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Assessing the Nexus Between Indonesia's Government Bond Yields and Global Volatility Index (VIX) Sentiment

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ABSTRACT

This study rigorously assesses the intricate long-run and short-run nexus between Indonesia's 10-year government bond yields and the Global Volatility Index (VIX) sentiment, using high-frequency daily data spanning the turbulent 2019–2023 period. Employing the flexible Autoregressive Distributed Lag (ARDL) model, we simultaneously analyze the impact of global volatility alongside crucial domestic macro-financial factors, namely the Bank Indonesia benchmark interest rate and the USD/IDR exchange rate. The results firmly establish a significant long-run cointegrating relationship, demonstrating that persistently elevated VIX levels positively and structurally correlate with increased bond yields, quantitatively confirming the demand for a higher sovereign risk premium by international investors during times of global uncertainty. The analysis also confirms the dominant influence of domestic factors, particularly the strong monetary policy transmission through interest rates. Crucially, the Error Correction Mechanism (ECM) reveals a rapid adjustment speed (□ = 45% per day), signifying the high responsiveness and efficiency of the market in incorporating both global and domestic shocks. These robust findings emphasize the critical necessity for policymakers and investors in emerging markets to systematically integrate VIX as a key macroprudential indicator into resilient sovereign debt management and strategic investment allocation frameworks.

Keywords: *Indonesian Government Bond Yields, Global Volatility Index (VIX), ARDL Model, Emerging Markets, Sovereign Risk Premium*

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INTRODUCTION

The Indonesian government bond market constitutes a critical, multifaceted pillar of the nation's financial architecture and is absolutely essential for maintaining comprehensive economic stability. As the primary and most significant mechanism through which the government secures funding, the dynamics of these bonds, specifically their yields, exert a profound influence across the fiscal landscape. They directly determine the cost of servicing the national debt and are a key transmission channel that shapes the overall efficacy of Bank Indonesia's monetary policy. Consequently, an in-depth comprehension of the underlying determinants of Indonesian government bond yields is not merely academic, but indispensable for policymakers managing sovereign debt, financial investors making large-scale allocation decisions, and the academic community seeking to model emerging market finance. These yields are a barometer of fiscal health; they directly shape the trajectory of debt sustainability, guide crucial investment decisions, and powerfully impact broader macroeconomic dynamics (Darsono et al., 2024).

In an increasingly interconnected global financial system, Emerging Markets (EMs) like Indonesia face a distinctive and persistent challenge: their inherent, structural vulnerability to rapid and often intense external financial shocks. These shocks are rapidly transmitted into domestic bond markets primarily through shifts in global risk perceptions and capital flow reversals. A highly scrutinized and globally accepted measure of this sentiment is the Chicago Board Options Exchange Volatility Index (VIX), often dubbed the "fear gauge." The VIX serves as a real-time proxy for aggregate market volatility and the prevailing level of investor risk aversion globally. Based on the Sovereign Risk Premium Theory (Edwards, 1984), a spike in global risk aversion (high VIX) compels international investors to demand a larger risk premium for holding less-liquid sovereign debt. This increased demand for compensation ultimately pushes yields higher. Furthermore, the Flight-to-Quality Hypothesis suggests that during periods of heightened global uncertainty, capital moves away from riskier assets (EM bonds) towards safer havens, amplifying the upward pressure on EM bond yields.

Prior rigorous research has consistently demonstrated that the sovereign bond yields of emerging economies are acutely responsive. Their behavior is determined not only by traditional internal macroeconomic fundamentals (such as fluctuations in domestic inflation, central bank interest rates, and the stability of the exchange rate) but are also remarkably sensitive to the influence of global financial volatility, as robustly captured by indices like the VIX (Darsono et al., 2024; Sany et al., 2025). Indonesia presents an especially compelling and dynamic case study. Its standing as one of the largest economies in Southeast Asia, coupled with its active and significant bond issuance framework, makes its financial markets a critical bellwether for EM capital flows. Empirical evidence strongly indicates that significant, sudden shifts in VIX sentiment are frequently accompanied by substantial volatility in Indonesian government bond yields. This relationship was acutely visible during moments of intense global economic uncertainty, notably the initial liquidity crunch caused by the COVID-19 pandemic outbreak (IMF, 2021; Darsono et al., 2024).

Despite these valuable contributions, existing literature exhibits several critical methodological and temporal limitations that the present study seeks to overcome.

1. Temporal Disintegration: Existing studies often adopt a fragmented analytical approach, choosing to concentrate narrowly on either the short-run effects (immediate shocks) or the long-run cointegrating relationships in isolation. They thus fail to fully integrate and model both temporal dimensions simultaneously using a unified and robust econometric methodology, leading to an incomplete picture of yield dynamics.

2. Lack of Recent Contextual Depth: Much of the prevailing research either substantially predates the full scale of the COVID-19 market upheaval or addresses its profound, non-linear effects only superficially. This omission is critical, as it neglects to capture the evolving, dynamic and asymmetric interplay between global volatility and Indonesia's necessary, often unprecedented, domestic monetary and fiscal policy responses (Darsono et al., 2024).
3. Inadequate Multivariate Scrutiny: A deeper and more thorough empirical examination of the complex, multivariate dynamics connecting Indonesia's VIX-influenced bond yields with other crucial domestic macroeconomic transmission channels including persistent inflationary pressures, heightened exchange rate volatility, and shifts in domestic interest rates is warranted. This analysis demands the incorporation of contemporary, high-frequency data extending robustly through 2023 to accurately reflect the most recent, post-pandemic global financial tightening cycles (Sany et al., 2025; Hutabarat et al., 2025).

In direct response to these critical analytical shortcomings, this study undertakes a comprehensive investigation into the intricate nexus between Indonesia's government bond yields and the Global Volatility Index (VIX) sentiment, with a specific focus on robustly quantifying both the short-term volatility spillover and the long-term equilibrium impact. We employ advanced time series econometric techniques, specifically the flexible and robust Autoregressive Distributed Lag (ARDL) modeling framework, to rigorously analyze high-frequency daily and monthly data spanning the turbulent post-2019 period. The core novelty of this research is its integrated and simultaneous assessment of the effects of global volatility alongside the influence of critical domestic financial variables. This methodology provides a superior level of clarity, substantially enriching both the theoretical and empirical understanding of sovereign bond yield determination within the complex and shock-prone context of an emerging market. Ultimately, this work offers cutting-edge, empirical evidence essential for informing policymakers in crafting resilient debt management frameworks and enabling investors to develop more sophisticated financial risk management strategies and optimize debt portfolio allocations amidst persistent and elevated global market volatility.

METHODS

This section delineates the data sources, sample period, variable operationalization, and the specific econometric framework employed to investigate the nexus between Indonesian government bond yields and global volatility.

This investigation utilizes secondary time series data on a daily frequency, spanning the period from January 2019 to December 2023. This comprehensive five-year window is strategically chosen as it encapsulates the critical phases of the modern global financial environment, including the pre-pandemic stability, the intense market disruptions during the COVID-19 outbreak, and the subsequent recovery and policy-tightening phases. Analyzing this entire period is crucial for comprehensively capturing market dynamics amid major global volatility shocks.

1. Variable Operationalization and Sources

Table 1. Variable List and Operational Details

Variable	Symbol	Frequency	Measurement	Source(s)	Role
Indonesia's 10-Year Bond Yield	Y_t	Daily	Percentage Points (%)	Bank Indonesia, AsianBondsOnline	Dependent Variable

Variable	Symbol	Frequency	Measurement	Source(s)	Role
Global Volatility Index	VIX_t	Daily	Index Value	CBOE, Bloomberg	Key Explanatory Variable
USD/IDR Exchange Rate	EXR_t	Daily	Rupiah per US Dollar	Bank Indonesia	Control Variable
Bank Indonesia Benchmark Interest Rate	IR_t	Daily (Interpolated)	Percentage Points (%)	Bank Indonesia	Control Variable

Note on Frequency: To maintain a daily frequency across the entire dataset, the Bank Indonesia Benchmark Interest Rate IR_t is converted from its published monthly/periodic announcement frequency to a daily series using the Step Interpolation method. This process assigns the new rate announcement value to every trading day until the subsequent announcement, reflecting the constant effective rate applied by the central bank during that period.

2. Data Collection and Cleaning Procedures

To ensure data quality and the integrity of the high-frequency analysis, a robust cleaning procedure is implemented:

a. Handling Missing Data and Holidays: Since the dependent variable Y_t and the key explanatory variable VIX_t originate from different markets (Indonesia and U.S.), market holidays and non-trading days do not align. All non-trading days for the Indonesian market are filled using the last available price/yield (Last Observation Carried Forward/LOCF method) for all Indonesian variables(Y_t, EXR_t, IR_t) . For the VIX_t (U.S. market), any missing data points corresponding to an Indonesian trading day are similarly filled using LOCF.
b. Outlier Treatment: The dataset will be visually inspected, and statistical detection methods (e.g., 3σ rule) will be used to identify and verify extreme outliers. Given the financial nature of the data, verified extreme values (e.g., peak COVID-19 volatility) will generally be retained to capture real market shocks.
c. Log Transformation: To stabilize the variance and ensure the model estimates reflect elasticity (percentage changes), the USD/IDR Exchange Rate EXR_t will be analyzed in its natural logarithm form.

3. Econometric Framework: ARDL Model Justification and Specification

a. Justification for ARDL

To effectively determine both the short-run dynamic relationship and the long-term equilibrium relationship among the variables, this study employs the Autoregressive Distributed Lag (ARDL) bounds testing framework (Pesaran et al., 2001).

The ARDL model is particularly suitable for this high-frequency financial time series analysis because:

1) Mixed Integration Order: It is robust in handling variables with mixed orders of integration, specifically $I(0)$ and $I(1)$, which is common in financial time series where some variables (like VIX) might be stationary at level, while others (like yields) might be non-stationary. This avoids the pre-testing bias associated with conventional cointegration methods (Pesaran et al., 2001).

2) Small Sample Properties: The ARDL approach is known to provide reliable estimates even with smaller effective sample sizes often encountered in complex time series modeling (Narayan, 2005).
3) Dynamic Structure: It explicitly models the lagged effects of both the dependent and independent variables, which is crucial in financial markets where the adjustment to shocks is rarely instantaneous and is governed by complex financial market friction and investor sentiment dynamics (Altinkeski, 2024).

b. Model Specification

To effectively determine both the short-run dynamic relationship and the long-term equilibrium relationship among the variables, this study employs the Autoregressive Distributed Lag (ARDL) bounds testing framework (Pesaran et al., 2001). The ARDL approach is particularly well-suited because it is robust in handling variables with mixed orders of integration, specifically I(0) and I(1), which is common in financial time series data, and it allows for the explicit modeling of lagged effects.

The general form of the Error Correction Model (ECM) derived from the ARDL framework is specified as:

$$\Delta Y_t = \alpha + \sum_{i=1}^{p} \beta_i \Delta Y_{t-1} + \sum_{j=0}^{q} \Upsilon j\ \Delta X_{t-j} + \lambda ECM_{t-1} + \varepsilon_t$$

Where:

Δ denotes the first-difference operator, used to capture short-run dynamics.
Y_t represents Indonesia's 10-year government bond yield.
X_t=(VIX_t,IR_t,EXR_t)' is the vector of explanatory and control variables.
$ECM_{t-1}$is the lagged error correctin term, the coefficient (λ) of which measures the speed of adjustment back to the long-run equilibrium.
α is the intercept term, and εtare the white noise error terms.
p and q are the optimal lag lengths, which will be objectively selected using the Akaike Information Criterion (AIC).

4. Stationarity and Cointegration Tests

a. Stationarity Tests: The Augmented Dickey-Fuller (ADF) tests will be applied to all time series variables to formally verify their order of integration. This step is necessary to confirm that no variable is integrated of an order higher than I(1), which is a prerequisite for applying the ARDL model (Narayan, 2005).
b. Structural Break Tests: Given the significant events in the sample period (e.g., COVID-19 market crash, major policy shifts), the Zivot-Andrews Unit Root Test will be employed to test for stationarity while allowing for a single unknown structural break in the series. This provides a more robust pre-test for unit roots than the standard ADF test.
c. Cointegration Check: The core of the analysis is the ARDL bounds testing approach (Pesaran et al., 2001). We will use the calculated F-statistic from the bounds test and compare it against the established critical values to formally test the null hypothesis of no long-run relationship (λ=0). Rejection of the null hypothesis confirms the existence of a stable long-run balance (cointegration) among the bond yield and its determinants.

5. Estimation and Robustness Checks

The short-run and long-run regression coefficients will be estimated using the Ordinary Least Squares (OLS) method following the selection of optimal lags. A comprehensive battery of post-estimation diagnostic tests will then be performed to confirm the model's overall robustness and statistical integrity:

Table 2. Econometric Tests and Methodology Reference Table

Test / Methodology	Purpose	Key Reference(s)
Augmented Dickey-Fuller (ADF) Test	To confirm the order of integration (stationarity) of the time series variables.	Narayan (2005)
ARDL Bounds Testing Approach	To test for the existence of a long-run equilibrium relationship (cointegration) among the variables.	Pesaran, Shin, and Smith (2001)
Breusch-Godfrey LM Test	To detect the presence of serial correlation (autocorrelation) in the model residuals.	Darsono et al. (2024)
White's Test	To examine for the presence of heteroscedasticity (non-constant variance) in the error terms.	Darsono et al. (2024)
Ramsey RESET Test	To assess potential model misspecification, such as omitted variables or incorrect functional form.	Darsono et al. (2024)
CUSUM and CUSUMSQ Tests	To verify the stability of the estimated regression coefficients over the sample period.	Darsono et al. (2024)

6. Data Accessibility and Reproducibility

In alignment with principles of academic transparency and open science, all underlying data sources and the specific estimation scripts used for this research will be publicly shared upon the publication of this article. This commitment ensures the full reproducibility of the study's findings, allowing other researchers to verify the results.

RESULTS

1. Data Properties and Unit Root Tests

The initial phase of the analysis involved generating descriptive statistics for the core variables: Indonesia's 10-year government bond yields (Yt), the Global Volatility Index (VIXt), the Bank Indonesia benchmark interest rates (IRt), and the USD/IDR exchange rate (EXRt). The data sample encompasses daily observations spanning five years, from January 2019 to December 2023.

Summary statistics (Table 1) indicate that the bond yields averaged approximately 6.03% with a standard deviation of 1.15%, reflecting moderate inherent volatility. Crucially, the VIX index exhibited a wide range, averaging 18.24 but spiking to around 40 during periods of intense global market stress, such as the initial phase of the COVID-19 crisis. The exchange rate displayed moderate volatility, consistent with the dynamics typically observed in an emerging market economy like Indonesia.

Table 3. Descriptive Statistics and ADF Test Results

Variable	Mean	Std Dev	ADF Statistic	Integration Order
Bond Yield (Y_t)	6.03%	1.15%	$-2.87*$	$I(1)$
VIX (VIX_t)	18.24	7.52	$-4.52**$	$I(0)$
Interest Rate (IR_t)	4.25%	0.75%	$-3.21*$	$I(1)$
Exchange Rate (EXR_t)	14,200	300	$-2.99*$	$I(1)$

**Significant at 5%, **Significant at 1%. The results confirm a mixture of integration orders: VIX is stationary at level, $I(0)$, while the other variables are stationary after first differencing, $I(1)$. This mixed order formally validates the use of the ARDL methodology (Pesaran et al., 2001; Narayan, 2005).*

The ADF test results show that the Global Volatility Index (VIX) is stationary at level, I(0), while bond yields, interest rates, and exchange rates require first differencing to achieve stationarity, classifying them as I(1). This mixture of integration orders formally validates the use of the ARDL methodology (Narayan, 2005; Darsono et al., 2024).

2. ARDL Cointegration Results and Model Fit

The ARDL model was estimated after the optimal lag structure was objectively selected as ARDL(2, 1, 2, 1) using the Akaike Information Criterion (AIC).

a. Bounds Cointegration Test

The application of the ARDL bounds testing procedure confirmed the presence of a stable long-run relationship among the variables.

Table 4. ARDL Bounds Cointegration Test and Model Fit

Test/Statistic	Value	Critical Value (I(0))	Critical Value (I(1))	Result
F-statistic	7.89	3.78 (1% level)	4.85 (1% level)	Cointegration Confirmed
Adjusted R^2	0.85	-	-	-
Standard Error of Regression (SER)	0.21	-	-	-
Durbin-Watson (DW) Statistic	1.98	-	-	-

Notes: The calculated F-statistic (7.89) significantly exceeds the upper critical bound (4.85) at the 1% level, thereby rejecting the null hypothesis of no cointegration. This vital finding substantiates that the Indonesian bond yields, VIX, domestic interest rates, and the exchange rate are tethered together by a fundamental long-run equilibrium (Pesaran et al., 2001). The high Adjusted R^2 (85%) indicates a strong goodness-of-fit.

3. Long-Term Equilibrium Findings

The estimated long-run coefficients (Table 5) yield several crucial insights regarding the persistent determinants of Indonesian bond yields, reflecting their permanent equilibrium effects.

Table 5. Long-Run ARDL and ECM Estimation

Variable	Coefficient	Std Error	Significance
VIX	0.0053	0.0012	0.000***
Interest Rate	0.7421	0.0876	0.000***
Exchange Rate	0.0002	0.0001	0.005***

a. Global Volatility (VIX): A positive and statistically highly significant impact is observed. The coefficient of +0.0053 suggests that a sustained one-unit increase in VIX leads to a persistent 0.0053 percentage point increase in Indonesian bond yields. This confirms the Sovereign Risk Premium Theory; persistent global financial risk aversion directly translates into a higher risk premium demanded by investors for holding Indonesian sovereign debt.
b. Domestic Interest Rates (IR): The coefficient (+0.7421) is strongly positive and highly significant, confirming the expected monetary policy transmission mechanism. This suggests that in the long run, the benchmark bond yields track the central bank's policy rate, with approximately 74 cents of every Rupiah increase in the policy rate reflected in the 10-year yield.
c. Exchange Rates (EXR): A statistically significant, positive relationship is found. A depreciation of the Rupiah (higher (EXR_t) value) is associated with higher bond yields, indicating that the market incorporates currency risk and associated capital flow dynamics into the long-term yield structure.

4. Short-Term Dynamics and Adjustment Speed

a. Error Correction Mechanism

The Error Correction Model (ECM) results confirm that deviations from the established long-run equilibrium are efficiently corrected. The adjustment parameter, λ ($\mathbf{EC_{t-1}}$), is estimated at -0.4538 and is statistically highly significant. This figure suggests that approximately 45.38% of the disequilibrium in the bond yield is corrected or absorbed within each subsequent daily period. This confirms a rapid and dynamic adjustment of Indonesia's bond market to both global and domestic factors.

b. Short-Run Coefficients

The short-term coefficients (Table 6) capture the instantaneous impact of changes in the explanatory variables.

Table 6. Estimated Short-Run Coefficients (Error Correction Model)

Variable	Coefficient	Std Error	P-value
ΔVIX	+0.0018	0.0005	0.001(***)
ΔIR	+0.5512	0.0531	0.000(***)
ΔEXR	+0.0001	0.0000	0.045(**)

Variable	Coefficient	Std Error	P-value
EC_{t-1} (Adjustment Speed λ)	-0.4538	0.069	0.000(***)

The short-run impact of the VIX (+0.0018) is positive and significant but is relatively smaller than its long-run impact (+0.0053), suggesting that its influence builds over time. In contrast, the change in domestic interest rates (+0.5512) shows a strong and immediate influence, which is highly consistent with the swift intended monetary policy transmission mechanism.

5. Post-Estimation Diagnostic Tests

A battery of post-estimation diagnostic tests was conducted on the residuals of the estimated ARDL model to ensure the model's robustness and statistical validity.

Table 7. Post-Estimation Diagnostic Tests

Test	Null Hypothesis (H_0)	F-statistic / χ^2	Result
Breusch-Godfrey LM Test	No serial correlation	1.02	Accept H_0 (No Serial Correlation)
ARCH-LM Test	No ARCH effects (Homoscedasticity)	1.15	Accept H_0 (No ARCH Effects)
Ramsey RESET Test	Correct functional form	1.90	Accept H_0 (Correct Specification)
CUSUM Test	Stability of coefficients	Within 5% Critical Bounds	Stable Coefficients

The diagnostic tests confirm that the ARDL model is well-specified, the residuals are free from autocorrelation (Breusch-Godfrey), and there are no signs of heteroscedasticity or ARCH effects (ARCH-LM), which is often challenging to achieve with high-frequency financial data. The CUSUM test further confirms the stability of the estimated coefficients over the entire sample period.

DISCUSSION

The empirical findings of this study offer compelling evidence regarding the significant and structured interaction between Indonesia's government bond yields (Y_t) and global financial volatility, as robustly captured by the VIX index.

1. Global Volatility, Sovereign Risk Premium, and Flight-to-Safety

The estimation results reveal a positive and substantial long-term coefficient for the VIX (+0.0053), which is statistically highly significant. This finding confirms that heightened global uncertainty is structurally embedded in the pricing of Indonesian sovereign debt. The underlying economic mechanism is twofold:

a. Sovereign Risk Premium: An enduring increase in global market risk aversion directly escalates the sovereign risk premium demanded by investors. This is quantitatively demonstrated by the 0.0053 percentage point permanent increase in Y_t for every one-unit sustained rise in the VIX.

b. Systemic Flight-to-Safety: This behavior reflects a systemic "flight-to-safety" by international capital, compelling investors to demand significantly higher compensation to hold riskier Emerging Market (EM) sovereign debt. This mechanism is crucial in the post-2019 period, where a higher VIX is closely associated with foreign capital outflows from the Indonesian bond market, thereby pushing yields up due to reduced demand and increased sell-offs.

c. Comparison with Literature and Temporal Nuances
While this positive relationship resonates with previous literature (Darsono et al., 2024; IMF, 2021), the magnitude observed in this high-frequency, post-2019 dataset suggests the yield sensitivity to global volatility remains high. Crucially, the short-term impact of the VIX (+0.0018) is notably smaller than its long-term effect (+0.0053). This temporal difference implies that the pricing of global risk is not just an immediate shock, but rather a process that builds and persists as structural uncertainty compels long-term investors to re-evaluate Indonesia's debt sustainability, permanently incorporating a larger risk buffer into their required rate of return.

2. Domestic Macro-Financial Transmission and Comparative Magnitude

The analysis substantiates that domestic macro-financial variables—specifically the Bank Indonesia benchmark interest rate (IR_t) and the USD/IDR exchange rate (EXR_t)—are critical determinants of bond yields across both the short and long terms.

a. Monetary Policy Transmission (IR): The strongly positive long-term coefficient (+0.7421) directly corroborates the effectiveness and high fidelity of the monetary policy transmission mechanism. The immediate short-term response (+0.5512) is also substantial, implying that the market swiftly incorporates central bank decisions, indicating a highly responsive bond pricing mechanism.

b. Currency Risk and Capital Flows (EXR): The observed positive relationship between Rupiah depreciation (higher EXR_t) and higher yields highlights Indonesia's structural exposure to currency risk. Depreciation impacts yields through two primary channels: (a) Inflationary Expectations, as a weaker Rupiah increases imported inflation, compelling bond investors to demand higher nominal yields to compensate for lost real returns; and (b) Capital Outflow Pressure, where a weakening currency signals potential instability, accelerating the withdrawal of foreign portfolio capital and driving domestic yields higher. The magnitude of these domestic factors is comparatively dominant in the short run, where central bank action (ΔIR_t) causes immediate yield adjustments larger than the immediate VIX shock (ΔVIX_t).

3. Market Efficiency, Cointegration, and Adjustment Dynamics

The statistical verification of cointegration confirms the existence of a stable long-run equilibrium among Indonesian bond yields and their global and domestic determinants, affirming the integrated nature of the market. This persistence is remarkable given the high volatility of the daily data.

The magnitude of the error correction term ($\lambda = -0.4538$) suggests that approximately 45.38% of any disequilibrium is corrected and absorbed within a single day. This rapid rate of adjustment signifies high informational efficiency, primarily attributable to the dominance of sophisticated institutional investors (both domestic and foreign) and the high liquidity of the 10-year benchmark bond. This efficiency allows the Indonesian market to quickly absorb new information, whether it is a global VIX spike or a domestic policy announcement, and return to its fundamental long-term pricing path, thereby reducing the persistence of speculative shocks.

4. Policy Implications and Implementation Realities

These empirical results bear significant policy implications that must be translated into realistic debt management and stability frameworks:

a. Macroprudential Monitoring & Intervention: The large and persistent long-term VIX coefficient (+0.0053) mandates treating the VIX as a key early warning indicator. During periods of steeply rising VIX, proactive policies are necessary. The trade-off is crucial: Preemptive Interest Rate Hikes (Monetary Policy) can stabilize the exchange rate and pre-empt larger yield increases, but may hinder domestic growth stability. Alternatively, Targeted FX Intervention (Fiscal/BI) can mitigate capital outflow, directly reducing pressure on yields without penalizing domestic lending, but this is constrained by limited foreign exchange reserves. Authorities must prioritize maintaining the credibility of the long-term equilibrium ($\lambda = -0.4538$) through predictable, targeted interventions.
b. Debt Structure and Resiliency: Given the high sensitivity to currency risk (EXR_t) and global volatility (VIX_t), the government's debt management strategy must focus on reducing reliance on short-term foreign portfolio investors. This entails actively promoting domestic institutional investor participation and extending the maturity profile of new debt issuances to insulate the sovereign from rapid, VIX-driven capital reversals.
c. Integrated Risk Modeling for Practitioners: For portfolio managers, the study emphasizes moving beyond simple correlation. The ARDL findings necessitate risk assessment models that systematically integrate the temporal dynamics—using the large short-run ΔIR_t impact for immediate trading strategies and the persistent VIX effect (+0.0053) for long-term strategic asset allocation.

5. Research Contribution and Future Directions

This research significantly extends the existing literature by providing a robust, comprehensive, and simultaneous assessment of both short-term transmission dynamics and long-term equilibrium relationships using the ARDL framework on high-frequency daily data extending through the challenging post-2023 financial tightening cycle. This period offers unique empirical evidence that yield dynamics, while maintaining a structural cointegrating relationship, respond with differentiated magnitudes to domestic and global shocks in the short term.

Despite its comprehensive scope, this investigation is primarily limited by its focus on linear relationships. Future research could strategically build upon this foundation by:

a. Exploring Non-Linear Dynamics: Employing models such as Non-linear ARDL (NARDL) or Markov-Switching to capture potential asymmetric threshold effects where the VIX impact might be greater during periods of high volatility (e.g., VIX > 30) than during calm periods.
b. Disaggregation of Risk: Incorporating additional, disaggregated risk measures such as geopolitical risk indices or a local equivalent of the VIX, and systematically investigating the VIX impact across different sovereign bond maturities (tenors) and currency denominations to assess hedging strategies.
c. Endogeneity and Policy: Addressing potential endogeneity using Vector Autoregression (VAR) or Vector Error Correction Models (VECM) to determine the precise direction and causality between variables during periods of stress.

CONCLUSIONS

This research successfully delivered a rigorous empirical assessment of the nexus between Indonesia's government bond yields and Global Volatility Index (VIX) sentiment over the crucial 2019–2023 period using the ARDL-ECM framework. The findings strongly support a significant long-run cointegrating relationship among the variables, providing robust statistical evidence that global financial volatility is an integral and structural factor shaping Indonesia's sovereign risk premiums, as confirmed by the highly significant bounds test F-statistic. Persistently elevated VIX levels are demonstrably correlated with increased bond yields (long-run coefficient: +0.0053), reflecting heightened risk aversion among international investors in line with Sovereign Risk Premium Theory.

In addition, key domestic variables—namely the Bank Indonesia benchmark interest rate and the USD/IDR exchange rate—exert consequential influence on yield dynamics, underscoring the importance of monetary policy transmission and currency risk. The Error Correction Model reveals a relatively rapid adjustment process, with an adjustment parameter ($\lambda = -0.4538$) indicating that approximately 45% of any short-run disequilibrium is corrected within a single day, highlighting the high responsiveness and informational efficiency of the Indonesian sovereign bond market, even if not constituting formal Fama-style efficiency. These results carry important policy and investment implications, emphasizing the necessity for policymakers and strategists to integrate global risk indicators such as the VIX into domestic macro-financial frameworks to better manage sovereign debt exposure and portfolio allocation amid global volatility.

Nonetheless, the study is limited by the linear structure of the ARDL approach, which cannot capture potential asymmetric or threshold effects—such as disproportionate yield responses during extreme VIX spikes—suggesting that future research should explore non-linear models like NARDL or Markov-switching frameworks and incorporate broader or disaggregated risk measures, including geopolitical risk indices or maturity-specific VIX indicators, to further enrich understanding of emerging market sovereign debt behavior under varying global stress conditions.

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