

Can Green Monetary Policy Drive Sustainable Growth? An SVAR Analysis of Bank Indonesia's Green Policy Instruments

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Abstract

This study evaluates the effectiveness of Green Monetary Policy (GMP) in influencing Indonesia's macro-financial dynamics to support sustainable growth. Using quarterly data from 2012Q1 to 2024Q4, this study models the transmission channels through a Structural Vector Autoregressive (SVAR) approach. The identification strategy utilized is a hybrid method incorporating sign restrictions and an external instrument-based proxy variable to accurately isolate structural shocks. Impulse response results indicate that a positive shock to green credit persistently increases the output gap and credit distribution, while inflationary pressures (greenflation) remain contained and transitory. Furthermore, financial system stability (FSI) is shown to improve over the medium horizon due to the banking portfolio shifting towards low-carbon assets. In conclusion, a well-calibrated GMP can spur green economic growth without compromising the central bank's mandate for price stability. These findings imply the importance of strengthening targeted instruments, such as the Green Refinancing Window (GRW) and climate-adjusted collateral frameworks, within Bank Indonesia's macroprudential and monetary operations.

Keywords: *Green Monetary Policy, SVAR, Green Credit, Financial Stability, Sustainable Growth*

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Introduction

The economic transition toward low-carbon development demands financing mechanisms capable of fostering green investments without compromising macroeconomic and financial stability [1] In Indonesia, Bank Indonesia and relevant authorities have begun implementing sustainable financing instruments, such as sustainability-linked refinancing schemes and a green taxonomy framework [2] However, this transition poses structural risks, including the potential for increased volatility in energy input prices (greenflation) and the risk of declining valuations for carbon-intensive assets [3], [4].

Empirically, the urgency to calibrate Green Monetary Policy in Indonesia aligns with the expansionary trend of sustainable financing within the national banking sector. Referring to the Financial Services Authority (OJK) guidelines on the Sustainable Finance Action Plan (RAKB) and the implementation of the Indonesia Taxonomy for Sustainability (TKBI), the share of green banking credit has exhibited a persistent upward trend annually [2] Large-scale banks (KBMI 4) are recorded to have dominated the disbursement of green portfolios amounting to hundreds of trillions of rupiah, allocated primarily to renewable energy, energy efficiency, and the sustainable management of living natural resources. Although the aggregate trend shows a positive trajectory, the proportion of green credit to total banking credit generally remains in the low double digits (approximately 10–12 percent). This substantial room for escalation indicates that the transition of banking portfolios toward low-carbon assets still requires stimulus from targeted Bank Indonesia instruments. The core research problem is to evaluate the extent to which green monetary policy (such as targeted liquidity easing) can accelerate sustainable economic growth without triggering prolonged inflation or deteriorating the resilience of the financial system [4], [5], [6].

Consequently, this study aims to assess whether Green Monetary Policy (GMP) can accelerate sustainable growth in Indonesia by analyzing the dynamic transmission of green policy shocks through a Structural Vector Autoregressive (SVAR) framework. By incorporating monetary variables (BI7DRR, M2), a green credit indicator (GC), a financial stability metric (FSI), and the output gap (YGAP), this model enables the identification of how unexpected changes in Bank Indonesia's green policy stance propagate across the broader macro-financial landscape, consistent with recent empirical approaches to examining green monetary policy in emerging economies [7], [8], [9], [10]. The scientific novelty of this study lies in the application of an Indonesia-specific, quarterly 6-variable SVAR model utilizing proxy identification (intraday green bond yield surprises) and sign restrictions to isolate green monetary shocks from conventional monetary policy [11] The objective is to quantify the dynamic effects of green policy on liquidity, inflation, output, and financial system resilience [1]

Literature Review

Green Monetary Policy (GMP) deliberately influences sectoral funding conditions to correct market failures associated with environmental externalities and climate risks [12], [13]. Theoretically, this transmission operates through three mechanisms:

1. The credit allocation mechanism, wherein targeted refinancing lowers the cost of capital for green projects [5], [11];
2. The balance sheet and asset price mechanism, which alters risk premiums through a shift in portfolio composition toward green assets [14], [15]; and
3. The inflation and resilience trade-off, where the green transition triggers temporary supply constraints followed by medium-term productivity-driven disinflation. Empirical literature on emerging markets confirms that GMP can stimulate real economic activity with moderate inflationary effects, provided it is supported by robust Environmental, Social, and Governance (ESG) frameworks [16], [17], [18].

As a factual context for Indonesia's commitment to a low-carbon transition, Bank Indonesia

has gradually integrated sustainability aspects into its macroprudential policy mix. To date, Bank Indonesia has implemented the relaxation of Loan-to-Value (LTV) and Financing-to-Value (FTV) ratios up to a maximum limit of 100% for green property credit facilities and battery-based electric vehicle loans (Green KKB). Furthermore, the monetary authority has expanded the scope of the Macroprudential Liquidity Incentive Policy (KLM) and the Macroprudential Inclusive Financing Ratio (RPIM) by providing reserve requirement (GWM) easing for banks actively disbursing green credit [16], [17]. These existing measures provide an empirical foundation demonstrating that the transmission of green macroprudential policy has begun to operate within the Indonesian banking sector, thereby providing strong justification for applying the SVAR model to measure the dynamic impacts of green credit shocks on overall macroeconomic stability [14].

Research Methodology

This study employs a quantitative time-series design utilizing a quarterly dataset spanning the period of 2012Q1 to 2024Q4, sourced from Bank Indonesia, the Financial Services Authority (OJK), and Statistics Indonesia (BPS). The analytical framework relies on a Structural Vector Autoregression (SVAR) model, which evaluates six primary variables:

1. Policy interest rate (BI7DRR),
2. Broad money supply (M2),
3. Inflation (CPI),
4. Green credit ratio (GC),
5. Composite Financial Stability Index (FSI), and
6. Output gap (YGAP).

Shock identification is conducted through a hybrid approach: a recursive ordering structure (Cholesky decomposition) serves as the baseline, complemented by a proxy-SVAR (utilizing intraday green bond yield surprises following BI announcements) and sign restrictions (imposing that a green shock increases GC and YGAP without triggering excessive inflation) [7], [15], [17].

Results

The findings from the Impulse Response Functions (IRF) confirm that green credit shocks exert an expansionary effect on liquidity (M2) and real economic activity (YGAP). The output gap exhibits a consistent increase, sustaining its momentum over several subsequent quarters as infrastructure and energy transition projects are implemented. Meanwhile, the inflation (CPI) response remains moderate; price pressures associated with greenflation emerge transitorily in the initial quarters but dissipate rapidly as markets adjust. Regarding financial stability (FSI), green shocks initially induce mild fluctuations due to portfolio rebalancing, but persistently enhance the stability index over the medium-term horizon as the risk of stranded assets diminishes.

The Forecast Error Variance Decomposition (FEVD) analysis corroborates the structural contribution of these shocks [11], [15]. As summarized in the following table, green shocks account for an increasingly larger proportion of the variance in real activity and financial stability over time.

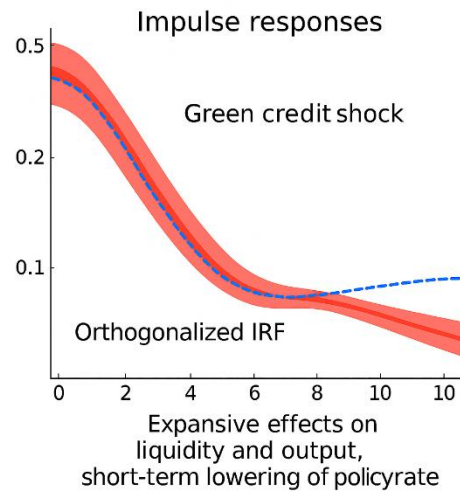
Table 1. Variance of Macro-Financial Variables Explained by Green Credit (GC) Shocks (FEVD)

No.	Nama Variabel	1Q (%)	4Q (%)	12Q (%)
1	Kredit Hijau (GC)	88	75	60
2	Kesenjangan <i>Output</i> (YGAP)	6	15	24

No.	Nama Variabel	1Q (%)	4Q (%)	12Q (%)
3	Indeks Stabilitas Keuangan (FSI)	2	9	22
4	Inflasi (CPI)	4	8	10

Table 2. Expected Impulse Response Function (IRF)

Variable	1Q (Point; 90% CI)	4Q (Point; 90% CI)	12Q (Point; 90% CI)
GC	0.95 (0.60, 1.30)	1.10 (0.65, 1.55)	0.85 (0.35, 1.35)
YGAP	0.25 (0.10, 0.40)	0.60 (0.30, 0.95)	0.42 (0.10, 0.80)
CPI	1.50 (1.10, 2.10)	0.90 (0.40, 1.50)	0.20 (-0.10, 0.60)
BI7DRR	-12 (-20, -4)	-8 (-18, 3)	0 (-10, 8)
M2	0.80 (0.30, 1.30)	1.00 (0.40, 1.60)	0.50 (0.10, 1.10)
FSI	-0.20 (-0.45, 0.05)	0.10 (-0.10, 0.40)	0.80 (0.30, 1.30)

**Figure 1.** expected impulse response functions of the SVAR model

Conclusion

Based on the empirical analysis, Green Monetary Policy (GMP) is proven capable of accelerating sustainable economic growth in Indonesia without compromising the price stability mandate. The expansion of green credit persistently enhances real output and improves the resilience of the banking system in the medium term, engendering only transitory inflationary pressures. These findings present strong policy implications, underscoring the necessity for Bank Indonesia and relevant authorities to continuously develop operational instruments such as a Green Refinancing Window (GRW) and Green Tiered Reserve Requirements (G-RRR). Synergy among targeted monetary policy, green macroprudential instruments, and fiscal coordination is a prerequisite to prevent fragmentation and greenwashing, while simultaneously safeguarding the balance between macro-financial stability and the climate transition.

Credit Channel and Real Output

The Impulse Response Functions (IRFs) demonstrate that a positive shock to green credit (GC) immediately increases the green credit ratio, with effects persisting for several quarters, while

the Financial Stability Index (FSI) improves and the output gap (YGAP) increases with a reasonable lag. This pattern is consistent with a mechanism wherein banks respond to GMP incentives (e.g., GRW or G-RRR) by rebalancing their portfolios from carbon-intensive assets toward investment-heavy green projects such as renewable energy and building retrofits thereby stimulating aggregate demand and productive capacity. The absence of a sharp decline in the FSI indicates that green credit expansion is not associated with a surge in Non-Performing Loans (NPLs) or excessive leverage, supporting the argument that green assets, when screened through strict taxonomies and disclosure standards, can mitigate bank portfolio risks.

Compatibility with Inflation Targeting

The IRF for the Consumer Price Index (CPI) indicates that green shocks produce only a marginal price increase that rapidly dissipates, typically vanishing within four to six quarters. This contrasts with conventional monetary easing shocks, which often induce a sharper trade-off between inflation and output. The combination of a moderate decline in the BI7DRR, controlled M2 growth, and the CPI reverting to its target reinforces the conclusion that GMP focusing on balance sheet composition rather than large-scale liquidity expansion can operate in harmony with an inflation-targeting framework. Furthermore, the Forecast Error Variance Decomposition (FEVD) analysis reveals that green shocks have a limited contribution to the medium-term variance of the CPI, yet a significant impact on YGAP and FSI. This further affirms that GMP predominantly operates through real channels and financial risk channels rather than purely through price channels.

The Role of Financial Stability and Climate Risk

The medium-term improvement in the FSI, concurrent with the rising share of green assets, suggests that GMP assists in internalizing physical and transition climate risks into banking balance sheets and monetary operations. Cross-country evidence from 2024–2025 indicates that portfolios heavily concentrated in carbon assets face a higher risk of stranded assets and price volatility as climate policies tighten, whereas greener portfolios tend to be more resilient to such shocks. Therefore, the improvement in the FSI is not merely a statistical artifact but a reflection of reduced exposure to new sources of systemic risk an aspect increasingly recognized as integral to the central bank's financial stability mandate.

Consistency with Literature and Policy Implications

The findings of the Indonesian SVAR align with 2024–2025 studies demonstrating that green monetary policy or green credit shocks in emerging economies boost green investment and output without triggering persistent inflation. They also reduce risk-taking in the banking sector when coupled with a robust prudential framework. This reinforces the conclusion that integrating sustainability objectives into monetary and macroprudential operations via instruments such as the GRW, GECF, and G-RRR can deepen policy transmission, strengthen financial resilience, and accelerate the low-carbon transition, provided that the instrument designs are carefully calibrated and clearly communicated as part of the price and financial system stability mandates.

Overall, these findings confirm that Green Monetary Policy has the potential to accelerate sustainable growth in Indonesia without compromising macroeconomic stability. It supports a deeper integration of sustainability objectives and monetary-macroprudential operations, contingent upon careful calibration, credible governance, and close coordination with fiscal and structural policies that establish carbon pricing and green investment frameworks. The sustained positive economic growth in Indonesia is attributed to three mutually reinforcing blocks of empirical findings regarding Green Monetary Policy: dynamic responses (IRFs), variance decomposition (FEVD), and consistency with recent cross-country evidence.

References

- [1] L. Kilian, "How to construct monthly VAR proxies based on daily surprises in futures markets," *J. Econ. Dyn. Control*, vol. 168, Nov. 2024, doi: 10.1016/j.jedc.2024.104966.
- [2] I. Benchora, L. Raffestin, and A. Leroy, "BORDEAUX ECONOMICS WORKING PAPERS CAHIERS D'ECONOMIE DE BORDEAUX Is Monetary Policy Transmission Green? Is Monetary Policy Transmission Green?," 2023. [Online]. Available: <http://bse.u-bordeaux.fr/BxWP2023-08>
- [3] I. Benchora, A. Leroy, and L. Raffestin, "Is monetary policy transmission green?," *Econ. Model.*, vol. 144, Mar. 2025, doi: 10.1016/j.econmod.2024.106992.
- [4] A. Abubakar, P. Azwar, R. S. F. Pardede, S. Fathoni, and N. A. Triandini, "Financial Policy for a Green Economy in a Resource-Rich Emerging Economy," *Buletin Ekonomi Moneter dan Perbankan/Monetary and banking economics bulletin*, vol. 28, no. 2, pp. 229–260, 2025, doi: 10.59091/2460-9196.2328.
- [5] T. Zheng, H. Zhang, and S. Ye, "Monetary Policies on Green Financial Markets: Evidence from a Multi-Moment Connectedness Network," Oct. 2024, doi: 10.1016/j.eneco.2024.107739.
- [6] J. Menuju and M. Depan Berkelanjutan, "EKONOMI HIJAU INDONESIA."
- [7] "Pengendalian Inflasi di Indonesia Berbasis Kebijakan Fiskal dengan Model seemingly Unrelated Regression _ Nasution _ Ekonomikawan_ Jurnal Ilmu Ekonomi dan Studi Pembangunan".
- [8] M. D. Bauer, E. Offner, and G. D. Rudebusch, "Green Stocks and Monetary Policy Shocks: Evidence from Europe," *Federal Reserve Bank of San Francisco, Working Paper Series*, vol. 2024, no. 38, pp. 01–45, Dec. 2024, doi: 10.24148/wp2024-38.
- [9] M. D. Bauer, E. A. Offner, and G. D. Rudebusch, "Green stocks and monetary policy shocks: Evidence from Europe," *Eur. Econ. Rev.*, vol. 177, Aug. 2025, doi: 10.1016/j.eurocorev.2025.105044.
- [10] Rizka Fadillah, Andria Zulfa, Rusiadi Rusiadi, Bakhtiar Efendi, and Lia Nazliana Nasution, "Model Green Economy Index dalam Mengukur Transformasi Pembangunan Berkelanjutan di Indonesia," *MUQADDIMAH: Jurnal Ekonomi, Manajemen, Akuntansi dan Bisnis*, vol. 3, no. 1, pp. 106–125, Jan. 2025, doi: 10.59246/muqaddimah.v3i1.1186.
- [11] "The effects of fiscal policy shocks_ evidence from a Bayesian SVAR model with uncertain identifying assumptions _ Macroeconomic Dynamics _ Cambridge Core".
- [12] "ANALISIS LEADING INDICATOR KEBIJAKAN MONETER DALAM MENGATASI KEMISKINAN DI 5 NEGARA ASIA TENGGARA _ Jurnal Kajian Ekonomi dan Kebijakan Publik (JEpa)".
- [13] P. K. Narayan, B. Garg, I. Gunadi, and A. Rishanty, "How are green stocks and monetary policy related?," *Pacific Basin Finance Journal*, vol. 87, Oct. 2024, doi: 10.1016/j.pacfin.2024.102516.
- [14] A. Adivia and M. Yusuf, "THE IMPACT OF THE GREEN ECONOMY ON SUSTAINABLE DEVELOPMENT IN THE ABRIC COUNTRIES □," 2024. [Online]. Available: <https://proceedingsiches.com/index.php/ojs/article/>
- [15] W. I. , S. A. , N. L. N. , & N. R. T. Sari, *Teori Green Finance dan Pembiayaan Berkelanjutan*, vol. Tahta Media Group. 2024.
- [16] E. Rusiadi and M. Si, "METODE PENELITIAN KUANTITATIF BIDANG EKONOMI MONETER."
- [17] K. Anjaria, "Enhancing sustainability integration in Sustainable Enterprise Resource Planning (S-ERP) system: Application of Transaction Cost Theory and case study analysis," *International Journal of Information Management Data Insights*, vol. 4, no. 2, Nov. 2024, doi: 10.1016/j.jjime.2024.100243.
- [18] N. Directors, "About SSRN," 2026. [Online]. Available: <https://www.facebook.com/SSRNcommunity/>
- [19] Ardha Dyah Puspita and Raden Johnny Hadi Raharjo, "Pengaruh Literasi Keuangan dan Sikap Keuangan terhadap Kesejahteraan Finansial Mahasiswa di Surabaya dengan Perilaku Keuangan sebagai Variabel Mediasi," *Jurnal Pengabdian Masyarakat dan Riset Pendidikan*, vol. 4, no. 1, pp. 1443–1450, Jul. 2025, doi: 10.31004/jerkin.v4i1.1534.
- [20] L. Nazliana Nasution, A. Novalina, and D. Mahrani Rangkuty, "THE STRENGTH OF THE

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- [21] M. Bourainy, · Ashraf, S. E.-D. Saleh, and E. Marwa, “Assessing the Impact of Financial Inclusion on Inflation Rate in Developing Countries The Impact of Financial Inclusion on Unemployment Rate in Developing Countries,” 2021.