, and sustainable urban planning aspects. Jakarta currently faces significant polemics, including severe traffic congestion, air pollution, land subsidence caused by groundwater extraction and sea-level rise, and uneven regional development—where Java Island remains disproportionately dominant compared to other regions in Indonesia (Junadi et al., 2025; Rachmawati et al., 2024). The government believes that constructing a new capital city in East Kalimantan, designed as a forest city and smart city, will facilitate sustainable and equitable development while mitigating ecological risks that have not been adequately addressed in Jakarta (Rijanta et al., 2024). This initiative aligns with the provisions outlined in the Law of the Republic of Indonesia Number 3 of 2022 concerning the IKN.

The relocation of the national capital carries significant economic urgency, with proponents arguing that it will stimulate economic growth and promote regional diversification, especially in East Kalimantan province, which has long been heavily reliant on the extractive sector. Yusuf et al. (2023) estimate that East Kalimantan's gross regional domestic product (GRDP) will increase by 22%, while Jakarta's GRDP is expected to decline by approximately 7% in 2025 as the economy shifts toward the service sector. This sector typically absorbs more skilled labor and reduces dependence on carbon-intensive, natural resource-based industries. Concurrently, the relocation is closely linked to social incentives, such as empowering local residents as workers. The establishment of the IKN is predicted to

generate spillover effects on the workforce in East Kalimantan and surrounding areas through extensive infrastructure development and the expansion of trade, construction, and complementary services such as hospitality and tourism (Althalets et al., 2025). Hotsawadi et al. (2025) identified that inclusive development of the IKN drives both output and labor absorption—particularly in East Kalimantan—with the construction sector serving as the primary engine of job creation.

As is well known, the IKN infrastructure project during the 2022–2024 phase requires a workforce of around 260,000 people, most of whom are expected to come from local communities in East Kalimantan and the broader Kalimantan region. Nonetheless, the impact on open unemployment rates remains relatively small in several surrounding districts and cities (Subroto et al., 2024). When discussing employment, one commonly used indicator to assess the labor situation of the economically active working-age population is the labor force participation rate (LFPR/TPAK). This metric reflects the proportion of the productive-age population that is either employed or actively seeking work, thereby detecting whether the labor market is effectively absorbing the available workforce. According to the East Kalimantan Province Statistics Agency (BPS-Statistics) report (2025), the TPAK has shown fluctuations over time. Although the trend is relatively dynamic, averaging around 65.35%, the highest TPAK was recorded in 2011 at 68.51%, while the lowest was 62.39% in 2015 (see Figure 1).

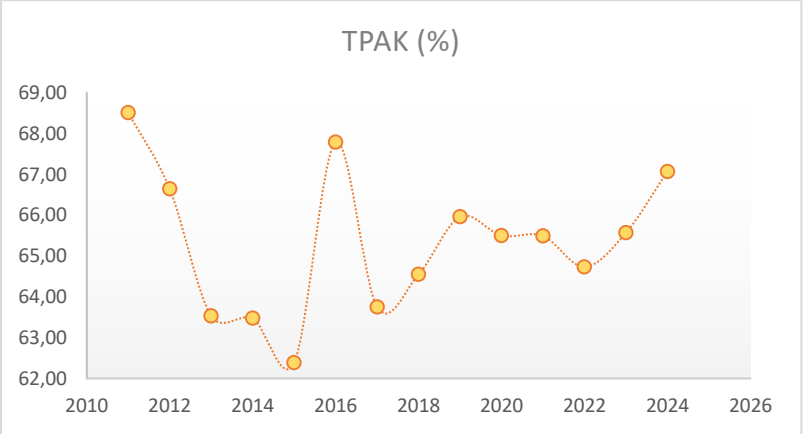

Figure 1. TPAK graph in East Kalimantan
Source: BPS-Statistics Kalimantan Timur Province, 2025(a)

The development of a labor participation model that incorporates foreign investment capital and population growth—both directly and indirectly through minimum wages, economic growth, and the Human Development Index (HDI)—is essential for understanding the structural dynamics of the labor market amid economic globalization and demographic pressures. Foreign direct investment (FDI) acts as a catalyst for economic growth and job creation; however, its impact on labor depends significantly on the quality of human resources and labor regulations, such as minimum wage policies (Tintin, 2012; Hohberg & Lay, 2015). Meanwhile, population growth increases labor supply, which, if not accompanied by inclusive economic growth and improvements in HDI, can lead to unemployment and social inequality (Feriyanto, 2016). This review is critical because these variables interact and form complex causal relationships, where minimum wages and HDI can serve as strategic mediators to enhance the positive effects of FDI and demographic changes on labor absorption (Sitompul & Simangunsong, 2019; Del Carpio et al., 2015). Such studies are vital for refining adaptive and equitable employment strategies, particularly in developing countries like Indonesia, which face parallel pressures from global investment and demographic dividends.

The novelty of observing the impact of foreign investment capital and population growth—moderated by minimum wages, economic growth, and human development—on labor force participation lies in several ideas. First, this interaction model refines previous studies by demonstrating that FDI and demographic factors do not always directly influence labor force participation; rather, their effects depend on minimum wage regulations, economic capacity (growth), and human quality (*i.e* HDI). Second, research of this nature remains scarce in the context of the development of IKN (the new capital city), offering new insights into labor transformation in regions experiencing significant investment and population migration. Third, the connection to the new capital city is particularly important, as the relocation of the capital triggers drastic shifts in local demographics, foreign investment flows, labor demand, and disparities in minimum wages and quality of life. Consequently, human development and economic growth serve as catalysts that determine whether labor force participation can be stimulated alongside development.

Furthermore, Raharjo (2024) asserts that development success indicators such as GRDP, provincial minimum wage (UMP), and FDI have a tangible impact on the HDI. In North Sumatra, it was found that economic growth, HDI, and minimum wages contribute to reducing unemployment rates, which are closely related to labor absorption from the workforce (Hidayat et al., 2023). According to Tuah et al. (2023), investment, economic growth, minimum wages, and HDI all significantly affect the reduction of the open unemployment rate on the island of Kalimantan. With the IKN serving as a major infrastructure program, accompanied by significant changes in population, foreign investment, minimum wage regulations, and human development that are not yet fully aligned, this study assists stakeholders in ensuring that the development of the IKN is not only substantial in terms of physical infrastructure but also prioritizes local labor absorption and quality of life improvement.

This scientific paper aims to explore the causal relationship between investment and population growth on labor force participation, with wages, economic growth, and human development serving as moderating factors. The object of this research is the IKN region, which reflects the economy of East Kalimantan. Notably, the development of the IKN area has experienced rapid growth from 2022 to the present. The findings of this study offer practical insights for government policies to systematically create new employment opportunities based on the aforementioned macroeconomic variables. What's more, this research contributes to academic discourse by addressing gaps in the literature on labor force participation.

Although this study focuses on the employment absorption dynamics associated with the development of IKN, the empirical analysis utilizes provincial-level data from East Kalimantan as a proxy unit of analysis. This approach is adopted because IKN is administratively located within East Kalimantan, and comprehensive macroeconomic time-series data specific to the core IKN area are not yet fully available for the study period (2011–2024). Therefore, provincial labor market indicators are assumed to capture the broader structural adjustments linked to the capital relocation process. Recent international literature on the relocation of national capitals and the development of strategic regional projects suggests that transforming a region into an alternative investment destination and a new administrative center tends to trigger structural adjustments in the regional labor market. Various empirical perspectives show that public sector infrastructure expansion drives employment opportunities not only in government administration and construction but also in other sectors through economic multiplier effects (Freitas, 2025; Hadiningrat, 2024; Jofre-Monseny et al., 2020; Li & Roy, 2020). Furthermore, the dynamics of population growth and investment flows accompanying the development of the IKN have been shown to contribute to labor force participation patterns, wage structures, and human development indicators at a

broader regional level. In the context of IKN development, using East Kalimantan data as the unit of analysis is considered appropriate for capturing aggregate labor absorption trends, given that labor market impacts generally spread across the region and are not confined to the core administrative zone.

B. LITERATURE REVIEW

1. Theoretical Basis

The endogenous economic growth theory emphasizes that investment in human capital—through health and education—plays a fundamental role in boosting labor productivity, which in turn supports economic growth and human development. In the Indonesian context, although a large population can provide abundant labor, low-quality human capital can hinder economic growth. For example, a study by Najah et al. (2025) concludes that while population size positively affects economic growth, low-quality human capital diminishes this positive impact. In addition, investment in the health and education sectors has been shown to improve community quality of life, as reflected in the HDI. In Aceh province, human capital investment has contributed to improved economic performance and poverty reduction (Sartiyah et al., 2018).

The causality between investment, population growth, and economic growth is not always linear. Najiya and Hasri (2018) explain that although investment positively affects economic growth, population size and the HDI do not always have a significant direct impact in West Nusa Tenggara province. In principle, endogenous economic growth theory emphasizes the importance of investing in human capital to stimulate economic growth and sustainable human development. Yet, the effectiveness of such investments also depends on other dimensions, including infrastructure, government policy, and institutional quality.

2. Empirical Foundations

This scientific work focuses on labor force participation by emphasizing the macroeconomic components that directly and indirectly influence it, including investment, population, wages, economic growth, and human development. To date, few publications have comprehensively linked these five macroeconomic components to overall labor force participation. Nevertheless, several papers at local, national, and international levels have identified key determinants of labor absorption.

First, changes in the minimum wage can impact FDI positively by boosting productivity and quality incentives, or negatively by increasing labor costs, particularly in the short term. FDI itself has spillover prospects on local and domestic wages, but these effects vary significantly depending on the sector, company size, technology, and labor regulations. Population size often emerges as a key factor in moderating economic effects, particularly concerning labor demand, wage pressure, and service provision capacity, all of which influence productivity and competitiveness (Fan et al., 2018; Holl & Lork, 2025; Sepdianty & Tuah, 2024; Sitompul & Simangunsong, 2019; Sugiharto & Kurnia, 2016; Sultoni, 2020; Suwitra et al., 2024; Tegep et al., 2019). Drawing on these manuscripts, several research gaps emerge, notably the need to explore demographic variables—such as population size, growth, and the productive-age demographic—in conjunction with FDI and minimum wage policies. In the Indonesian context, numerous studies have examined the impact of minimum wage on investment, labor absorption, and unemployment; however, few have dissected how population growth moderates these effects. A key limitation concerns endogeneity: minimum wage levels may be set in response to economic conditions (such as FDI), complicating the determination of causal direction.

Second, investigations conducted by Appiah et al. (2019), Fazaalloh (2024), Li and Liu (2005), Primastuty et al. (2024), Setiyanto and Fitrady (2024), Sirag et al. (2025), and

Yuliadi (2020) reveal several patterns regarding how population growth or population size is elaborated from a national perspective. This includes demographic factors such as the working-age population, which is often treated as an independent variable. On the other hand, population growth over time does not necessarily guarantee an increase in GRDP growth. It should be noted that high population growth can become a burden, especially if it is not accompanied by improvements in productivity, human capital, and adequate public capacity or infrastructure. Some studies also indirectly modify demographic variables by focusing on absorptive capacity, which can be influenced by population size, age structure, and the quality of education and health. It is frequently observed that, ceteris paribus, FDI has a impressive effect on economic growth; however, the extent of its impact depends on internal factors such as the quality of institutions, human capital, infrastructure, technology absorption capacity, and fiscal and financial space. The effects of population growth are often indirect or dependent on transitional factors, such as whether population growth expands the productive labor force, the level of support for education and health, and the balance between the number of workers and available job opportunities. At a certain point, when population growth becomes too rapid and public, economic, or institutional capacity is insufficient, negative impacts on per capita growth may occur. National studies sometimes indicate that population growth does not necessarily stimulate local economic growth. This may be due to other more influential variables—such as investment, human capital, and institutional quality—or because the observation period is too short to capture the demographic effects.

Third, many references use human development as a proxy for the quality of population development. The pillars of education and health are often considered key dimensions of the HDI. Most journals in Indonesia state that population growth can become burdensome if it is not supported by elements such as education, human resource quality, and investment. FDI generally shows a positive correlation with HDI, especially in regions with sufficient absorption capacity, including infrastructure, education, health, and institutions. This relationship varies depending on the current level of human development, with areas exhibiting high HDI benefiting more from FDI than those with low HDI (Adamu et al., 2022; Dash et al., 2025; Emako et al., 2022; Giovanni & Faridatussalam, 2023; Pongge et al., 2025; Rezki et al., 2024; Sardar et al., 2022). Basically, few studies explore the direct interaction between FDI and population growth on human development within a single framework—that is, treating population growth and FDI alongside human development dimensions as independent variables. In fact, some studies include population only as a control or projection variable.

Fourth, few articles explicitly examine the moderation causal through which foreign investment capital and population growth influence labor force participation via minimum wages, economic growth, and human development. Most research focuses solely on their direct effects on labor force participation. Drawing on local and national literature, there is evidence that minimum wages, economic growth, and HDI are closely related to TPAK or employment-related variables, although the performance of FDI is sometimes suboptimal or location-dependent (Feriyanto, 2016; Matsuura & Saito, 2023; Sirait, 2020; Sitompul & Simangunsong, 2019; Tuah et al., 2023; Vidiana & Setyowati, 2023). From an international perspective, FDI also affects wages, income distribution, and labor demand by skill level, with minimum wages serving as a variable that differentiates the impact on minimum wage workers versus average wage workers (Fan et al., 2018; Lyu et al., 2025; Tintin, 2012). Besides, population growth is often included as a control variable rather than as a primary factor influencing employment through minimum wage and the HDI in this context, specifically TPAK. Few publications have rigorously examined the simultaneous relationships among foreign investment capital, minimum wage, human development, and economic growth on labor force participation using multiple moderation. International research encompassing all

these variables—foreign investment, population growth, minimum wage, human development, and labor force participation—is scarce. In practice, local and Indonesian literature typically focuses on national or provincial levels and rarely addresses cities or districts with datasets that simultaneously link population growth, HDI, and minimum wages.

C. RESEARCH METHOD

This scientific paper adopts a quantitative approach to examine the relationship between foreign investment capital and population growth, moderated by minimum wages, regional economic growth, and human development, in relation to labor force participation, using a case study in IKN. As illustrated in Figure 2, the relationships investigated include both direct and indirect interactions. Hypotheses one (H_1) through six (H_6), represented by solid arrows, denote direct partial effects, while hypotheses seven (H_7) through ten (H_{10}), depicted with dotted arrows, visualize moderating effects.

The data were collected from secondary materials over a 14-year period (2011–2024) and obtained from government agencies. Online documentation techniques were used as the data collection instrument. Data processing tool was conducted using the MRA method. For further details, the definitions and measurements of the data variables are provided in Table 1 below.

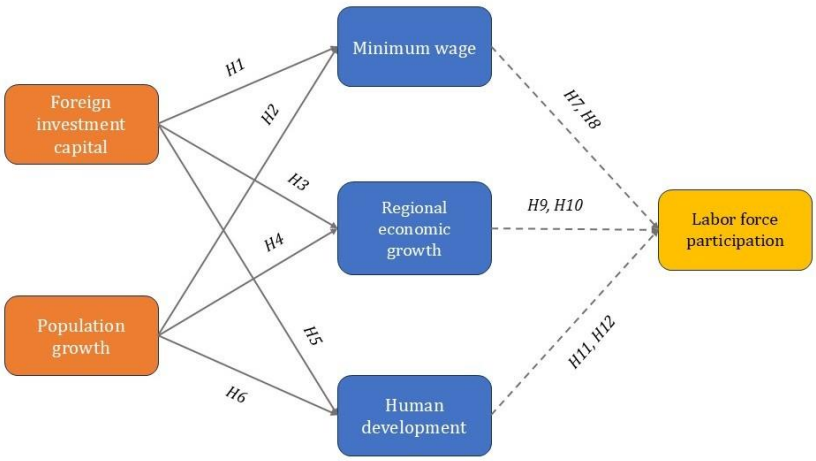

Figure 2. Research concept

Table 1. Operational definition of variable data

Variables (code)	Data	Source of data	Parameters
Labor force participation (LFP)	Percentage of the labor force relative to the population aged 15 years and older	BPS-Statistics Kalimantan Timur Province (2025a)	Percentage (%)
Foreign investment capital (FIC)	Realization of foreign investment for business operations in Indonesia	BPS-Statistics Kalimantan Timur Province (2025b)	Thousand US$
Population growth (PG)	Changes in population size over time	BPS-Statistics Kalimantan Timur Province (2025c)	Percentage (%)
Minimum wage (MW)	The minimum wage that employers are legally required to pay workers, as established by the provincial government	BPS-Statistics Kalimantan Timur Province (2025d)	Rupiah (IDR)
Regional economic growth (REG)	Change in GRDP based on constant prices from one period to the another	BPS-Statistics Kalimantan Timur Province (2025e)	Percentage (%)
Human development (HD)	An index that measures human development achievements across three fundamental dimensions: (1) a long and healthy life, (2) knowledge, and (3) decent living standards	BPS-Statistics Kalimantan Timur Province (2025f)	Index number

Using the MRA method, six versions of econometric equations were developed. Equations 1, 2, and 3 represent the direct relationships for the minimum wage model, regional economic growth model, and human development model, respectively, each influenced by foreign investment capital and population growth. Equations 4, 5, and 6 illustrate the indirect effects on the labor force participation model, which is determined by foreign investment capital and population growth, with minimum wages, regional economic growth, and human development serving as moderating variables. The econometric equations are presented below:

$$Y_1 MW = \alpha_1 + \beta_1 FIC + \beta_2 PG + \mu_1 \quad (1)$$

$$Y_2 REG = \alpha_2 + \beta_3 FIC + \beta_4 PG + \mu_2 \quad (2)$$

$$Y_3 HD = \alpha_3 + \beta_5 FIC + \beta_6 PG + \mu_3 \quad (3)$$

$$Y_4 LFP = \alpha_4 + \beta_1 FIC + \beta_7 MW + \beta_8 (FIC\ x\ MW) + \beta_2 PG + \beta_7 MW + \beta_9 (PG\ x\ MW) + \mu_4 \quad (4)$$

$$Y_5 LFP = \alpha_5 + \beta_3 FIC + \beta_{10} REG + \beta_{11} (FIC\ x\ REG) + \beta_4 PG + \beta_{10} REG + \beta_{12} (PG\ x\ REG) + \mu_5 \quad (5)$$

$$Y_6 LFP = \alpha_6 + \beta_5 FIC + \beta_{13} HD + \beta_{14} (FIC\ x\ HD) + \beta_6 PG + \beta_{13} HD + \beta_{15} (PG\ x\ HD) + \mu_6 \quad (6)$$

Explanation of symbol notation; Y is an endogenous variable, α = intercept, β = regression coefficient, x = interaction between exogenous variables and moderating variables, and μ = stochastic.

In MRA, both main effects and interaction effects are included in the regression model. The main effects represent the direct influence of the independent variables and the moderator on the dependent variable, while the interaction terms capture the moderator's role in altering the relationship between the independent and dependent variables. The scenario for determining the hypothesis assumptions is based on the following two criteria:

- Null hypothesis (H_0): $\beta = 0$ or $\beta < 0$, if a negative effect is suspected between the exogenous variable and the endogenous variable.
- Alternative hypothesis (H_a): $\beta \neq 0$, or $\beta > 0$ if a positive effect is suspected between the exogenous and endogenous variables.

D. RESULTS AND DISCUSSION

1. Main Findings

Descriptive statistics and Pearson correlations are summarized in Table 2. The descriptive statistics reveal a diverse distribution of data, partly because several variables share similar units of measurement, while others differ. For example, labor force participation, population growth, and regional economic growth are all measured as percentages (%). In contrast, foreign investment capital and minimum wages are both measured in nominal terms but use different currencies: foreign investment capital is expressed in thousands of US dollars (US$), whereas minimum wages are denominated in Indonesian rupiah (IDR). Then, human development is measured on an index scale. When the variables are ranked by their mean, maximum, and minimum values from highest to lowest, minimum wage exhibits the highest values, while regional economic growth shows the lowest.

Table 2. Descriptive statistics and correlation tests

Var.	Mean	Max.	Min.	(1)	(2)	(3)	(4)	(5)	(6)
FIC	1,319,375.4	2,529,900	378,027	1	–.144	–.602*	–.124	–.524	–.247
PG	3.6	22.1	.84	–.144	1	.023	.193	.047	.140
MW	2,375,480.3	3,360,858	1,084,000	–.602*	.023	1	.198	.979**	–.076
REG	3.5	6.5	.38	–.124	.193	.198	1	.337	.483
HD	75.4	78.8	72	–.524	.047	.979**	.337	1	.016
LFP	65.4	68.5	62.4	–.247	.140	–.076	.483	.016	1

Source: secondary data was tabulated using SPSS software.
Noted: *probability of 5% and **probability of 1%.

Table 2 (two) also displays the statistical output of Pearson's correlation test (r), which assesses the linear relationship between two variables. According to Ulfah et al. (2025), the correlation coefficient ranges from –1 to +1 and can be classified as follows: (1) r = +1 indicates a perfect positive linear relationship, (2) r = –1 indicates a perfect negative linear relationship, and (3) r = 0 indicates no linear relationship. It is important to note that Pearson's correlation does not imply causation; it only measures the degree to which two variables move together linearly. Specifically, the results of the Pearson correlation test verified three distinct categories. At a probability threshold of 5%, a strong negative linear relationship was found between minimum wage and foreign investment capital, with a significant correlation coefficient of r = –0.602. At a 1% probability threshold, a strong positive linear relationship was confirmed between minimum wage and human development, with a significant correlation coefficient of r = 0.979. As well, many variables did not exhibit significant linear relationships at either the 5% ($p < 0.05$) or 1% ($p < 0.01$).

Next, assess the reliability of the model using the coefficient of determination (R^2) and test for residual autocorrelation with the Durbin-Watson (DW) statistic. A high R^2 coefficient indicates that the model fits the data well statistically, but it does not guarantee that the model is correct or unbiased. It is important to adjust for R^2 bias, as R^2 can increase simply by adding variables, even if those variables are not significant. Methodologically, the DW test detects linear autocorrelation between sequential residuals and is particularly relevant for time-series regression data. Adapted from Komarlina et al. (2025), the interpretation of DW statistics ranges from 0 to 4 as follows: (1) DW = 2 implies no autocorrelation, (2) DW < 2 implies positive autocorrelation, and (3) DW > 2 implies negative autocorrelation.

Table 3. Model feasibility and autocorrelation test

Items	MW (Model 1)	REG (Model 2)	HD (Model 3)	LFP (Model 4)
R^2	.367	.047	.275	.705
Adjusted R^2	.251	–.127	.143	.481
Std. error of the estimate	628,655.2	2	1.9	1.7
Durbin-Watson	2.658	.593	.644	3.377
95% CI for lower bound	2,372,339.6	.554	74.8	60.2
95% CI for upper bound	4,278,087.1	6.7	80.6	70.7

Source: secondary data was tabulated using SPSS software.

First, the R^2 coefficient in Model 1 reached 25.1%, indicating that variations in minimum wages can be explained by foreign investment capital and population growth, while 74.9% of the variation remains unexplained by the model. The DW statistic for Model 1 is 2.658, suggesting the presence of negative autocorrelation (since 2.658 > 2). Second, Model 2 has an R^2 of only 4.7%, implying that the regression model has very weak predictive power. Most changes in regional economic growth—approximately 95.3%—are likely influenced by factors other than investment capital and population growth. The low R^2 coefficient also indicates that adding these exogenous variables has little substantive effect. Additionally, Model 2 exhibits positive autocorrelation, as indicated by a DW value of 0.593 (less than 2),

which is a common issue in time series data. Third, Model 3, with an R^2 of 27.5%, indicates that 72.5% of the variance in human development is explained by factors other than foreign investment capital and population growth. The DW statistic of 0.644 (less than 2) suggests the presence of positive autocorrelation. Fourth, the labor force participation model (Model 4) has an R^2 of 70.5%, confirming that foreign investment capital and population growth—moderated through minimum wages, regional economic growth, and human development—moderately explain the variation in labor force participation, with 29.5% attributed to other variations. The DW value of 3.377 (greater than 2) in Model 4 indicates negative autocorrelation. Overall, the data from all four models are appropriate for regression (see Table 3).

The results of the regression models, including the constant, simultaneous, partial, and moderation effects, evaluated at significance levels of 1% ($p < 0.01$) and 5% ($p < 0.05$). In Model 1, the intercept is positive (α = 3,325,213.4) when the exogenous variables are held constant. The *F*-test probability value (p = 0.007) indicates that the exogenous variables are simultaneously significant in explaining the minimum wage model. Partially, foreign investment capital (β = –0.611; p = 0.028) and population growth (β = –0.065; p = 0.793) both have negative effects on minimum wages; however, only foreign investment capital has a statistically significant effect. In Model 2, the intercept is also positive (α = 3.642), indicating that if all exogenous variables are zero, the predicted value for regional economic growth is 3.642. The *F*-test shows that the exogenous variables simultaneous influence regional economic growth significantly (p = 0.039). Partially, foreign investment capital has a negative but insignificant impact (β = –0.099; p = 0.747), whereas population growth significantly and positively affects regional economic growth (β = 0.179; p = 0.036). Similar to Model 1, where the intercept value is positive (α = 77.722), Model 3 also shows a positive intercept when the exogenous variables are held constant. The *F*-test probability value (p = 0.014) shows that the exogenous variables are simultaneously significant in explaining the human development model. Partially, foreign investment capital (β = –0.528; p = 0.047) and population growth (β = –0. 028; p = 0.915) both have negative effects on human development; however, only foreign investment capital has a statistically significant impact.

Table 4. Regression result recapitulation

Variables	MW (Model 1)	REG (Model 2)	HD (Model 3)	LFP (Model 4)
FIC	-0.611*	-0.099	-0.528*	
	(0.028) [0.979]	(0.747) [0.979]	(0.047) [.979]	
PG	-0.065	0.179*	-0.028	
	(0.793)	(0.036)	(0.915)	
FIC × MW				0.293*
				(0.029) [0.058]
PG × MW				-4.865
				(0.524) [.001]
FIC × REG				0.891*
				(0.045) [.091]
PG × REG				-2.238
				(0.671) [0.003]
FIC × HD				-1.268
				(0.443) [0.029]

Table 4. Regression result recapitulation continued

Variables	MW (Model 1)	REG (Model 2)	HD (Model 3)	LFP (Model 4)
PG × HD				7.005**
				(0.003) [0.001]
Constant	3,325,213.4**	3.642*	77.722**	65.456**
	(0.006)	(0.025)	(0.000)	(0.000)
Std. Error	432,930	1.403	1.335	2.209
F-statistic	3.184**	1.269*	2.088*	1.192*
	(0.007)	(0.039)	(0.014)	(0.020)
Observations	14	14	14	14

Notes
- Standard errors are reported in parentheses.
- $p < 0.05$, ** $p < 0.01$
- FIC = Foreign Investment Capital; PG = Population Growth; MW = Minimum Wage; REG = Regional Economic Growth; HD = Human Development; LFP = Labor Force Participation
- Source: Secondary data processed using SPSS

Referring to Table 4, it can be observed that Model 4 has a positive intercept value (α = 65.456). This indicates that if all exogenous variables and their moderating effects are zero, the predicted value for labor force participation is 65.456. The *F*-test results, with a significance level below 5% (p = 0.02), show that the exogenous variables, through the interaction with moderating variables, simultaneously affect labor force participation. Specifically, foreign investment capital moderated by minimum wages (β = 0.293; p = 0.029) and regional economic growth (β = 0.891; p = 0.045), as well as population growth moderated by human development (β = 7.005; p = 0.003) have a significant positive impact on labor force participation. Although, population growth moderated by minimum wages (β = –4.865; p = 0.524) and regional economic growth (β = –2.238; p = 0.671), as well as foreign investment capital moderated by human development (β = –1.268; p = 0.443) show no significant relationship with labor force participation.

As shown in Table 2 above, the correlation between MW and HD was relatively high (r = 0.979), indicating potential multicollinearity. To address this issue, multicollinearity diagnostics were conducted by examining the Variance Inflation Factor (VIF) and tolerance values. All variables involved in the interaction term were mean-centred prior to creating the interaction term to mitigate multicollinearity symptoms in the MRA. The general standard applied for VIFs is that multicollinearity is indicated if the tolerance is ≤ 0.1; conversely, there is no multicollinearity if the tolerance is > 0.1. Consequently, Models 1, 2, and 3 show that the VIF values remain within the acceptable range. However, this is not the case in Model 4, where all tolerance values are below 0.1, indicating strong multicollinearity among the independent variables. This condition suggests that the variables are highly correlated, which can cause instability in the regression coefficient estimates and warrants further investigation in future research.

2. Implications

In this session, the main findings related to the argumentative analysis model were discussed. First, H_1 and H_2 indicate that foreign investment capital and population growth reduce minimum wages, which contradicts the proposed hypothesis. Foreign investment can lower minimum wages if foreign companies introduce relatively capital-intensive technologies and weaken the bargaining power of local workers. This phenomenon is evident in Vietnam, where the presence of FDI actually suppresses average wages in domestic companies by approximately one percent for every one percent increase in FDI, despite FDI companies paying higher wages (Nguyen et al., 2019). Rapid population growth can increase

the labor supply, thereby intensifying competition among workers and tending to suppress wages, especially for low-skilled workers. In the USA, Newman (2003) found that Hispanic population growth in rural areas weakened wages for skilled workers, such as high school graduates.

Second, H_3 affirms that foreign investment capital reduces regional economic growth, thereby contradicting the proposed hypothesis. Interestingly, population growth actually promotes regional economic growth, meaning it is directly proportional, and H_4 is accepted. Notwithstanding some studies suggest that FDI typically drives economic growth, in certain cases it can reduce the growth rate if foreign funds are directed toward low-productivity primary sectors or if they are not accompanied by improvements in human capital, infrastructure, and institutions. Conversely, population growth—especially when accompanied by an increase in the productive labor force and higher domestic consumption—can stimulate economic growth by expanding the market, labor supply, and consumption base. This fact is supported by Emako et al. (2022), who report that FDI in the tertiary sector negatively affects growth in some developing countries because it flows into non-productive service sectors. As noted by Steven et al. (2024), population growth has a concrete impact on economic growth when macroeconomic components such as inflation are controlled.

Third, H_5 and H_6 were rejected because foreign investment capital and population growth actually reduce human development. Although foreign investment often targets human development as a Sustainable Development Goal (SDG) through technology transfer, job creation, and income improvement, some manuscripts show that FDI can gradually decrease the HDI, especially in countries with low HDI. This occurs when foreign investment focuses primarily on extractive or capital-intensive sectors that neither absorb local labor nor improve health and education systems. This perspective is reinforced by Adamu et al. (2025), who found that FDI has a significant negative effect on HDI in the lower HDI quantiles in West Africa. Conversely, rapid population growth in developing countries, without corresponding increases in the capacity of health, education, and infrastructure systems, exacerbates social and environmental burdens, ultimately reducing the quality of life per individual and causing an average decline in human development (Ahlburg et al., 1996; Sapkota, 2014).

Fourth, foreign investment capital can increase labor force participation through minimum wages and regional economic growth as well as population growth driven by human development, thereby accepting H_7, H_9, and H_{12}. Foreign investment capital enhances labor force participation when minimum wage policies and economic growth conditions are favorable. For instance, raising minimum wages to a level that sufficiently incentivizes workers to transition from the informal or household sectors into the formal labor market, combined with economic growth that generates adequate employment opportunities, can boost labor participation. In Indonesia, investment and minimum wage variables simultaneously have a significant impact on labor absorption; thus, when economic growth is also robust, the positive effect of FDI on labor force participation is amplified (Ummah & Yasin, 2021). Furthermore, population growth accompanied by improvements in human development—such as enhanced education, health, and access to opportunities—can substantially increase labor force participation by expanding the productive-age population and improving human capital quality, resulting in more individuals being both able and willing to work. Bloom and Freeman (1986) observed that population growth expands the labor supply and, when accompanied by investment in human capital, can drive the transition from the agricultural sector to the more productive industrial and service sectors, thereby reducing barriers to labor absorption. In addition, Bloom et al. (2018) mention that countries with low and medium HDI scores stand to benefit greatly from changes in age structure, which result in a higher proportion of working-age individuals in the population, along with increased labor force participation in certain age groups.

In other cases, population growth driven by minimum wages and regional economic growth, along with foreign investment capital through human development, can reduce labor force participation. Consequently, three hypotheses—H_8, H_{10}, and H_{11}—are rejected. Rapid population growth can strain the regional labor market, particularly if it is not accompanied by sufficient job creation and increased productivity. Globally, minimum wages that do not align with productivity or living costs can worsen this situation, especially in regions experiencing slow economic growth. Such disparities may diminish incentives for individuals to join the labor force, especially among younger people and women, who tend to be more sensitive to economic conditions and wage levels. Gindling and Terrell (2010) argue that in developing countries, excessively high minimum wages can reduce formal sector employment, pushing workers into the informal sector or out of the labor force entirely. Klasen et al. (2019) highlight that economic structural aspects—including regional disparities, differences across economic sectors, and social norms—affect female labor force participation rates unevenly both between and within countries. Indeed, uneven economic growth across regions can create disparities in employment opportunities, negatively impacting labor force participation in low-growth areas (World Bank, 2019). Essentially, this economic growth is superficial and fragile; although growth figures may appear to be rising, they do not reflect a sustainable improvement in the community's real welfare.

E. CONCLUSION AND RECOMMENDATION

The purpose of this scientific paper is to examine the relationship between foreign investment capital and population growth on minimum wages, regional economic growth, and human development, as well as their implications for labor force participation in the IKN. Using the MRA method over the period 2011–2024, five valuable findings emerged: (1) In both the first and third models, foreign investment capital and population growth reduce minimum wages and human development; (2) In the second model, foreign investment capital is shown to reduce regional economic growth, whereas population growth actually increases it; (3) Minimum wages and regional economic growth play a crucial role in the relationship between foreign investment capital and labor force participation, but neither moderates the relationship between population growth and labor force participation; and (4) Ironically, foreign investment capital moderated by human development actually reduces labor force participation, which contrasts with the positive effect of human development in realizing population growth that drives labor force participation.

One of the root causes of low labor force participation in IKN is the lack of foreign investment to stimulate wage increases, economic growth, and human development advancement. Similarly, population growth has not been matched by relevant labor market demand. In other words, the expanding population of IKN has not been optimally absorbed into the labor market. Moreover, even when individuals are employed, they often receive wages below the minimum standard, which only marginally contributes to economic growth and human development necessary for sustainable employment. The research findings recommend that the government, as the policymaker on employment, initiate a restructuring of investment programs to promote the engagement of the working-age population in labor-intensive sectors. To cultivate a high-quality workforce, adequate access to education and health insurance—such as skills training and the enhancement of health infrastructure—is essential. Another recommendation is that the minimum wage determination process must rigorously consider the cost of living through strict oversight. By focusing on attracting investment capital and adopting a more comprehensive approach to population growth, it is possible to improve wage standards, foster inclusive economic growth, and promote positive human development that synergizes effectively with local labor force participation.

The originality of this scientific work lies in its conceptual framework, which integrates and elaborates on socio-economic, demographic, and employment policy components into a model that can be further refined. Although this concept represents a breakthrough in deepening and enriching the limitations of empirical foundations, the use of methods and data characteristics remains a point of weakness. Future studies should aim to refine data decomposition techniques to break down time series data into multiple constituent components, allowing for clearer identification of specific patterns. Additionally, it is recommended to incorporate comparative quantitative methods beyond MRA with extended long-term observations.

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