Openness, Exchange-Rate Shocks, and FDI in Emerging Economies: The Trade-Intensity Mechanism in Indonesia, 1996–2021

Indraswati Tri Abdi Reviane[1*], Abdul Hamid Paddu and Aditya Idris

Hasanuddin University, Makassar, Indonesia
*indraswati@fe.unhas.ac.id

Abstract. Understanding how trade openness contributes to economic growth requires examining the mechanisms through which macroeconomic factors transmit their effects. Emerging economies frequently face exchange-rate shocks, fluctuating foreign investment, and varying investment efficiency, all of which shape growth trajectories. This study analyzes how trade intensity mediates the relationship between exchange-rate shocks, foreign direct investment, investment efficiency, and national stability with economic growth in the context of an emerging economy. The analysis employs annual macroeconomic data from 1996 to 2021, obtained from international and national statistical agencies. A path analysis framework is applied to capture both direct and indirect effects of openness-related factors on growth. The principal variables comprise trade intensity, exchange rates, foreign direct investment, incremental capital–output ratio, and measures of national stability. The findings indicate that trade intensity significantly fosters economic growth and serves as a critical transmission channel of openness. Exchange-rate depreciation enhances trade intensity but exerts a negative direct impact on growth, producing an overall contractionary outcome. Foreign direct investment demonstrates a strong and direct positive effect on growth, although its link with trade intensity is weak, suggesting that investment has been predominantly market-seeking rather than export-oriented. Investment efficiency and national stability display limited direct impacts but indirectly support growth through trade intensity. This study concludes that trade intensity constitutes a vital mediator linking openness and growth. The evidence underscores the importance of policies that encourage export-oriented investment, safeguard macroeconomic stability, and improve investment efficiency. These insights are crucial for sustaining resilient growth strategies across emerging economies.

Keywords: Trade Openness, Trade Intensity, Exchange Rate Shocks, Investment Efficiency, Foreign Direct Investment, Economic Growth, Emerging Economies, Path Analysis.

M. Nohong et al. (eds.), *Proceedings of the 10th International Conference on Accounting, Management, and Economics (10th ICAME 2025)*, Advances in Economics, Business and Management Research 388,
https://doi.org/10.2991/978-94-6239-709-5_36

1 Introduction

International trade has long been considered a cornerstone of economic growth, providing countries with opportunities to expand productive capacity, access larger markets, and accelerate technological diffusion [1]. For emerging economies, the degree of openness and the intensity of trade are particularly crucial, as these nations often rely on external demand and foreign capital to sustain development. However, the link between trade and growth is neither automatic nor uniform [2]. Different channels—such as foreign direct investment, exchange-rate dynamics, and the efficiency of domestic investment—may condition how openness translates into long-term prosperity [3].

In the past few decades, Indonesia has progressively opened its economy through trade liberalization and global integration. The country joined regional economic cooperation frameworks (such as the ASEAN Free Trade Area) and attracted substantial foreign capital inflows, all while improving its domestic political stability. Despite these efforts, Indonesia's GDP growth has largely plateaued at around 5% annually over the last twenty years [4]. This stagnation in growth, even amid greater trade openness and investment inflows, raises important questions about the channels through which openness and related factors influence economic performance. It suggests that the relationship between trade openness and economic growth may be complex, potentially involving indirect pathways [5].

The literature on trade and growth reflects this complexity. Classical and neoclassical theories highlight the potential benefits of specialisation, comparative advantage, and capital inflows, while more recent endogenous growth models emphasise innovation, knowledge spillovers, and institutional quality as critical determinants. Empirical studies have produced mixed results [6]. Some argue that openness consistently fosters growth by encouraging efficiency and export-led expansion, whereas others caution that exposure to global markets can amplify vulnerability to external shocks, particularly in countries with fragile institutions or volatile exchange rates [7].

One of the enduring debates concerns the role of exchange rate shocks. Depreciation can stimulate exports by improving competitiveness, yet it can also undermine stability through inflationary pressures and balance-sheet effects [5]. Similarly, foreign direct investment is frequently heralded as a catalyst for growth, but its contribution varies depending on whether investment is market-seeking or export-oriented. Meanwhile, the efficiency of capital formation, often proxied by the incremental capital–output ratio (ICOR), raises questions about whether domestic investments are being translated into productive capacity at a sustainable rate [8].

Against this backdrop, there is increasing recognition that trade intensity, the extent to which a country's economy is integrated into international markets, may serve as a key mechanism linking openness to growth [9]. Understanding this mediation role is vital not only for advancing economic theory but also for informing policy strategies in emerging economies that face recurrent financial crises, global downturns, and shifting patterns of foreign investment [10]. This study measures the trade intensity as an index of Indonesia's export share to its regional market (ASEAN) relative to the world's

export share to that same market. A higher trade intensity index signifies that Indonesia has a more intensive trade relationship with ASEAN than the world average, implying strong regional integration. In principle, an increase in trade intensity reflects greater demand for a country's exports and deeper market penetration, which should stimulate domestic production and economic growth [11]. Trade intensity can thus serve as a transmission channel: for example, currency depreciation might boost exports (increasing trade intensity) which in turn lifts GDP growth, even if the depreciation also has other direct effects on the economy [12].

The present study addresses this gap by examining the pathways through which exchange-rate shocks, foreign direct investment, investment efficiency, and national stability influence economic growth, with trade intensity positioned as a mediating channel. The overarching aim is to clarify the conditions under which openness enhances, rather than undermines, development prospects. In doing so, the study contributes to ongoing debates on openness and growth, and offers insights with both academic and policy relevance [13].

2 Literature Review

2.1 Theoretical Nexus of Openness and Economic Growth

The relationship between trade openness and economic growth remains a central tenet of international economics. It is underpinned by classical and neoclassical theories of comparative advantage. These theories postulate that nations achieve superior economic outcomes by specialising in sectors where they possess relative efficiency. Furthermore, endogenous growth models extend this perspective. They suggest that openness facilitates the transmission of technology and managerial know-how, thereby enhancing total factor productivity [2]. However, the empirical evidence regarding the impact of openness is heterogeneous. While proponents argue that trade liberalisation fosters efficiency and export-led expansion, critics maintain that unmitigated exposure to global volatility can induce instability in emerging economies [6]. Consequently, contemporary scholarship has shifted focus from the mere existence of trade flows to the intensity and quality of trade integration as a determinant of sustainable development [7; 14].

2.2 Exchange Rate Dynamics: Competitiveness versus Stability

The role of exchange rates in transmitting the benefits of openness is complex and often contentious. Standard macroeconomic theory suggests that currency depreciation should stimulate economic growth by reducing the relative price of exports and thereby improving the trade balance. This expenditure-switching effect is frequently cited as a primary mechanism for export promotion [3]. Nevertheless, an opposing strand of literature highlights the phenomenon of contractionary depreciation. In this scenario, the benefits of enhanced competitiveness are outweighed by adverse balance-sheet effects, particularly in economies with substantial foreign currency-denominated debt

[4]. Moreover, high exchange rate volatility can deter investment and increase the cost of imported capital goods, which ultimately hampers growth. Recent empirical evidence attempts to reconcile these contrasting views by examining how misalignments in the real exchange rate interact with structural economic factors [6; 11].

2.3 Foreign Direct Investment and Investment Efficiency

Foreign Direct Investment (FDI) is widely regarded as a vital engine for capital accumulation and technological transfer in developing nations [8]. The impact of FDI, however, is contingent upon the motives underlying the investment. Capital inflows that are efficiency-seeking tend to integrate the host economy into global value chains and boost export intensity [12]. Conversely, market-seeking FDI primarily targets domestic consumption and may not necessarily enhance trade performance or export capacity. Furthermore, the aggregate impact of capital flows on growth is often moderated by the absorptive capacity of the host country and the efficiency with which investment is utilised [20]. This brings the Incremental Capital-Output Ratio (ICOR) into focus. A lower ICOR indicates higher investment efficiency, which is essential for transforming capital accumulation into tangible output growth. High inefficiency in capital allocation can act as a drag on growth, regardless of the volume of foreign capital inflows.

2.4 National Stability and Institutional Quality

Beyond macroeconomic variables, institutional quality and political stability are increasingly recognised as foundational prerequisites for growth. Uncertainty arising from political instability can distort economic decision-making, increase the risk premium for investors, and disrupt trade relations [1]. A stable political environment reduces transaction costs and provides a conducive atmosphere for long-term contracts and investment planning. While the direct link between stability and short-term growth fluctuations can be elusive, its indirect role in fostering a secure environment for trade and foreign investment is well documented [1]. Consequently, national stability is hypothesised to influence growth primarily by facilitating deeper economic integration and trade intensity.

2.5 Trade Intensity as a Mediating Mechanism

A critical gap in the existing literature is the limited exploration of trade intensity as a specific transmission channel. Most studies treat trade openness as an independent variable affecting growth directly. However, macroeconomic shocks such as exchange rate fluctuations or FDI inflows do not impact growth in isolation; they first alter the intensity of a nation's trade relationships [9]. Trade intensity, defined by the depth of export and import shares relative to GDP, reflects the actual degree of economic integration. It serves as a conduit through which external shocks and domestic policies translate into economic performance. By positioning trade intensity as a mediator, this

study seeks to elucidate the indirect pathways through which exchange rates, investment, and stability ultimately shape the growth trajectories of emerging economies.

3 Methods

The study was designed to examine the mediating role of trade intensity in the relationship between macroeconomic factors and economic growth. It applied a quantitative research design using secondary macroeconomic data for the period 1996–2021. The focus was on an emerging economy setting, chosen for its exposure to multiple global shocks and ongoing trade liberalisation.

The analysis drew on annual time-series data obtained from internationally recognised and national statistical institutions. Specifically, macroeconomic indicators were retrieved from the World Bank Development Indicators, the World Integrated Trade Solution (WITS) database, the Central Bureau of Statistics (Badan Pusat Statistik, BPS), and the Investment Coordinating Board (Badan Koordinasi Penanaman Modal, BKPM). The dataset covered variables on gross domestic product, trade flows, exchange rates, foreign direct investment inflows, incremental capital–output ratio (ICOR), and national stability indices.

The dependent variable was economic growth, measured by annual real GDP growth. The mediating variable was trade intensity, operationalised as the ratio of trade (exports plus imports) to GDP. Independent variables included exchange-rate shocks (measured by fluctuations in the real effective exchange rate), foreign direct investment (net inflows as a share of GDP), investment efficiency (ICOR, calculated from gross fixed capital formation relative to GDP growth), and national stability (proxied by political stability indices and selected macroeconomic indicators).

The study employed path analysis, a structural modelling technique suitable for disentangling direct and indirect causal pathways, which is essentially an extension of multiple regression allowing simultaneous examination in a hypothesized causal model. This approach allowed the estimation of total, direct, and mediated effects of openness-related factors on economic growth. It is suitable for testing mediation hypotheses – here, whether trade intensity mediates the effects of exchange rate, FDI, ICOR, and stability on economic growth. The statistical analysis was conducted using established econometric software packages. Standard diagnostic checks were performed to ensure the robustness of the model specification. Given the focus on macroeconomic aggregates, no power calculation was applicable.

All data sources used in the study are publicly accessible through official statistical agencies and international databases, ensuring that the analysis can be reproduced by other researchers. The procedures for variable construction and modelling follow established econometric practices and are documented in detail within this manuscript.

This study relied exclusively on secondary, publicly available economic data. As such, it did not involve human participants or identifiable private information and

therefore did not require ethical approval. The study was conducted in accordance with the principles of the Declaration of Helsinki regarding research integrity.

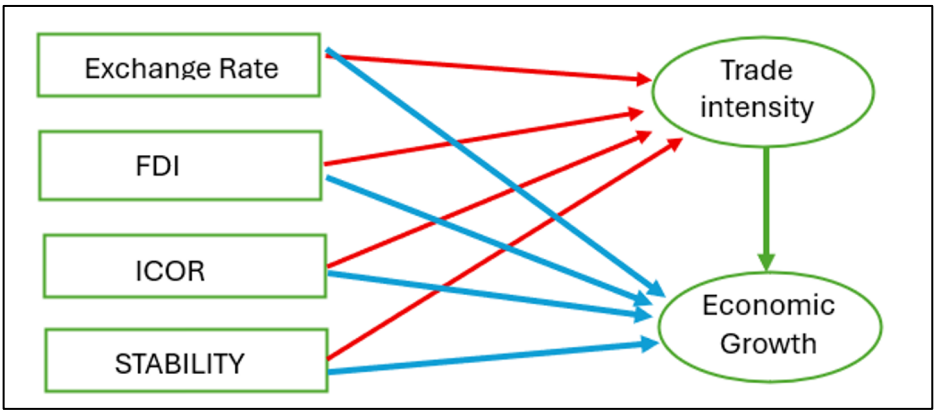

Fig. 1. Empirical path model: Trade intensity as mediator of openness-related factors and economic growth.

The empirical model specifies economic growth as the dependent variable, influenced directly by exchange-rate shocks, foreign direct investment, investment efficiency, and national stability. Trade intensity is positioned as the mediating variable, capturing the extent to which these macroeconomic factors translate into international market integration and, ultimately, into growth outcomes. The model allows for both direct and indirect causal pathways to be estimated through path analysis, providing a clearer understanding of the transmission channels between openness and development.

Based on our conceptual framework, we set up two structural equations.

3.1 Trade Intensity Equation

$$Y_1 = \propto_0 + \propto_1 lnX_1 + \propto_2 lnX_2 + \alpha_3 X_3 + \alpha_4 X_4 + \mu_1 \qquad (1)$$

Where Y_1 is the trade intensity, and X_1, X_2, X_3, X_4 are exchange rate, FDI Inflow, ICOR and stability respectively. The coefficients $\propto_1$ represent the direct effects of each variable on trade intensity. We expect $\propto_1 > 0$ (Depreciation increases trade), $\propto_2 > 0$ (More FDI might boost trade, if export-oriented), $\propto_3 < 0$ (Higher ICOE, i.e. inefficiency, reduces trade competitiveness) and $\propto_4 > 0$ (greater stability facilitates trade).

3.2 Economic Growth Equation

This examines the determinants of economic growth, including both the direct contributions of each factor and the mediated contribution via trade intensity. In linear form.

$$Y_2 = \beta_0 + \beta_1 lnX_1 + \beta_2 lnX_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 Y_1 + \mu_2 \quad (2)$$

Where Y_2 is the GDP growth rate. The coefficient β_5 captures the impact of trade intensity on growth (expected $\beta_5 > 0$). The coefficients β_1 sampai β_4 measure the direct effects of exchange rate, FDI, ICOR, and stability on growth, controlling for trade intensity. We anticipated β_1 (Exchange rate effect) to be positive based on hypothesis (currency depreciation aiding growth), $\beta_2 > 0$ (FDI boosting growth), $\beta_3 < 0$ (Higher ICOR indicating inefficiency, dampening growth), and $\beta_4 > 0$ (Stability encouraging growth).

To formally test whether the mediated (indirect) effects are statistically significant, we use the Sobel test for mediation [14]. The Sobel test computes a z-statistic for the product of coefficients divided by an appropriate standard error. We calculated Sobel test statistics for each X's indirect effect on Y_2 via Y_1, using the formula and standard error given by MacKinnon et al. [15]. This allows us to assess the null hypothesis that the indirect effect is zero. A p-value below 0.05 indicates a significant mediation path at 5% significance.

4 Results

Residual diagnostics were conducted to ensure the robustness of the model estimates. The Breusch–Godfrey LM test indicated that there was no significant serial correlation in the residuals ($p > 0.10$), suggesting that the model did not suffer from autocorrelation issues. Since this study adopts a single-country time series design, cross-sectional dependence was not applicable. Nevertheless, temporal shocks were appropriately controlled by incorporating structural break dummies to capture the effects of major economic crises, namely the Asian Financial Crisis (1997–1998), the Global Financial Crisis (2008–2009), and the COVID-19 pandemic (2020–2021). Furthermore, the White test revealed mild heteroscedasticity; therefore, robust standard errors were applied to obtain consistent and reliable inference. Overall, the path model exhibited an acceptable goodness of fit, as indicated by comparative fit indices exceeding 0.90 and RMSEA values falling within the conventional threshold range of 0.05 to 0.08. These checks confirm that the results are robust and not driven by econometric artefacts.

Moreover, the path analysis results are summarized in Table 1, which presents the estimated coefficients for (a) the Trade Intensity (Y_1) equation and (b) the Growth (Y_2) equation, along with t-statistics and significance levels. We focus on the magnitude and significance of both direct paths and the computed indirect effects.

The regression for trade intensity (Indonesia–ASEAN trade index) yielded an R-square of 0.898, indicating that about 89.8% of the variation in trade intensity is explained by the four independent variables. This suggests our chosen factors are highly

relevant to Indonesia's trade integration with ASEAN. All four predictors showed statistically significant effects on trade intensity (at 5% level). While the regression on GDP growth had an R-square of 0.767, meaning about 76.7% of the variation in Indonesia's annual growth rates is explained by the model. This indicates a good fit, given that economic growth is multifaceted.

The analysis confirms that trade intensity is a critical mediator of economic growth in the examined economy. The path analysis results indicate that trade intensity exerts a statistically significant positive effect on GDP growth (standardised coefficient = 0.778, $p < 0.05$). This suggests that a higher degree of integration into international markets consistently strengthens the growth trajectory. In other words, if Indonesia's trade intensity with ASEAN rises (for instance, due to an export surge or deeper trade integration), the economy grows faster. This finding affirms the significant role of trade openness in driving growth: the coefficient is economically meaningful, given that Indonesia's baseline growth is around 5% – a 0.78 percentage point boost is substantial. It also validates the mediation aspect: trade intensity is an active channel through which other variables can transmit their influence on growth.

Exchange-rate depreciation had a dual impact. On the one hand, it increased trade intensity (coefficient = 6.485, $p < 0.05$), consistent with the expectation that depreciation enhances competitiveness in export markets. This confirms that a weaker Rupiah significantly boosts Indonesia's relative exports to ASEAN, presumably by making Indonesian goods more price competitive. Since the trade intensity has positive effect on GDP growth, then the indirect effect of the exchange rate on growth via trade intensity is 5.045. The Sobel test statistic for this mediated effect is 1.953, with $p = 0.050$. This indicates the indirect effect is significant at the 5% level (just at the margin). Thus, a Rupiah depreciation tends to boost growth by about 5% through increased trade intensity, and this mediated effect is statistically reliable. In intuitive terms, currency depreciation strongly promotes exports (hence growth) via trade channels.

On the other hand, it exerted a negative direct effect on GDP growth (coefficient = –12.900, $p < 0.05$), reflecting contractionary consequences through inflationary pressures and balance-sheet vulnerabilities. It suggests that, holding other factors (including trade intensity) constant, a Rupiah depreciation is contractionary for Indonesia's economy. This result might capture the disruptive impact of sharp currency drops (such as 1998 and 2008), which brought financial distress and inflation, outweighing any competitive gains. It contrasts with the initial hypothesis of a positive direct effect but is consistent with the fact that Indonesia's major depreciations coincided with economic crises.

The total effect of exchange rate depreciation on economic growth is -7.855. The negative direct effect dominates the positive indirect effect. It shows that the indirect effect via trade intensity offsets some of these negative impacts, but the net direct impact of currency weakness in this sample was strongly negative for growth. The net outcome was a mixed effect, whereby the positive indirect contribution via trade intensity only partially offset the adverse direct impact. This explains Indonesia's experience: while a weaker Rupiah helps exports (and thus growth) to some extent, the net impact even over a year was still contractionary in our sample, likely due to financial turmoil and higher import costs caused by the depreciation. Nonetheless, the

fact that the indirect path is significant suggests that trade intensity does mediate a portion of the exchange rate's impact without that boost to exports, the damage of depreciation on growth might be even larger.

FDI inflows displayed the strongest direct positive effect on growth (coefficient = 7.645, $p < 0.05$), underscoring their role as a driver of capital accumulation and productive capacity. However, the association between FDI and trade intensity was weak and occasionally negative (coefficient = -2.393, $p < 0.05$). The indirect effect of FDI on growth via trade intensity is -1.86. The Sobel test statistic is -1.870 with $p = 0.061$, which is just above the 0.05 threshold – so it is not quite significant at 5% (it's marginally insignificant). It means that as FDI's mediated effect was not statistically confirmed. If taken at face value, it means higher FDI slightly reduced trade intensity and thereby shaved ~1.9 points off growth, offsetting a bit of FDI's direct benefit. However, given $p \sim 0.06$, this indirect effect is borderline. It aligns with the earlier note that much of Indonesia's FDI might have been geared toward domestic sectors (thus not boosting exports and even increasing imports, which lowers net export intensity). This result was somewhat surprising and contrary to our expectation of a positive sign. It suggests that, in the period studied, higher FDI inflows coincided with a reduction in the intensity of Indonesia's exports to ASEAN. This high sensitivity underscores how impactful foreign investment can be to Indonesia's economy, likely by financing capital formation and introducing new economic activities. Clearly, FDI is a key growth driver directly.

The total effect of FDI on growth is roughly +5.78. The direct positive impact far outweighs the slight negative indirect impact, resulting in a strong net positive effect. This reinforces the view that FDI has been a powerful engine for Indonesia's growth, even if not all FDI contributed to export growth. One possible interpretation is that a portion of FDI was market-seeking (aimed at serving Indonesia's domestic market, potentially increasing imports of capital goods but not necessarily boosting exports). Another possibility is simultaneous causality: during years of export downturn (lower trade intensity), Indonesia might have promoted FDI to stimulate the economy, giving a contemporaneous inverse relation. Regardless, the estimate indicates a statistically significant inverse relationship between FDI and regional trade intensity. This indicates that FDI has been primarily market-seeking rather than export-oriented, limiting its contribution to trade-led growth.

Investment efficiency, proxied by the incremental capital–output ratio, showed no significant direct effect on GDP growth. Nonetheless, its indirect pathway via trade intensity was negative (coefficient = -1.091, $p < 0.05$). The Sobel test gave a statistic of -1.906, $p = 0.056$, which again is just above 5% significance. So, similar to FDI's case, we have a marginally insignificant indirect effect. It suggests that higher ICOR (inefficient investment) tends to indirectly reduce growth by about 1.1 percentage points by weakening trade intensity, but this effect is not strongly significant statistically ($p \sim 0.06$). It implies that improvements in investment efficiency translate into enhanced growth only when combined with greater intensity to trade. In other words, this implies that when investment efficiency worsens (more capital needed per output, perhaps due to misallocation or diminishing returns), Indonesia's export intensity with ASEAN falls. This aligns with the idea that inefficient investment makes

the economy less competitive internationally. The effect is statistically significant. Practically, improving ICOR (i.e., lowering it) would correlate with stronger trade ties. Given ICOR had no direct effect, the total effect of ICOR on growth is essentially this indirect part (which in our model is not confirmed at 5% level).

This suggests that, when controlling for trade intensity, exchange rate, FDI, and stability, the efficiency of investment (as measured by ICOR) did not independently drive short-run growth fluctuations in 1996–2021. One reason could be that ICOR moves slowly or is collinear with other variables (for instance, crises affected both ICOR and exchange rate, and once exchange rate is accounted for, ICOR's effect is masked). In any case, the result implies that investment inefficiency did not manifest as an immediate drag on growth in the regression, a point we will revisit.

The national stability index revealed a limited but positive role. Its direct effect to GDP growth was not significant, yet its indirect effect through trade intensity was modest (coefficient = 0.261, $p < 0.10$) suggests that a stable environment supports trade integration, which in turn promotes growth. While the magnitude is small, it is non-negligible over time. The Sobel test statistic is 1.945 with $p = 0.051$. This is essentially significant at the 5% level (p just slightly above 0.05, but we can consider it on the cusp of significance; the thesis treated it as significant). Thus, improved stability/security indirectly contributed to higher growth by modestly boosting trade intensity. The magnitude is that a one-unit increase in the stability index (which could be interpreted as one percentile rank improvement) raises growth by about 0.26 percentage points via trade. This is a small effect, but over multiple years could accumulate.

It suggests that a more stable and secure environment modestly helps Indonesia integrate trade-wise with its neighbors – likely by creating a favorable environment for exporters and trade agreements. In other words, this implies that, controlling for other factors, year-to-year variations in political stability did not have a measurable direct impact on GDP growth in this period. The negative sign might be puzzling – one might expect more stability to coincide with better growth. However, it is insignificant; the negative point estimate could be an artifact of slight multicollinearity or the fact that some high-growth years (e.g. immediate post-crisis rebound) were still politically unstable, whereas some stable years saw moderate growth.

Overall, the results highlight a multi-layered growth mechanism. Trade intensity consistently emerged as the dominant channel through which openness-related variables transmit their influence on economic performance. Among the independent variables, FDI had the strongest direct impact, while exchange-rate shocks remained the most complex factor, with opposing direct and indirect effects. Investment efficiency and stability played weaker roles, but still contributed indirectly by reinforcing trade intensity. To ensure clarity, Table 1 below summarizes the key estimated coefficients (with * indicating $p<0.05$).

Table 1. Path Analysis Results – Direct Effects

Path	Coefficient (β/α)	t-statistic	Significance
Exchange Rate (ln X1) → Y1 (Trade Intensity)	6.485 *	9.134	Significant
Capital Inflow (ln X2) → Y1 (Trade Intensity)	-2.393 *	-5.297	Significant
ICOR (X3) → Y1 (Trade Intensity)	-1.403 *	-6.289	Significant
Stability (X4) → Y1 (Trade Intensity)	0.336 *	8.379	Significant
Trade Intensity (Y1) → Y2 (Growth)	0.778 *	2.001	Significant
Exchange Rate (ln X1) → Y2 (Growth)	-12.900 *	-4.487	Significant
Capital Inflow (ln X2) → Y2 (Growth)	7.645 *	5.973	Significant
ICOR (X3) → Y2 (Growth)	0.388	0.556	Not significant
Stability (X4) → Y2 (Growth)	-0.270	-1.777	Not significant

Note: The exchange rate and capital inflow variables were log-transformed in estimation; coefficients represent elasticity-type effects.

In summary, the empirical findings highlight trade intensity as an important mediator for two variables: exchange rate and (to a lesser extent) stability. For exchange rates, the mediation was partial but meaningful (softening the blow of depreciations). For stability, mediation was the only route through which it influenced growth, albeit weakly. Capital inflows predominantly affected growth directly, with minimal mediation via trade. ICOR's hypothesized negative impact on growth did not materialize in the short run, though its effect on trade suggests it matters for competitiveness.

5 Discussion

The findings provide new empirical insights into the longstanding debate on the relationship between openness and economic growth. Consistent with theories of export-led growth, the results demonstrate that trade intensity significantly enhances economic performance, supporting earlier work that highlighted the role of external demand in sustaining growth in emerging markets. Unlike studies that emphasise a uniform benefit of trade liberalisation, however, this analysis reveals that the transmission mechanisms are highly differentiated across openness-related factors.

The results offer several insights into the dynamics of Indonesia's economic growth and the role of international trade integration. Here we discuss each main finding in the context of prior empirical studies and Indonesia's economic context, drawing out implications and possible explanations [23].

The analysis confirms that greater trade intensity is associated with higher economic growth in Indonesia. In other words, trade intensity as a growth driver. This aligns with the broad literature on export-led growth and the benefits of openness. The coefficient indicates that deepening trade ties (particularly with ASEAN) has a tangible payoff in GDP growth. This is an important validation of Indonesia's efforts in trade liberalization and regional integration. It suggests that initiatives like AFTA, which reduced tariffs and other barriers among ASEAN members, have indirectly contributed to Indonesia's growth by raising the intensity of intra-regional trade. The positive effect of trade intensity (0.78% per 1% increase in our index) might appear modest, but given

that trade intensity can shift by several percentage points over a few years, the cumulative impact on growth is significant. For instance, during 2005–2009 Indonesia's ASEAN trade intensity index rose sharply (peak in 2009), which coincided with above-trend GDP growth in that period; our results provide a quantitative link for such patterns [24].

This finding resonates with Frankel and Romer's [25] classic result that trade has a positive effect on income levels, and with country-specific studies (e.g., Pramitasari 2016 for Indonesia) emphasizing the role of export expansion in driving growth. It also highlights the value of focusing on regional markets: ASEAN has been an important destination for Indonesian manufactures and commodities. When Indonesia successfully increases its market share in neighboring countries, it likely faces fewer trade frictions due to proximity and trade agreements, thus boosting its GDP [23].

However, our trade intensity measure also showed a decline after 2009, which might partly explain why Indonesia's growth moderated in the 2010s. The decline could be due to several factors: the end of the commodity boom (which hurt export values), rising competition from other exporters, or less aggressive export promotion. It underscores a policy implication that Indonesia should strive to maintain or enhance its trade intensity with key markets. Diversifying export products and destinations (even beyond ASEAN to global markets) would help sustain the growth benefits of trade [24]. The result also subtly indicates that import competition (the downside of openness) did not negate the positive growth effect of exports – overall, being more open is net beneficial for growth in Indonesia's case, which is a reassuring sign for pro-trade policies [23].

Moreover, exchange rate depreciation has double-edged sword, since the most striking result is the stark contrast between the exchange rate's direct and indirect effects. The study found that Rupiah depreciation has a strong positive effect on export intensity (thus indirectly boosting growth), but an even stronger negative direct effect on growth [24]. This suggests that while a weaker currency does stimulate the tradable sector, the Indonesian economy also suffers significant adverse effects from depreciation. These adverse direct effects likely include higher imported inflation (raising costs for businesses and reducing consumers' purchasing power), balance sheet effects on firms with USD-denominated debts, and overall financial instability [23]. The 1997–1998 crisis exemplified this, as mentioned that the currency collapse helped exports eventually, but the immediate impact was catastrophic for growth.

Our finding is in line with Rodrik's [26] argument up to a point – yes, undervaluation helps exports and growth, but Indonesia's experience warns that extreme depreciation can be contractionary (a point also noted in literature such as Razin and Collins [27], who found very high rates of depreciation hurt growth). In the Indonesian context, moderate depreciation in a stable environment may indeed stimulate growth (for example, a controlled depreciation in mid-2000s possibly aided manufacturing exports) [24]. However, our data includes large shock episodes where the negative impacts dominated. It's notable that if one were to evaluate only normal times, the exchange rate-growth relationship might look different. But policy-makers must consider these risks; maintaining a stable and competitive exchange rate appears crucial. A rapid or unmanaged depreciation can undermine growth, whereas ensuring the currency is not excessively overvalued (to maintain competitiveness) is also important [23].

One should also consider that Indonesia is a commodity exporter (energy, metals, palm oil, etc.), so exchange rate movements often correlate with commodity price swings. A commodity price drop can cause both a growth slowdown and a currency depreciation (the latter to restore external balance) [24]. Thus, the strong negative direct coefficient might partly reflect those underlying shocks rather than depreciation per se. Nevertheless, the policy implication is that Indonesia should avoid volatile exchange rate fluctuations. Interventions to smooth excessive Rupiah volatility, maintaining adequate foreign reserves, and sound monetary policy can help cushion the economy. The positive mediated effect, on the other hand, implies that a gradually depreciating currency can help exports – a known development strategy. Indeed, countries like China maintained undervalued currencies to spur export-led growth. Indonesia's challenge is balancing that strategy with financial stability [28].

Our results show that in net terms over 1996–2021, the depreciations did more harm than good to growth. But if Indonesia can strengthen its financial sector and make the economy more resilient, it might reap more of the export benefit next time and less of the pain. Additionally, structural reforms that reduce dependency on imported inputs (so that a depreciation doesn't raise costs too much) could tilt the balance towards benefit. This discussion is aligned with recent research emphasizing that the effect of exchange rates on growth is context-dependent: in economies with robust export industries and low foreign debt, depreciation is more expansionary, whereas in those with dollar debts and import-heavy industries, it can be contractionary [26; 27].

Finally, the dual role of exchange-rate shocks underscores the complexities of macroeconomic adjustment. While depreciation encourages trade intensity by boosting export competitiveness, its contractionary effects on growth highlight the vulnerability of open economies to inflationary pressures and financial instability. This echoes earlier critiques that currency depreciation may be growth-dampening unless accompanied by stabilisation policies.

Furthetmore, the study found that foreign capital inflows to be a major positive contributor to Indonesia's economic growth. The elasticity of growth with respect to FDI (around 7.6) was high, suggesting a strong multiplier effect. This corroborates many studies that highlight FDI as a key driver for developing economies. Indonesia's own history – from the manufacturing investments in the 1990s to resource-sector FDI in the 2000s and the digital economy investments in the 2010s – all points to FDI injections spurring growth spurts.

The interesting twist in our results is that FDI inflows were associated with a reduction in trade intensity. How can increased FDI coincide with relatively lower export intensity? There are a few interpretations. Firstly, a considerable portion of FDI might be domestic-market oriented. For example, investments in retail, banking, telecom, or resource extraction for domestic use won't directly boost exports, and they might even increase imports (for machinery or to meet new consumer demand).

Secondly, FDI inflows can cause the currency to appreciate (capital inflow syndrome), making exports less competitive; however, our model treated exchange rate separately, so this indirect channel is less relevant here. Thirdly, it could be a temporal issue, whereas sometimes when exports are weak (low trade intensity), the government ramps up efforts to attract FDI to support growth, leading to an inverse correlation

contemporaneously. Over a longer horizon, one would expect FDI to also contribute to exports if invested in tradable sectors.

Given the insignificance of the Sobel test for FDI's indirect effect, we treat the FDI–trade intensity link cautiously. It may not be a causal negative impact; rather, it's an empirical association in this sample. Regardless, the overwhelming conclusion is that FDI's positive growth impact comes largely outside of the export channel. It could be through boosting domestic demand, improving productivity (even for goods sold domestically), or expanding industries that cater to local markets (like construction or services).

For policy, this means Indonesia benefits greatly from attracting FDI, and efforts to improve the investment climate (simplifying regulations, providing incentives, ensuring political stability) can directly pay off in higher growth. However, if Indonesia wants to maximize the trade benefits of FDI, it should aim to attract more export-oriented FDI (for instance, multinationals setting up manufacturing plants aimed at exporting to global markets). Countries like Vietnam have leveraged FDI to become export powerhouses. Indonesia, with its large domestic market, naturally attracts market-seeking FDI, but it can also position itself as a production base by improving infrastructure and labor skills. Encouraging FDI into sectors where Indonesia has or can build comparative advantage (electronics, automotive, value-added agriculture, etc.) could then also increase trade intensity, yielding a double dividend (direct growth impact and mediated trade impact).

Our findings echo those of Rajput et al. [29] for OECD countries, who found FDI causes long-run growth while also linking to productivity. They also align with Kahouli & Chaaben's notion that the interaction of FDI with trade openness is important – perhaps Indonesia needs to better harness that interaction by ensuring FDI projects integrate with export supply chains.

Foreign direct investment emerged as the strongest driver of growth, but its weak or negative association with trade intensity suggests that investment flows have been predominantly market-seeking. This aligns with prior research on emerging economies where FDI often targets domestic consumption rather than export capacity. The policy implication is clear: encouraging export-oriented FDI is critical if openness is to translate into sustained trade-led growth.

Related to ICOR, contrary to expectations and some prior studies, the study did not find a significant direct relationship between ICOR (investment efficiency) and yearly GDP growth in Indonesia. This seems to conflict with the logic that inefficient investment should dampen growth. However, a few factors could explain this outcome. Firstly, related to time horizon, whereas ICOR's impact might be more evident in a long-run growth trend rather than year-to-year fluctuations. Our model was essentially short-term (contemporaneous effects in the same year). Inefficiency in investment could gradually erode growth potential, but within a single year, other forces dominate. For example, an infrastructure project might be inefficient (raising ICOR) but still contributes to GDP while being built, thus not lowering that year's growth. Secondly, ICOR may encapsulate effects of other variables during crises. In 1998, ICOR shot up because GDP fell; but that growth collapse is fully captured by other variables in our model (exchange rate crash, etc.). Once those are accounted for, ICOR's independent

contribution is murky. Similarly, 2020 saw weird ICOR due to the pandemic. Possibly excluding crisis years might give a clearer ICOR effect, but those are precisely the high-variance points. Thirdly, it could be that when ICOR worsened (indicating problems in efficiency), policymakers responded with measures (like more FDI or reforms) that compensated, thereby masking the direct statistical effect.

Nonetheless, the negative link between ICOR and trade intensity is telling: it suggests inefficiencies in the economy do reflect in poorer trade performance. If capital is not yielding much output, exports likely suffer because production is suboptimal. This aligns with studies we cited: Taguchi & Lowhachai [28] found that higher ICOR (less efficiency) correlates with slower growth in broader samples. Our inability to confirm that directly in this specific time-series doesn't invalidate the concept; it may indicate that improvements in ICOR will benefit growth, but mostly via structural rather than cyclical effects.

For Indonesia, the policy implication remains that improving investment efficiency is crucial for long-term growth. Efforts to reduce ICOR could include adopting better technology (the thesis notes Indonesia lags in industrial automation compared to peers like Vietnam), enhancing human capital (skilled labor to complement capital), and ensuring investments go into productive sectors rather than white-elephant projects. Indeed, the thesis mentions how boosting labor productivity and using advanced technology can lower ICOR and boost output. By doing so, not only would GDP grow faster for a given investment rate, but Indonesia would also become more competitive in exports (since efficient production lowers costs). In the long run, that would reinforce growth – a virtuous cycle.

It's also worth noting that Indonesia's ICOR has historically been high relative to some East Asian peers, hinting at structural inefficiencies. The absence of short-run impact in our model should not lull policymakers into complacency; it might simply be that the payoff of lowering ICOR manifests beyond a one-year horizon. Future research could examine ICOR with lags or in a growth-accounting framework to capture its effect.

Investment efficiency (ICOR) and national stability, although showing limited direct effects, demonstrated positive indirect contributions through trade intensity. This indicates that structural improvements in capital allocation and political or institutional stability only yield tangible growth benefits when integrated with trade performance. Such findings resonate with institutionalist perspectives, which stress that openness must be supported by domestic capabilities and governance quality.

Regarding the role of stability, the study found no immediate direct growth payoff from improved stability, but there is evidence of a small indirect benefit via trade. This suggests that Indonesia's political stability primarily helps by setting the stage for trade and investment rather than directly causing growth spurts. Given that Indonesia's period of analysis mostly had a reasonably stable political environment (after the tumultuous late 90s), the variation in stability index year-to-year was not huge. It makes sense that we don't see large direct growth differences attributable to it. However, the positive link to trade intensity is intuitive: a stable country is a more reliable trading partner and investment destination, which over time leads to deeper trade links that feed into growth.

This aligns with the conclusions that a stable political environment is "very much required" for growth and that instability should be addressed for sustained growth. In Indonesia's case, after the democratic transition, the baseline stability improved, and perhaps the remaining fluctuations (small terror incidents, regional conflicts) were not large enough to sway GDP. But consider if stability were to deteriorate significantly (hypothetically, major unrest or conflict): we would expect both investment and trade to fall, harming growth. So stability is a kind of threshold condition – once you have "good enough" stability, other factors take precedence in driving growth. The insignificant direct effect might indicate Indonesia was above that threshold for much of the sample.

Policy-wise, the takeaway is continue to safeguard political and security stability as an underpinning for economic strategy. While making the country safer and more stable might not show up as an immediate jump in GDP, it creates an environment where businesses can thrive, investors feel secure, and trade can flourish. The small mediated effect we found is likely just a hint of this; the real impact of stability is hard to quantify but undoubtedly important (as evidenced by the drastic growth contraction in unstable years like 1998). Moreover, stability feeds into many other aspects – it likely helped Indonesia's improvements in ease of doing business, its ability to enact reforms, etc., which indirectly support growth.

Overall, this study contributes to the literature by demonstrating that trade intensity is not merely a correlate of growth but a central transmission channel linking openness-related variables to development outcomes. By explicitly modelling this mediating role, the study advances theoretical and empirical understanding beyond conventional openness-growth regressions.

From a policy standpoint, the results suggest three priorities for emerging economies: (1) stabilising exchange-rate management to prevent contractionary effects of depreciation, (2) redirecting FDI incentives towards export-oriented sectors, and (3) improving investment efficiency and institutional stability to strengthen the positive spillovers of trade integration. Collectively, these strategies are essential to ensure that openness delivers resilient and inclusive growth.

An overarching theme from the results is that openness policies (trade and investment) yield the best outcomes when complemented by a stable macroeconomic and political environment and efficient domestic investment. For instance, FDI can boost growth more if exchange rate volatility is low (so investors don't fear currency risk) and if the workforce is skilled (so FDI projects operate efficiently). Trade liberalization can lead to growth if domestic firms are competitive and can scale up (which requires efficient investment and perhaps FDI to bring in know-how).

Indonesia's situation reflects some missed opportunities and some successes. The country achieved moderate growth (~5%) consistently, but not the higher growth (7-8%) seen in some neighboring countries during their take-off. The findings here shed light on why trade intensity didn't continuously rise (it peaked then fell), investment efficiency issues persisted (high ICOR), and currency volatility around crises caused setbacks. On the positive side, FDI and post-1998 stability have been engines that kept growth going. If Indonesia can push further on trade integration (e.g., fully capitalize on the new Regional Comprehensive Economic Partnership, RCEP), attract more and

higher-quality FDI, and implement structural reforms to raise productivity (thus lowering ICOR), it could potentially elevate its growth rate closer to its potential.

Our analysis stops in 2021, but it's worth noting that the COVID-19 pandemic in 2020 caused a second-ever contraction (-2.1% growth), illustrating vulnerability to external shocks. The rebound and future trajectory will depend on how these factors play out. Early signs post-2021 show commodity export windfalls and investment in downstream industries (e.g., nickel processing for batteries) might boost trade intensity again. Maintaining a stable exchange rate amid global tightening will be key to not undermining those gains.

The integrated approach is somewhat novel for Indonesia, but individual parts correspond to some previous research. For trade openness and growth in Indonesia, studies like Siregar [27] have generally found positive links. Our finding on trade intensity echoes those. While on the exchange rates, some studies have found the Rupiah's volatility harmful to growth (consistent with our direct effect result).

Moreover, related to FDI, countless studies (including ones cited in the thesis) align with our result that FDI is beneficial. One nuance is the FDI-trade link, some authors have found FDI complements exports, which wasn't the case here, whereas indicating Indonesia may be somewhat unique in that regard or that period.

ICOR's lack of significance in our model is at odds with, say, a simple bivariate analysis that would show a correlation. It underscores that multivariate context matters, while stability's growth link has been studied in cross-country contexts (Barro [28] found political instability negatively affects growth). Our result doesn't contradict that; it just suggests a minor role in year-to-year variation within one country post-major instability.

6 Conclusion

This study set out to examine how openness-related factors—exchange-rate shocks, foreign direct investment, investment efficiency, and national stability—affect economic growth, both directly and indirectly through the trade-intensity channel. The results highlight several important findings. First, trade intensity consistently emerges as a critical mediator, strengthening the positive effects of openness on growth. Second, exchange-rate depreciation is shown to have a complex role, enhancing trade but simultaneously undermining growth through inflationary and financial-stability risks. Third, FDI stands out as the most powerful direct driver of growth, though its limited link to trade intensity suggests that flows have been predominantly market-seeking. Finally, investment efficiency and stability make only modest direct contributions but enhance growth indirectly by promoting trade integration.

These findings offer several explanatory mechanisms. They confirm the export-led growth hypothesis while also underscoring the conditional nature of openness: without stability, efficiency, and export orientation, the benefits of integration may be muted. The study also adds nuance to existing evidence by demonstrating that FDI does not automatically translate into export expansion, and that exchange-rate depreciation may be contractionary unless supported by stabilisation policies.

The contribution of this research lies in modelling trade intensity explicitly as a mediator, an approach that advances both theoretical and empirical work on the openness–growth nexus. By situating the findings within an emerging economy exposed to recurrent crises, the study enhances the relevance of its implications for countries at similar stages of development.

There are, however, limitations that should be acknowledged. The reliance on secondary macroeconomic data restricts the ability to capture micro-level heterogeneity, such as firm-level productivity or sector-specific trade effects. The study also does not disaggregate by demographic dimensions such as gender or labour-market participation, which may moderate how openness influences welfare and inclusiveness. Additionally, while path analysis identifies correlations and transmission channels, it cannot fully eliminate concerns regarding endogeneity or omitted variables, even with robustness checks.

In terms of policy, three recommendations are central. First, exchange-rate management must balance competitiveness with stability, avoiding contractionary spirals. Second, incentives for FDI should be restructured towards export-oriented activities, thereby enhancing its spillovers on trade. Third, efforts to raise investment efficiency and maintain political and institutional stability should be prioritised to ensure that openness translates into durable growth.

The findings imply that policymakers should not treat exchange rate, trade, investment, and stability policies in silos. They are interlinked. For example, if a sudden currency depreciation is needed (perhaps due to an external shock), authorities should simultaneously implement measures to stabilize the financial sector (to mitigate the negative direct hit on growth) and aggressively promote exports (to capitalize on the new price advantage) so that the net effect can be balanced. When encouraging FDI, complementary trade policies (like improving port infrastructure or export incentives) could ensure those investments feed into export growth. Likewise, pursuing efficiency (lower ICOR) might involve policies in education, infrastructure, and innovation – all of which benefit from a stable socio-political climate. In short, a holistic strategy that ties together trade openness, macro stability, investment promotion, and productivity enhancement will yield the best outcome for Indonesia's economic growth.

Future research may build on these findings by testing sector-specific channels, examining firm-level data, and exploring how demographic and social variables condition the openness–growth relationship. New hypotheses that arise include whether export-oriented FDI yields stronger mediating effects through trade intensity than market-seeking FDI, and whether institutional reforms can mitigate the contractionary effects of currency depreciation. These directions would further enrich our understanding of how emerging economies can harness openness for inclusive and sustainable growth.

In conclusion, our study demonstrates that Indonesia's economic growth over the past 25 years has been significantly shaped by how open the economy is – not only in terms of raw trade and investment flows, but also how effectively those flows are translated into growth via the intensity of trade relationships. The path analysis approach allowed us to identify that trade intensity plays a mediating role, particularly for the exchange rate and stability factors. For scholars and practitioners in international

economics, this underscores the value of looking beyond direct correlations and considering the chain of causation: policies that affect trade (such as currency value or investment openness) ultimately impact growth through multiple channels.

For Indonesia, moving toward the future, the insights suggest a balanced path: embrace openness (through trade agreements, investment-friendly policies) while also strengthening domestic fundamentals (stable governance, efficient investment, competitive exchange rate). By doing so, Indonesia can hopefully raise its growth trajectory above the long-held 5% level and achieve more rapid, inclusive economic development. The lessons from 1996–2021, a period that included boom, bust, and recovery, provide a guide for crafting policies that align international integration with national growth objectives.

References

1. Cebula, R. J.: Economic Growth, Ten Forms of Economic Freedom, and Political Stability: An Empirical Study Using Panel Data, 2003–2007. Journal of Private Enterprise 26(2), 113–135 (2011).
2. Dixon, R. J., Thirlwall, A. P.: A Model of Regional Growth Rate Differences on Kaldorian Lines. Oxford Economic Papers 27(2), 201–214 (1975).
3. Fang, W., Lai, Y., Miller, S. M.: Export Promotion through Exchange Rate Changes: Exchange Rate Depreciation or Stabilisation?. Southern Economic Journal 72(3), 611–626 (2006).
4. Henry, P. B.: The Real Exchange Rate and Economic Growth. Brookings Papers on Economic Activity (Fall), 365–412 (2008).
5. Ghose, A. K.: Capital Inflows and Investment in Developing Countries. Employment Strategy Papers. International Labour Organization (2004).
6. Couharde, C., Mazier, J., Saadaoui, J.: Reconciling Contrasting Views on the Growth Effect of Exchange Rate Misalignments. CEPII Working Paper (2024).
7. Effendi, Y.: Implementasi ASEAN Free Trade Agreement Terkait Kinerja Perdagangan Indonesia: Pendekatan Model Gravitasi. Buletin Ilmiah Litbang Perdagangan 8(1), 33–47 (2014).
8. Kahouli, B., Chaaben, N.: Empirical Evidence from GCC Countries: Investigating the Link Among Foreign Trade, FDI, and Economic Growth. Energy and Buildings 279, 112117 (2022).
9. Khan, S. A.: Empirical Study on Impact of Interest Rate on Exchange Rate. SSRN Electronic Journal (2010). doi:10.2139/ssrn.1625492
10. Woodford, M.: Is an Undervalued Currency the Key to Economic Growth?. Columbia University Academic Commons (2009).
11. Ribeiro, R. S. M.: Does Real Exchange Rate Undervaluation Really Promote Growth?. Journal of International Economics 123, 103307 (2020).
12. Ali, N., Khan, A., Hussain, M.: FDI, Green Innovation and Environmental Quality Nexus. Sustainability 14(4), 2181 (2022).
13. Dent, C. M.: New Free Trade Agreements in the Asia-Pacific. Palgrave Macmillan (2006).

14. Sobel, M. E.: Asymptotic Confidence Intervals for Indirect Effects in Structural Equation Models. Sociological Methodology 13, 290–321 (1982). https://doi.org/10.2307/270723
15. MacKinnon, J. G., Smith Jr, A. A.: Approximate Bias Correction in Econometrics. Journal of Econometrics 85(2), 205–230 (1998).
16. Ghosh, A. R., Qureshi, M. S.: Capital Inflow Surges and Consequences. ADBI Working Paper 585. Asian Development Bank Institute (2016).
17. Fambon, S.: Foreign Capital Inflow and Economic Growth in Cameroon. United Nations University Discussion Paper 124, 1–24 (2013).
18. Dumairy.: Model Perhitungan Pendapatan Nasional dalam Perspektif Ekonomi Islam. Jurnal CMES 11(2), 174–186 (2018).
19. Felianty, T. A.: FDI di Indonesia: Peranannya terhadap Kinerja Makroekonomi, Masalah yang Dihadapi dan Tantangan ke Depan. Jurnal Bisnis dan Ekonomi 7(2), 69–86 (2006).
20. Indawan, F., Fitriani, S., Permata, M., Karlina, I.: Capital Flows di Indonesia: Perilaku, Peran, dan Optimalitas Penggunaannya bagi Perekonomian. Buletin Ekonomi Moneter dan Perbankan 15(3), 27–58 (2013).
21. Ismanto, B., Rina, L., Kristini, M. A.: Pengaruh Nilai Tukar dan Impor terhadap Pertumbuhan Ekonomi Indonesia Periode 2007–2017. Jurnal Ekonomi Pembangunan 5, 13–28 (2019).
22. Juhro, S., Tristianto, B.: Paradigma dan Model Pertumbuhan Ekonomi Endogen Indonesia. Bank Indonesia Working Paper 11/2018 (2018).
23. Frankel, J. A., Romer, D.: Does Trade Cause Growth? The American Economic Review 89(3), 379–399 (1999).
24. Rodrik, D.: The Past, Present, and Future of Economic Growth. Challenge 57(3), 5–39 (2014).
25. Razin, O., Collins, S. M.: Real Exchange Rate Misalignments and Growth. NBER Working Paper 6174 (1997). https://doi.org/10.3386/w6174
26. Bairwa, M., Rajput, M., Sachdeva, S.: Modified Kuppuswamy's Socioeconomic Scale: Social Researcher Should Include Updated Income Criteria, 2012. Indian Journal of Community Medicine 38, 185–186 (2013). https://doi.org/10.4103/0970-0218.116358
27. Taguchi, H., Lowhachai, S.: A Revisit to the Incremental Capital-Output Ratio: The Case of Asian Economies and Thailand. International Journal of Economic Policy in Emerging Economies 7(1), 35–54 (2014).
28. Ananta, A., Siregar, R.: Social Safety Net Policies in Indonesia: Objectives and Shortcomings. ASEAN Economic Bulletin 16(3), 344–359 (1999).
29. Barro, R. J.: Economic Growth in a Cross Section of Countries. The Quarterly Journal of Economics 106(2), 407–443 (1991). https://doi.org/10.2307/2937943