

Money Laundering Risk and Foreign Portfolio Investment: Barrier or Bridge to International Capital Flows?

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Abstract

Foreign portfolio investment (FPI) is highly sensitive to money laundering risks, which degrade transparency, heighten market volatility, and erode investor confidence. However, existing research on anti-money laundering (AML) regulations primarily focuses on foreign direct investment (FDI) and the banking sector. However, foreign portfolio investment (FPI), being highly liquid and sensitive to governance risks, remains relatively underexplored in the AML literature. Furthermore, cross-country variations in institutional capacity may generate heterogeneous effects, particularly between developed and developing economies. This study examines the linear and non-linear impacts of money laundering risk on FPI using panel data from 104 countries (2012–2021). To address endogeneity and cross-country heterogeneity, we employ a two-step Generalized Method of Moments (GMM) estimator. The findings are expected to provide empirical evidence for policymakers in designing financial supervisory systems that are proportionate and do not inadvertently undermine investment attractiveness. The results indicate that, in developing countries, foreign portfolio investment declines at low levels of money laundering risk up to a certain threshold, but increases once this threshold is exceeded. In developed countries, money laundering risk exhibits a non-linear effect on foreign portfolio investment. These findings suggest that policymakers must design proportionate AML frameworks to mitigate financial crimes without inadvertently stifling capital inflows critical for economic growth.

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Introduction

Foreign portfolio investment (FPI) plays an pivotal role in fostering economic growth and enhancing financial system stability by supporting investment financing, expanding capital

markets, and improving the efficiency of resource allocation. Errunza (2001), demonstrates that FPI also provides significant benefits through risk diversification, heightened market liquidity, and broader access to global technologies and managerial practices.¹ Furthermore, Camanho et al. (2022) argue that these inflows drive improvements in governance quality and institutional reforms, as foreign investors typically demand greater transparency, accountability, and efficiency.²

FPI exerts a stabilizing effect on the economy by enhancing the resilience of capital markets to global shocks. Thapa and Poshakwale (2012) found that stable foreign capital inflows strengthen the robustness of financial systems and improve market stability.³ Similarly, Kwabi et al. (2016) highlight that the presence of foreign investors reduces the cost of capital through increased market liquidity and lower risk premiums, in contrast to economies that rely heavily on domestic investment and experience stronger home bias effects.⁴ However, Durham (2004) argues that these benefits are highly contingent upon a country's absorptive capacity.⁵ Weak financial systems and institutional frameworks may transform foreign portfolio investment from a driver of long-term development into a source of market volatility.

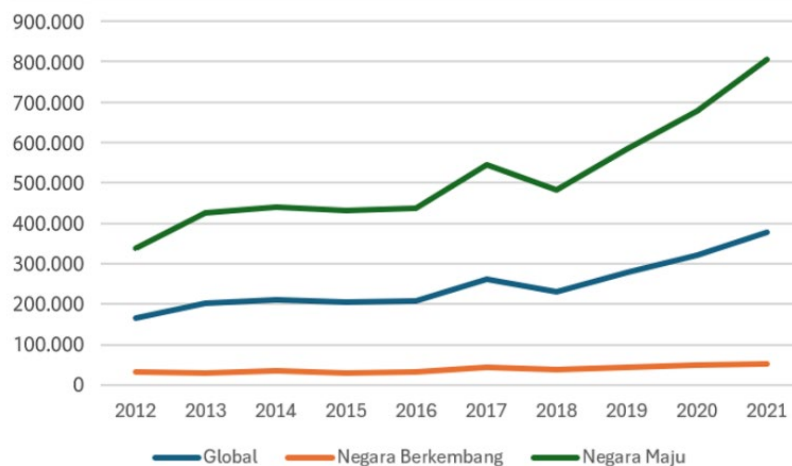


Figure 1. Trends in Foreign Portfolio Investment (Average), Million USD

Source: *External Wealth of Nations* (processed by the authors)

The trend of FPI demonstrates a substantial increase in global portfolio holdings, with the global average rising from approximately USD 170 billion in 2012 to nearly USD 300 billion in 2021. The most pronounced growth occurred in developed countries, where average portfolio investment surged from around USD 340 billion to more than USD 850 billion over the same period, reflecting the dominant position of these economies in attracting foreign equity capital. In contrast, developing countries exhibited relatively stagnant growth, with average portfolio investment increasing only from approximately USD 30 billion in 2012 to around USD 45

¹ Vihang Errunza, "Foreign Portfolio Equity Investments, Financial Liberalization, and Economic Development," *Review of International Economics* 9, no. 4 (2001): 703–26, <https://doi.org/10.1111/1467-9396.00308>.

² N. Camanho, F. Silva, and J. Vicente, "The Long-Term Economic Impact of Foreign Portfolio Investment," *The Long-Term Economic Impact of Foreign Portfolio Investment* (3), 2022, 786–805.

³ Chandra Thapa and Sunil Poshakwale, "Financial Market Development and Economic Volatility," *Journal of International Financial Markets, Institutions and Money* 22, no. 1 (2012): 58–73.

⁴ Frank Kwabi et al., "Sub-Optimal International Portfolio Allocations and the Cost of Capital," *Journal of Multinational Financial Management* 35 (2016): 41–58, <https://doi.org/10.1016/j.mulfin.2016.04.001>.

⁵ J. Benson Durham, "Absorptive Capacity and the Effects of Foreign Direct Investment and Equity Foreign Portfolio Investment on Economic Growth," *European Economic Review* 48, no. 2 (2004): 285–306, [https://doi.org/10.1016/S0014-2921\(02\)00264-7](https://doi.org/10.1016/S0014-2921(02)00264-7).

billion in 2021. This disparity suggests the presence of significant barriers, including systemic risk, institutional weaknesses, and underdeveloped capital markets. These findings are consistent with Goldstein and Razin (2006), who argue that portfolio investors tend to avoid markets characterized by high levels of risk and information asymmetry.⁶

Several factors influencing foreign portfolio investment, including economic growth, political stability, financial regulatory frameworks, trade openness, and macroeconomic risk. Stulz (2005) emphasizes that barriers to international investment, such as policy uncertainty and elevated political risk, significantly diminish a country's attractiveness.⁷ Countries that maintain disciplined fiscal and monetary policies, coupled with low inflation rates, are generally more appealing investment destinations. Haider et al. (2016) further demonstrate that institutional factors, particularly government effectiveness and strong rule of law, can reduce uncertainty and enhance investor confidence.⁸

Trade openness and regulatory reforms also play a crucial role in attracting foreign portfolio investment. Agarwal (1997)⁹ and Gupta and Ahmed (2020)¹⁰ find that economies characterized by open markets and efficient regulatory systems tend to receive larger volumes of foreign portfolio investment. Nevertheless, risks associated with money laundering can undermine investor confidence and threaten the stability of financial markets. Schnorrenberger and Meurer (2018),¹¹ as well as Khayat (2020),¹² argue that legal uncertainty and reputational risks arising from illicit financial activities constitute significant obstacles to investment. Investors generally avoid markets perceived as opaque, poorly regulated, and vulnerable to manipulation, as such conditions increase information asymmetry and investment risk.

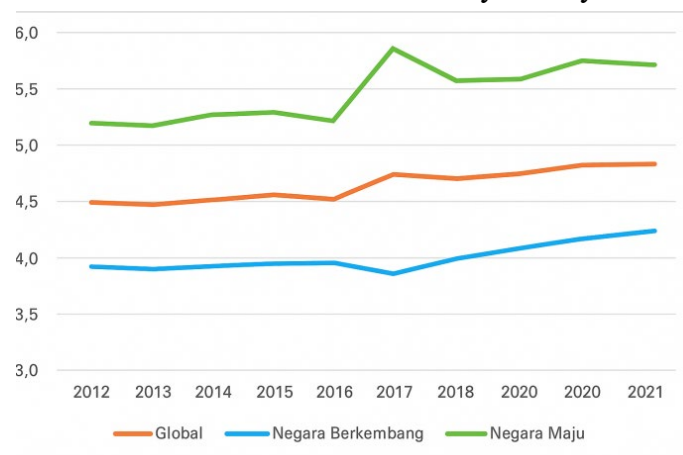


Figure 2. Trends in Anti-Money Laundering (AML) Performance

Source: Basel AML Index (processed by the authors)

⁶ Itay Goldstein and Assaf Razin, "An Information-Based Trade off between Foreign Direct Investment and Foreign Portfolio Investment," *Journal of International Economics* 70, no. 1 (2006): 271–95, <https://doi.org/10.1016/j.jinteco.2005.12.002>.

⁷ René M. Stulz, "The Limits of Financial Globalization," *The Journal of Finance* 60, no. 4 (2005): 1595–638, <https://doi.org/10.1111/j.1540-6261.2005.00775.x>.

⁸ M. Haider, M. A. Hashmi, and M. Ahmed, "Macroeconomic and Institutional Determinants of Foreign Portfolio Investment," *Economic Modelling* 58 (2016): 291–304.

⁹ R. N. Agarwal, "Foreign Portfolio Investment In Some Developing Countries: A Study of Determinants and Macroeconomic Impact," *Indian Economic Review* 32, no. 2 (1997): 217–29.

¹⁰ P. Gupta and S. Ahmed, "Regulatory Quality and Foreign Investment: Evidence from Emerging Markets," *Journal of Policy Modeling* 42, no. 4 (2020): 776–96.

¹¹ Tobias Schnorrenberger and Jörg Meurer, "Political Risk and Foreign Portfolio Flows in Emerging Markets," *Applied Economics Letters* 25, no. 5 (2018): 304–8.

¹² M. Khayat, "Trade Openness, Governance, and Foreign Investment: Evidence from MENA Countries," *Global Business Review* 21, no. 2 (2020): 56–72.

The figure illustrates the trend of the Basel AML Index from 2012 to 2021, where higher scores indicate lower money laundering risk. Developed countries consistently recorded relatively high scores, with a noticeable increase in 2017 and stable performance within the range of 5.5 to 5.8 thereafter, reflecting the strength of their anti-money laundering (AML) frameworks. Developing countries also demonstrated gradual improvement, with average scores increasing from 3.8 to 4.4 over the study period. Although this trend suggests progress in mitigating money laundering risk, developing economies continue to lag behind their developed counterparts.

Money laundering poses a significant threat to financial market stability by disguising illicit funds through legitimate transactions, particularly within equity markets. Such activities can create an illusion of liquidity, distort asset prices, and generate artificial volatility. Consequently, foreign investors may face increased risks because asset values no longer reflect underlying economic fundamentals but are instead influenced by market manipulation. Ajide and Ojeyinka (2023) argue that Anti-Money Laundering (AML) regulations were developed to preserve the integrity of financial systems and prevent financial crimes.¹³ Kang (2018) further suggests that effective AML regulations enhance investor confidence and strengthen law enforcement,¹⁴ while Sharman and Chaikin (2009) note that the absence of robust AML measures increases the likelihood of investors becoming indirectly exposed to illicit financial networks.¹⁵

Savona and Riccardi (2019)¹⁶ emphasize the importance of adopting a risk-based approach in designing AML systems that align with each country's institutional capacity, thereby preventing the infiltration of high-risk capital. Similarly, Ofoeda et al. (2020)¹⁷ demonstrate that effective AML frameworks enhance the credibility of financial markets by creating a stable and predictable investment environment, a particularly important consideration for portfolio investors who are highly sensitive to short-term risks. Nevertheless, Antwi et al. (2023)¹⁸ caution that excessively stringent and disproportionate AML regulations may generate administrative burdens, particularly in countries with limited institutional capacity. High compliance costs can reduce the efficiency of financial intermediation, slow financial innovation, and diminish the attractiveness of capital markets. Therefore, maintaining an appropriate balance between regulatory oversight and ease of doing business is essential to ensure that AML policies do not inadvertently discourage foreign portfolio investment. Furthermore, Ofoeda et al. (2024)¹⁹ argue that the impact of AML regulations on financial sector development is not necessarily linear and depends heavily on implementation quality and institutional capacity. Strong but inconsistently enforced regulations may lose effectiveness,

¹³ K. B. Ajide and T. A. Ojeyinka, "Anti-Money Laundering Policy and Economic Governance in Africa," *Journal of Money Laundering Control* 26, no. 1 (2023): 77–90.

¹⁴ M. Kang, "Anti-Money Laundering Regulation and Banking Behavior: Theory and Evidence," *Journal of Banking Regulation* 19 (2018): 34–49.

¹⁵ Jason C. Sharman and David Chaikin, *Corruption and Money Laundering: A Symbiotic Relationship* (London: Palgrave Macmillan, 2009).

¹⁶ Ernesto U. Savona and Michele Riccardi, *Assessing the Risks of Money Laundering: Concepts and Approaches* (Cham: Springer, 2019).

¹⁷ Isaac Ofoeda et al., "Anti-Money Laundering Regulations and Financial Sector Development," *International Journal of Finance & Economics* 27, no. 4 (2020): 4085–104, <https://doi.org/10.1002/ijfe.2360>.

¹⁸ Samuel Antwi et al., "Anti-Money Laundering Measures and Financial Sector Development: Empirical Evidence from Africa," *Cogent Economics & Finance* 11, no. 1 (2023): 2209957, <https://doi.org/10.1080/23322039.2023.2209957>.

¹⁹ Isaac Ofoeda, Elikplimi Agbloyor, and Joshua Yindenaba Abor, "Financial Sector Development, Anti-Money Laundering Regulations and Economic Growth," *International Journal of Emerging Markets* 19, no. 1 (2024): 191–210, <https://doi.org/10.1108/IJOEM-12-2021-1823>.

whereas simpler regulatory frameworks implemented with discipline can strengthen market confidence and support investment stability.

Evidence from previous studies suggests that the level of money laundering risk within a country has both direct and indirect implications for foreign portfolio investment. In an era of increasingly integrated global financial markets and heightened investor sensitivity to governance-related issues, the integrity of Anti-Money Laundering (AML) systems has emerged as a critical determinant of a country's ability to attract and retain foreign capital. Consequently, examining the relationship between money laundering risk and cross-border portfolio investment has become increasingly important, particularly in addressing whether such risk influences foreign investors' decisions to allocate capital across countries.

Ofoeda et al. (2020)²⁰ argue that money laundering risk, as reflected in the effectiveness of AML regulations, plays a crucial role in maintaining transparency and stability within the global financial system. However, debate persists regarding the effectiveness of AML frameworks, particularly in countries with limited institutional capacity. Stulz (2005)²¹ and Issah et al. (2022)²² note that the existing AML literature has largely focused on foreign direct investment (FDI) and the banking sector. In contrast, foreign portfolio investment, which is generally more liquid and highly sensitive to governance-related risks, may be even more vulnerable to weaknesses in AML systems. Therefore, further investigation is warranted into the role of the Basel AML Index as a proxy for money laundering risk in shaping cross-country portfolio investment flows, including the possibility of threshold effects in its influence on investor behavior.

This study is crucial for providing cross-country empirical evidence to inform the design of proportionate AML policies aligned with institutional capacity, particularly amid escalating pressure from international organizations on developing countries to strengthen their regulatory frameworks. The novelty of this research lies in exploiting a quadratic specification within a dynamic panel framework to uncover the non-linear relationship between money laundering risk and foreign portfolio investment (FPI), an approach largely underexplored in the existing literature. Accordingly, this study aims to investigate how financial crime risks drive FPI dynamics across countries by addressing two critical questions: (1) How does money laundering risk shape global portfolio allocations, and (2) does this relationship exhibit non-linearities that diverge between developed and developing economies?

Literature Review

Risk, Investors, and Foreign Portfolio Investment

Erb et al. (1996)²³ developed a country risk framework emphasizing that political, economic, and financial risks significantly influence investment return expectations, with international investors relying on country risk ratings as key indicators in cross-border investment decisions. This perspective is reinforced by Stulz (2005),²⁴ who highlights the importance of trust in institutional integrity and legal protection for attracting capital inflows. Even countries with strong macroeconomic fundamentals may struggle to attract investment if

²⁰ Ofoeda et al., "Anti-Money Laundering Regulations and Financial Sector Development."

²¹ Stulz, "The Limits of Financial Globalization."

²² Mohammed Issah et al., "Anti-Money Laundering Regulations and Banking Sector Stability in Africa," *Cogent Economics & Finance* 10, no. 1 (2022): 2069207, <https://doi.org/10.1080/23322039.2022.2069207>.

²³ Claude B. Erb, Campbell R. Harvey, and Tadas E. Viskanta, "Political Risk, Economic Risk, and Financial Risk," *Financial Analysts Journal* 52, no. 6 (1996): 29–46, <https://doi.org/10.2469/faj.v52.n6.2038>.

²⁴ Stulz, "The Limits of Financial Globalization."

they lack credible legal and institutional frameworks. Meier (2015)²⁵ provides empirical evidence that investor confidence is positively associated with stock market activity and risk-taking behavior, suggesting that trust is not merely a psychological concept but a factor with tangible effects on market dynamics.

Good governance, which characteristically demands accountability, transparency, and the rule of law,²⁶ is vital for maintaining institutional stability and market efficiency against the destabilizing effects of illicit financial flows. Likewise, Rodrik et al. (2004)²⁷ argue that institutional quality is a more important determinant of economic development than geographic conditions or trade integration. The presence of a shadow economy is often viewed as an indicator of institutional weakness. Schneider and Enste (2000)²⁸ and La Porta et al. (1999)²⁹ contend that unrecorded economic activities reflect a state's inability to effectively enforce regulations and maintain fiscal transparency, thereby reducing investor confidence and increasing perceptions of country risk. Consequently, risk perception, investor confidence, and the scale of informal economic activity are closely interconnected and mediated by the quality of governance. Countries that consistently implement good governance principles are better positioned to create an investment environment that is stable, credible, and attractive to global investors.

Foreign portfolio investment (FPI) refers to cross-border capital investment through the acquisition of financial assets without direct involvement in corporate management.³⁰ As a result, FPI is highly liquid and particularly sensitive to changes in market sentiment. According to Masoud and Hardaker (2012),³¹ foreign portfolio investment contributes to greater market liquidity and more efficient capital allocation. However, Froot et al. (2001)³² argue that its speculative nature and ease of entry and exit can also generate financial instability. Durham (2004)³³ concludes that, when supported by strong institutional frameworks, foreign portfolio investment can contribute to sustainable economic growth. Compared with foreign direct investment (FDI), foreign portfolio investment is generally more flexible and responsive to market conditions, although its benefits tend to be more short-term in nature and highly dependent on the quality of domestic financial markets.³⁴ Given its high liquidity and sensitivity

²⁵ Christoph Meier, "Aggregate Investor Confidence in the Stock Market," *SSRN Electronic Journal*, ahead of print, 2015, <https://doi.org/10.2139/ssrn.2721487>.

²⁶ Daniel Kaufmann, Aart Kraay, and Massimo Mastruzzi, "The Worldwide Governance Indicators: Methodology and Analytical Issues," *Hague Journal on the Rule of Law* 3, no. 02 (2011): 220–46, <https://doi.org/10.1017/S1876404511200046>.

²⁷ Dani Rodrik, Arvind Subramanian, and Francesco Trebbi, "Institutions Rule: The Primacy of Institutions Over Geography and Integration in Economic Development," *Journal of Economic Growth* 9, no. 2 (2004): 131–65, <https://doi.org/10.1023/B:JOEG.0000031425.72248.85>.

²⁸ Friedrich Schneider and Dominik H. Enste, "Shadow Economies: Size, Causes, and Consequences," *Journal of Economic Literature* 38, no. 1 (2000): 77–114, <https://doi.org/10.1257/jel.38.1.77>.

²⁹ Rafael La Porta et al., "The Quality of Government," *Journal of Law, Economics, and Organization* 15, no. 1 (1999): 222–79, <https://doi.org/10.1093/jleo/15.1.222>.

³⁰ Geert Bekaert and Campbell R. Harvey, "Foreign Speculators and Emerging Equity Markets," *The Journal of Finance* 55, no. 2 (2000): 565–613, <https://doi.org/10.1111/0022-1082.00220>.

³¹ N. Masoud and G. Hardaker, "The Impact of Foreign Portfolio Investment on Capital Markets: Evidence from Emerging Economies," *International Journal of Economics and Finance* 4, no. 9 (2012): 1–15.

³² Kenneth A. Froot, Paul G. J. O'Connell, and Mark S. Seasholes, "The Portfolio Flows of International Investors," *Journal of Financial Economics* 59, no. 2 (2001): 151–93, [https://doi.org/10.1016/S0304-405X\(00\)00084-2](https://doi.org/10.1016/S0304-405X(00)00084-2).

³³ Durham, "Absorptive Capacity and the Effects of Foreign Direct Investment and Equity Foreign Portfolio Investment on Economic Growth."

³⁴ Goldstein and Razin, "An Information-Based Trade off between Foreign Direct Investment and Foreign Portfolio Investment"; Laura Alfaro et al., "FDI and Economic Growth: The Role of Local Financial

to information, governance quality, and institutional credibility, foreign portfolio investment is particularly vulnerable to factors that influence investor confidence. Consequently, the effectiveness of Anti-Money Laundering (AML) frameworks and the level of money laundering risk may play a crucial role in shaping foreign investors' portfolio allocation decisions across countries.

Money Laundering and Its Relationship with Foreign Portfolio Investment

Reuter and Truman (2004)³⁵ characterize money laundering as a tripartite mechanism, comprising placement, layering, and integration, designed to obfuscate the origins of illicit funds. These illicit operations systematically undermine financial system stability and significantly erode investor confidence.³⁶ The risks associated with money laundering tend to be higher in countries characterized by weak regulatory frameworks and complex ownership structures.³⁷ In response, Anti-Money Laundering (AML) frameworks, promoted globally by the Financial Action Task Force (FATF), have become important instruments for strengthening a country's reputation and credibility in the eyes of international investors.³⁸ Capital markets, particularly stock markets, are especially vulnerable to money laundering practices through mechanisms such as nominee accounts and cross-border securities transactions. Eulaiwi et al. (2024)³⁹ argue that weak AML systems facilitate transaction manipulation, reduce market transparency, and undermine investor confidence. The prevalence of money laundering activities may discourage foreign investors and reduce foreign portfolio investment due to concerns over reputational risks, legal uncertainty, and potential international sanctions, ultimately contributing to greater financial market volatility.⁴⁰ Conversely, effective and transparent AML systems can strengthen market confidence, lower the cost of capital, and encourage greater inflows of foreign portfolio investment.⁴¹

A growing body of literature employs money laundering risk as a proxy for the effectiveness of AML regulations, emphasizing that AML frameworks serve not only as mechanisms for combating financial crime but also as signals of sound governance to the international community.⁴² Empirical studies generally suggest that effective AML regulations improve transparency and financial stability, particularly in developing countries that are more vulnerable to illicit financial flows. However, excessively stringent implementation may create

Markets," *Journal of International Economics* 64, no. 1 (2004): 89–112, [https://doi.org/10.1016/S0022-1996\(03\)00081-3](https://doi.org/10.1016/S0022-1996(03)00081-3).

³⁵ Peter Reuter and Edwin M. Truman, *Chasing Dirty Money: The Fight against Money Laundering* (Washington, DC: Institute for International Economics, 2004).

³⁶ Financial Action Task Force, *International Standards on Combating Money Laundering and the Financing of Terrorism & Proliferation: The FATF Recommendations* (Paris: FATF/OECD, 2012).

³⁷ Dev Kar and Joseph Spanjers, *Illicit Financial Flows from Developing Countries: 2004–2013*, vol. 20 (Washington, DC: Global Financial Integrity, 2015); John S. Zdanowicz, "Trade-Based Money Laundering and Terrorist Financing," *Review of Law & Economics* 5, no. 2 (2009): 855–78.

³⁸ Financial Action Task Force, *FATF Annual Report 2019–2020* (Paris: FATF/OECD, 2020).

³⁹ Baban Eulaiwi et al., "Money Laundering Governance and Income Shifting: Evidence from Australian Financial Institutions," *Economic Modelling* 132 (2024): 106653, <https://doi.org/10.1016/j.econmod.2024.106653>.

⁴⁰ Mihir A. Desai, *The Corporate Profit Base, Tax Sheltering Activity, and the Changing Nature of Employee Compensation* (Cambridge, MA: National Bureau of Economic Research, 2002).

⁴¹ Sarah E. Bonner, Zoe-Vonna Palmrose, and Susan M. Young, "Fraud Type and Auditor Litigation: An Analysis of SEC Accounting and Auditing Enforcement Releases," *The Accounting Review* 73, no. 4 (1998): 503–32.

⁴² Isaac Ofoeda, Elikplimi Komla Agbloyor, and Joshua Yindenaba Abor, "How Do Anti-Money Laundering Systems Affect FDI Flows across the Globe?," *Cogent Economics & Finance* 10, no. 1 (2022): 2058735, <https://doi.org/10.1080/23322039.2022.2058735>.

administrative burdens and reduce access to formal financial services, especially in countries with limited institutional capacity.⁴³

AML regulations also exert broader effects on macroeconomic performance and public governance. Transparent and credible AML systems can enhance international investor confidence, whereas overly complex regulatory requirements may discourage capital inflows.⁴⁴ Compliance with AML regulations often requires substantial financial and administrative resources, potentially reducing the operational efficiency of financial institutions⁴⁵ and limiting the financial sector's contribution to economic growth. When implemented rigidly in countries characterized by weak institutions and high levels of corruption, AML regulations may hinder financial intermediation and reduce the positive role of the financial sector in supporting economic development.⁴⁶

Money laundering risk reduces perceptions of financial market stability, increases regulatory uncertainty, and encourages investors to avoid markets with weak oversight due to concerns about potential involvement in illicit activities.⁴⁷ Countries facing elevated money laundering risk are therefore more likely to experience reductions in foreign portfolio investment, as portfolio investors, who are generally more mobile and sensitive to reputational risk, tend to react more quickly to negative signals than foreign direct investors.⁴⁸ Nevertheless, the existing literature also suggests that the relationship may not be entirely straightforward. While stronger AML frameworks enhance transparency, legal enforcement, and institutional credibility, overly burdensome regulations may generate compliance costs that offset some of these benefits. As argued by Issaoui et al. (2017),⁴⁹ AML policies that are proportionate and adapted to national institutional contexts are more likely to strengthen governance and support sustainable economic growth. This suggests that the relationship between money laundering risk and foreign portfolio investment may be non-linear, with the effectiveness of AML measures depending not only on their strength but also on their implementation and institutional compatibility.

⁴³ Antwi et al., "Anti-Money Laundering Measures and Financial Sector Development"; Issah et al., "Anti-Money Laundering Regulations and Banking Sector Stability in Africa."

⁴⁴ Imen Khelil, Hichem Khelif, and Imen Achek, "The Economic Consequences of Money Laundering: A Review of Empirical Literature," *Journal of Money Laundering Control* 27, no. 5 (2024): 901–16, <https://doi.org/10.1108/JMLC-09-2023-0143>; Ofoeda, Agbloyor, and Abor, "Financial Sector Development, Anti-Money Laundering Regulations and Economic Growth."

⁴⁵ Killian J. McCarthy, Peter Van Santen, and Ingo Fiedler, "Modeling the Money Launderer: Microtheoretical Arguments on Anti-Money Laundering Policy," *International Review of Law and Economics* 43 (2015): 148–55, <https://doi.org/10.1016/j.irl.2014.04.006>; Christian Bühner, Ivo Hubli, and Eliane Marti, "The Regulatory Burden in the Swiss Wealth Management Industry," *Financial Markets and Portfolio Management* 19, no. 1 (2005): 99–108, <https://doi.org/10.1007/s11408-005-2299-2>.

⁴⁶ Ofoeda, Agbloyor, and Abor, "Financial Sector Development, Anti-Money Laundering Regulations and Economic Growth."

⁴⁷ Mohammed Ahmad Naheem, "Money Laundering Using Investment Companies," *Journal of Money Laundering Control* 18, no. 4 (2015): 438–46, <https://doi.org/10.1108/JMLC-10-2014-0031>.

⁴⁸ Ulku Yuksel and Asli Yuksel-Mermod, "A Risky Mode Of Foreign Market Entry: International Portfolio Investments," *Journal of Business & Economics Research (JBER)* 8, no. 8 (2010), <https://doi.org/10.19030/jber.v8i8.746>; Khelil, Khelif, and Achek, "The Economic Consequences of Money Laundering."

⁴⁹ Fakhri Issaoui, Toumi Hassen, and Touili Wassim, "The Effects of Money Laundering (ML) on Growth Application to the Gulf Countries:," *International Journal of Cyber Warfare and Terrorism* 7, no. 1 (2017): 13–24, <https://doi.org/10.4018/IJCWT.2017010102>.

Money Laundering Risk, Financial Institutions, And Economic Development

In an increasingly complex global financial landscape, the existence of a robust Anti-Money Laundering (AML) framework reflects not only compliance with domestic legal requirements but also serves as a crucial determinant of international investor preferences and investment eligibility. Money laundering risk is increasingly recognized as an independent factor that directly influences the inflow and outflow of cross-border investment.⁵⁰ AML frameworks function both as mechanisms for correcting distortions within financial systems and as indicators of a country's commitment to the rule of law and credible governance. As such, they have become essential prerequisites for global financial integration and represent a minimum threshold in investment risk assessments conducted by international financial institutions.⁵¹ Countries with weak AML frameworks face a greater risk of being placed on international blacklists, which can increase perceived risk, lower sovereign creditworthiness, and impede cross-border transactions and investment attractiveness.⁵²

Portfolio investors, who are particularly sensitive to market signals and reputational concerns, increasingly consider AML frameworks as a key factor in investment decision-making, beyond conventional considerations such as expected returns and macroeconomic stability. AML should not be viewed merely as a reflection of financial sector strength; rather, it constitutes an independent legal and regulatory framework that governs the behavior of financial institutions. Even highly developed financial markets may remain vulnerable to elevated money laundering risk if AML enforcement is weak or inconsistent.⁵³ The implementation of AML measures, including customer due diligence, suspicious transaction reporting, staff training, and internal auditing, strengthens financial intermediation and mitigates the negative externalities associated with illicit financial activities.⁵⁴ More importantly, these measures enhance confidence in the integrity of a country's financial system.⁵⁵ Consequently, indicators of money laundering risk do not primarily reflect the size or efficiency of financial institutions but rather the quality of legal governance and regulatory enforcement designed to prevent illicit activities. Therefore, even countries with sophisticated financial systems may face substantial money laundering risk if AML oversight remains inadequate.⁵⁶

Money laundering risk is often implicitly assumed to be a by-product of economic development indicators such as GDP per capita. However, GDP primarily captures economic output and provides limited information regarding legal integrity, regulatory effectiveness, or institutional quality. High-income countries may still attract illicit financial flows if their financial systems lack transparency, whereas lower-income countries may exhibit relatively low money laundering risk when they demonstrate strong commitments to governance,

⁵⁰ Ofoeda et al., "Anti-Money Laundering Regulations and Financial Sector Development."

⁵¹ Antwi et al., "Anti-Money Laundering Measures and Financial Sector Development"; Khelil, Khlif, and Achek, "The Economic Consequences of Money Laundering."

⁵² Ofoeda, Agbloyor, and Abor, "How Do Anti-Money Laundering Systems Affect FDI Flows across the Globe?"

⁵³ Antwi et al., "Anti-Money Laundering Measures and Financial Sector Development"; Khelil, Khlif, and Achek, "The Economic Consequences of Money Laundering."

⁵⁴ Husni Ali Khrawish, "The Impact of Anti-Money Laundering on Investment Funding: Evidence from Jordanian Financial Institutions," *International Journal of Economics and Finance* 6, no. 3 (2014): p227, <https://doi.org/10.5539/ijef.v6n3p227>; G. R. Loureiro, A. D. Araújo, and A. Pinho Neto, "The Economic Foundations of Anti-Money Laundering: A Pigovian Approach," *Journal of Money Laundering Control* 18, no. 4 (2015): 442–53.

⁵⁵ Bonnie Buchanan, "Money Laundering—a Global Obstacle," *Research in International Business and Finance* 18, no. 1 (2004): 115–27, <https://doi.org/10.1016/j.ribaf.2004.02.001>.

⁵⁶ Ofoeda et al., "Anti-Money Laundering Regulations and Financial Sector Development."

accountability, and regulatory enforcement.⁵⁷ Therefore, money laundering risk should be conceptualized as a distinct institutional and legal dimension that is not mechanically determined by macroeconomic performance. While its relationship with economic development may be indirect and potentially non-linear, money laundering risk remains a critical factor shaping a country's legitimacy, credibility, and attractiveness within the global investment landscape.

Non-Linearity in Money Laundering Risk

Money laundering poses significant challenges to economic stability, financial market integrity, and institutional credibility, prompting governments around the world to strengthen Anti-Money Laundering (AML) regulations. However, the economic effects of AML frameworks are not necessarily linear and may vary according to the intensity of regulatory implementation and the institutional capacity of a country.⁵⁸

In countries with weak institutions, AML regulations may generate high compliance costs and undermine market efficiency. However, beyond a certain threshold, such regulations can strengthen credibility and investor confidence.⁵⁹ The Kuznets theory approach is relevant in explaining this dynamic, whereby the negative impact of AML at the early stage may shift into a positive effect as markets and institutions adapt.⁶⁰ Therefore, AML policies need to be progressive, adaptive, and aligned with a country's level of economic and institutional development.

Research Methodology

Data type and Sources

This study employs secondary panel data from 104 countries covering the period 2012–2021, with countries as the unit of analysis and annual observations, to examine the long-term impact of money laundering risk on foreign portfolio investment. The sample of 104 countries is divided into 59 developing countries and 45 developed countries based on the World Bank's 2021 classification, which considers Gross National Income (GNI) per capita, economic structure, and levels of social and institutional development. This classification facilitates the consistent replication of the study. A panel data approach is adopted because it enables the simultaneous examination of both cross-country and temporal dynamics. The dependent variable is foreign portfolio investment (measured in million USD). Rather than capturing daily stock trading flows, this variable represents the stock value of foreign-held financial assets. The primary independent variable is money laundering risk, measured using the Basel AML Index (0–10 scale). Following Agoba et al. (2019) and Ofoeda et al. (2020),⁶¹ the Basel AML Index

⁵⁷ Amarillys Erika Noora Ariesiyani and Lalu Garin Alham, "Money Laundering in APEC Countries: A Gravity Model Analysis of Attractiveness and Destination Choices," *AML/CFT Journal: The Journal of Anti Money Laundering and Countering the Financing of Terrorism* 1, no. 2 (2023): 146–66, <https://doi.org/10.59593/amlcft.2023.v1i2.56>; Mile Šikman and Miloš Grujić, "Relationship of Anti-Money Laundering Index with GDP, Financial Market Development, and Human Development Index," *Nauka, Bezbednost, Policija* 26, no. 1 (2021): 21–33, <https://doi.org/10.5937/nabepo26-29725>.

⁵⁸ Ofoeda, Agbloyor, and Abor, "How Do Anti-Money Laundering Systems Affect FDI Flows across the Globe?"; Antwi et al., "Anti-Money Laundering Measures and Financial Sector Development."

⁵⁹ Siong Hook Law, Hui Boon Tan, and W. N. W. Azman-Saini, "Financial Development and Income Inequality at Different Levels of Institutional Quality," *Emerging Markets Finance and Trade* 50, no. sup1 (2014): 21–33, <https://doi.org/10.2753/REE1540-496X5001S102>.

⁶⁰ Michael P. Todaro and Stephen C. Smith, *Economic Development*, 12th ed. (Boston: Pearson Education, 2015).

⁶¹ Abel Mawuko Agoba et al., "Central Bank Independence, Elections and Fiscal Policy in Africa: Examining the Moderating Role of Political Institutions," *International Journal of Emerging Markets* 14, no. 5 (2019):

is rescaled using the transformation: $AMLR = -1 \cdot (AMLR - 10)$ so that higher values indicate lower levels of money laundering risk. The Basel AML Index is a composite measure that incorporates both risk dimensions (vulnerability to money laundering) and regulatory capacity (the effectiveness of AML/CFT frameworks). In this study, the AMLR variable is employed as a composite proxy reflecting a country's overall position within the global anti-money laundering landscape rather than merely the strength of its formal regulatory framework. The model further controls for seven additional variables, namely trade openness, inflation, political stability and absence of violence, labor force participation, access to financial institutions, and domestic credit.

Table 1. Operational Definition of Research Variables

Variabel	Definisi	Unit	Sumber
VARIABEL DEPENDEN			
Investasi Portofolio Asing (Portfolio)	Jumlah kumulatif investasi asing yang berupa kepemilikan saham di pasar modal domestik dalam satuan juta (USD)	ln	External Wealth of Nations
VARIABEL INDEPENDEN			
Tingkat Risiko Pencucian Uang (AMLR)	Tingkat risiko pencucian uang di suatu negara dalam satuan indeks (0-10, rendah-tinggi)	nominal	Basel AML Index
VARIABEL KONTROL			
Trade Openness (Trade)	Jumlah total ekspor dan impor barang dan jasa sebagai persentase dari Produk Domestik Bruto (PDB). Dihitung sebagai (Ekspor + Impor) / PDB × 100%.	persentase (%)	World Development Indicators
Inflasi (Infl)	Inflasi berdasarkan Indeks Harga Konsumen (CPI) mengukur persentase perubahan tahunan dalam tingkat harga rata-rata dari sekelompok barang dan jasa yang dikonsumsi oleh rumah tangga dalam suatu negara.	persentase (%)	World Development Indicators
Stability and Violence (Violence)	Ukuran sejauh mana suatu negara mengalami ketidakstabilan politik, konflik kekerasan, terorisme, dan penggulingan pemerintahan secara tidak konstitusional, yang dapat mempengaruhi lingkungan investasi dan pembangunan ekonomi dalam satuan indeks (-2.5 – 2.5, buruk-baik)	nominal	World Governance Index
Labor Force (Labor)	Jumlah total individu yang berpartisipasi dalam pasar tenaga kerja, termasuk mereka yang bekerja (employed) dan yang aktif mencari pekerjaan (unemployed), mencerminkan kapasitas tenaga kerja suatu negara dalam mendorong pertumbuhan ekonomi.	ln	World Development Indicators
Financial Institution Access (Access)	Aksesibilitas layanan keuangan bagi individu dan bisnis dalam suatu negara dalam satuan indeks (0-1, rendah-tinggi)	nominal	International Monetary Fund
Kredit Domestik (Domestic)	Total kredit yang diberikan oleh sektor keuangan domestik kepada sektor ekonomi suatu negara	persentase (%)	World Development Indicators

Source: Authors' compilation.

This study incorporates several variables measured as indices, including the Basel AML Index, Political Stability and Absence of Violence Index, and Financial Institution Access Index. These indices are expressed on different scales and are estimated in their original units. Wooldridge (2010)⁶² argues that the inclusion of indices with different measurement scales in regression models is acceptable, provided that the model is properly specified and the interpretation of coefficients is clearly defined. Similarly, Asteriou and Hall (2011)⁶³ emphasize that institutional variables such as corruption, governance quality, and political risk

809–30, <https://doi.org/10.1108/IJOEM-08-2018-0423>; Ofoeda et al., “Anti-Money Laundering Regulations and Financial Sector Development.”

⁶² Jeffrey M. Wooldridge, *Econometric Analysis of Cross Section and Panel Data*, 2nd ed. (Cambridge, MA: MIT Press, 2010).

⁶³ Dimitrios Asteriou and Stephen G. Hall, *Applied Econometrics*, 2nd ed. (London: Palgrave Macmillan, 2011).

are often measured on different scales but can be jointly employed to capture complex institutional dimensions. Numerous empirical studies, including Agoba et al. (2019) and Issah et al. (2022),⁶⁴ have utilized the Basel AML Index alongside governance and macroeconomic indices without standardizing their scales, relying instead on appropriate transformations to ensure consistent interpretation. Chinn and Ito (2006) likewise demonstrate that index-based variables can be directly incorporated into cross-country panel regressions without requiring scale harmonization.⁶⁵

Empirical Model

This study employs the two-step dynamic panel Generalized Method of Moments (GMM) estimator developed by Arellano and Bond (1991) and subsequently refined by Arellano and Bover (1995) as well as Blundell and Bond (1998).⁶⁶ The two-step GMM approach is particularly suitable for addressing endogeneity, heteroskedasticity, and autocorrelation issues commonly encountered in cross-country panel data. Furthermore, the estimator does not require the assumption of normally distributed errors and allows for the use of internal instruments, making it especially appropriate for studies with limited external instruments and complex interrelationships among variables. The advantages of the two-step GMM estimator are particularly relevant in the context of this study because the empirical model incorporates a dynamic dependent variable, namely the one-period lagged value of foreign portfolio investment, ($FPI_{i,t-1}$). The inclusion of the lagged dependent variable captures the persistence and inertia of foreign investors' behavior, recognizing that current investment positions are often influenced by previous investment decisions. Given the highly liquid nature of global portfolio markets and their sensitivity to risk perceptions, incorporating the lagged term allows the model to reflect gradual adjustment processes rather than assuming that investors immediately reallocate capital in response to short-term policy changes or economic shocks.

The baseline empirical specification is expressed as follows:

$$Portfolio_{it} = \beta_0 + \beta_1 Portfolio_{it-1} + \beta_2 AMLR_{it} + \beta_3 Trade_{it} + \beta_4 Inflation_{it} + \beta_5 Violence + \beta_6 Labor_{it} + \beta_7 Access_{it} + \beta_8 Domestic_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

The relationship between money laundering risk and foreign portfolio investment is expected to be non-linear, as the effects of anti-money laundering regulations may vary according to a country's level of economic and institutional development. Improvements in AML effectiveness may initially impose compliance and adjustment costs, while stronger governance and increased transparency may generate positive effects once a certain threshold is reached. Given the ambiguity regarding the direction and magnitude of this relationship, the study empirically tests for non-linearity by incorporating a quadratic term for money laundering risk into the regression model. The non-linear specification is formulated as follows:

⁶⁴ Agoba et al., "Central Bank Independence, Elections and Fiscal Policy in Africa"; Issah et al., "Anti-Money Laundering Regulations and Banking Sector Stability in Africa."

⁶⁵ Menzie D. Chinn and Hiro Ito, "What Matters for Financial Development? Capital Controls, Institutions, and Interactions," *Journal of Development Economics* 81, no. 1 (2006): 163–92, <https://doi.org/10.1016/j.jdeveco.2005.05.010>.

⁶⁶ Manuel Arellano and Stephen Bond, "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations," *The Review of Economic Studies* 58, no. 2 (1991): 277–97, <https://doi.org/10.2307/2297968>; Manuel Arellano and Olympia Bover, "Another Look at the Instrumental Variable Estimation of Error-Components Models," *Journal of Econometrics* 68, no. 1 (1995): 29–51, [https://doi.org/10.1016/0304-4076\(94\)01642-D](https://doi.org/10.1016/0304-4076(94)01642-D); Richard Blundell and Stephen Bond, "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models," *Journal of Econometrics* 87, no. 1 (1998): 115–43, [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8).

$$Portfolio_{it} = \beta_0 + \beta_1 Portfolio_{it-1} + \beta_2 AMLR_{it} + \beta_3 AMLR_{it}^2 + \beta_4 Trade + \beta_5 Infl_{it} + \beta_6 Violence + \beta_7 Labor_{it} + \beta_8 Access_{it} + \beta_9 Domestic_{it} + \mu_i + \lambda_t + \epsilon_{it}$$

To evaluate the overall impact of money laundering risk on foreign portfolio investment, the total effect is derived by taking the partial derivative of foreign portfolio investment with respect to the money laundering risk variable:

$$\frac{\partial \ln Portfolio_{it}}{\partial AMLR_{it}} = \beta_2 + 2\beta_3 AMLR_{it}$$

In quadratic regression models, the linear coefficient (β_2) and the squared coefficient (β_3) cannot be interpreted independently because the total effect of the independent variable depends on its own value. Therefore, the marginal effect is calculated to determine how changes in money laundering risk influence foreign portfolio investment at different levels of money laundering risk. This approach allows the analysis to identify potential threshold effects and variations in the magnitude and direction of the relationship across the observed range of AMLR values.⁶⁷

Result and Discussion

Descriptive Statistical Analysis

The descriptive analysis provides an initial overview of the statistical characteristics of the variables employed in this study, including their distributions and differences between developed and developing countries. Descriptive statistics are presented for the full sample and separately by country group to identify structural patterns that distinguish developed and developing economies with respect to foreign portfolio investment and its potential determinants.

Table 2. Summary Statistics

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
Full					
<i>Portfolio*</i>	1,040	245,815.9	956,383.2	0	15,300,000
<i>AMLR</i>	1,040	4.69502	1.167897	1.51	8.221319
<i>TradeOpenness</i>	1,027	91.54223	59.62541	23.10475	442.62
<i>Stability and Violence</i>	1,040	.0015997	.8541218	-2.996031	1.619648
<i>Inflation</i>	1,023	4.224474	11.2367	-3.749145	254.9485
<i>Labor Force</i>	1,040	27,900,000	91,800,000	186,239	781,000,000
<i>Financial Access</i>	1,040	.4442981	.2542578	0	1
<i>Domestic Credit</i>	985	68.59842	48.38373	.0030488	259.184
Developing					
<i>Portfolio*</i>	590	39,058.97	131,786.5	0	1,338,625
<i>AMLR</i>	590	3.954656	.9426167	1.506261	6.78
<i>TradeOpenness</i>	578	72.02708	30.13348	24.31973	186.6758
<i>Stability and Violence</i>	590	-.4736152	.7135543	-2.996031	1.104041
<i>Inflation</i>	573	6.222474	14.61284	-3.749145	254.9485
<i>Labor Force</i>	590	38,200,000	119,000,000	201,742	781,000,000
<i>Financial Access</i>	590	.3268983	.2043019	.03	.97
<i>Domestic Credit</i>	557	47.36412	33.87032	.0030488	182.8681
Developed					
<i>Portfolio*</i>	450	516,897.2	1,401,416	179.6795	15,300,000

⁶⁷ Thomas Brambor, William Roberts Clark, and Matt Golder, "Understanding Interaction Models: Improving Empirical Analyses," *Political Analysis* 14, no. 1 (2006): 63–82, <https://doi.org/10.1093/pan/mpi014>.

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
<i>AMLR</i>	450	5.484042	.8050618	3.219452	8.221319
<i>TradeOpenness</i>	449	116.6642	76.47651	23.10475	442.62
<i>Stability and Violence</i>	450	.6246591	.5782813	-1.335418	1.619648
<i>Inflation</i>	450	1.680354	1.945305	-2.540315	15.53441
<i>Labor Force</i>	450	14,400,000	27,700,000	186,239	167,000,000
<i>Financial Access</i>	450	.5982222	.2301853	0	1
<i>Domestic Credit</i>	428	96.23277	50.47068	22.17053	259.184

*Values of foreign portfolio investment are reported in million USD.

Source: Authors' calculations.

Table 2 presents the summary statistics and reveals substantial disparities between developed and developing countries in terms of foreign portfolio investment. The average level of foreign portfolio investment in developed countries reaches approximately USD 516 billion, significantly higher than the USD 39 billion observed in developing countries. This difference reflects the greater depth of capital markets and stronger investment attractiveness of developed economies. The AMLR index also exhibits higher average values in developed countries (5.48) than in developing countries (3.95), indicating more effective anti-money laundering frameworks and lower levels of money laundering risk. Developed countries are likewise characterized by greater trade openness (116.66% compared to 72.03%), higher political stability (0.62 compared to -0.47), and lower inflation rates (1.68% compared to 6.22%). Although developing countries possess larger labor forces on average, this primarily reflects differences in population size rather than labor productivity or workforce efficiency. Furthermore, the Financial Institution Access Index (0.60 versus 0.33) and the ratio of domestic credit to GDP (96.23% versus 47.36%) indicate that developed countries generally possess deeper, more accessible, and more stable financial systems. Taken together, these descriptive statistics suggest that developed economies enjoy more favorable institutional, macroeconomic, and financial conditions, which may contribute to their greater ability to attract and retain foreign portfolio investment. These preliminary findings also provide initial support for the argument that institutional quality, including the effectiveness of anti-money laundering frameworks, may play an important role in shaping cross-country differences in foreign portfolio investment.

Variable Correlation Analysis

The correlation matrix and Variance Inflation Factor (VIF) statistics are presented to assess the potential presence of multicollinearity among the explanatory variables included in the regression model. Multicollinearity arises when two or more independent variables exhibit a strong linear relationship, which may distort coefficient estimates, inflate standard errors, and complicate the interpretation of regression results. To evaluate this issue, pairwise correlations among the variables are examined and VIF values are calculated as numerical indicators of the degree of multicollinearity.

Table 3. Correlation Matrix of Variables

Variable	Portfolio	AMLR	Trade Openness	Stability and Violence	Inflation	Labor Force	Financial Institution Access	Domestic Credit	VIF
Portfolio	1.0000								
AMLR	0.3838	1.0000							1.56
Trade Openness	0.1117	0.2115	1.0000						1.41
Stability and Violence	0.2543	0.5282	0.4107	1.0000					2.10
Inflation	-0.2750	-0.3348	-0.2016	-0.3847	1.0000				1.29
Labor Force	0.4900	-0.2126	-0.4136	-0.4362	0.1636	1.0000			1.64
Financial Institution Access	0.3959	0.4506	0.0858	0.3988	-0.2999	- 0.0382	1.0000		1.49
Domestic Credit	0.6529	0.3247	0.2639	0.4183	-0.3674	0.1132	0.4445	1.0000	1.73

Source: Author’s calculations

The results reported in Table 3 indicate that multicollinearity is not a serious concern in the empirical model. The highest correlation coefficient among the independent variables is 0.5282, which remains well below the commonly accepted threshold of 0.80. This suggests that no pair of explanatory variables exhibits an excessively strong linear association. The Variance Inflation Factor (VIF) values range from 1.29 to 2.10, all of which are substantially below the critical threshold of 5 commonly used in empirical research. These results indicate that the explanatory variables provide distinct information and that the estimated coefficients are unlikely to be adversely affected by multicollinearity. Therefore, the regression model can be interpreted with confidence, and the estimated relationships between money laundering risk, the control variables, and foreign portfolio investment are expected to be statistically reliable and economically meaningful.

Identification of Endogenous and Exogenous Variables

This study employs the Durbin-Wu-Hausman (DWH) test to assess the endogeneity of the Basel AML Index (AMLR). The test yields a statistically significant result ($\chi^2 = 8.12$; $p = 0.0044$), indicating that AMLR should be treated as an endogenous variable. According to Wooldridge (2010), conducting endogeneity tests is an essential prerequisite before applying GMM estimation, as conventional estimators such as Ordinary Least Squares (OLS) or Fixed Effects may produce biased and inconsistent estimates when key explanatory variables are endogenous.⁶⁸ Only AMLR is subjected to endogeneity testing because it is considered the variable most susceptible to simultaneity and omitted variable bias, whereas the control variables are assumed to be exogenous. This approach is consistent with the methodological recommendations of Roodman (2009), who argues that limiting the number of endogenous variables helps preserve instrument validity and prevents instrument proliferation.⁶⁹

⁶⁸ Wooldridge, *Econometric Analysis of Cross Section and Panel Data*.

⁶⁹ David Roodman, “How to Do Xtabond2: An Introduction to Difference and System GMM in Stata,” *The Stata Journal: Promoting Communications on Statistics and Stata* 9, no. 1 (2009): 86–136, <https://doi.org/10.1177/1536867X0900900106>.

Regression Results

The regression results for the full sample, as well as for developing and developed countries separately, are presented below to provide a detailed examination of the relationships among the variables included in the study.

Table 4. Linear Regression Results

<i>Variables</i>	<i>Full Sample</i>	<i>Developing Country</i>	<i>Developed Country</i>
<i>Lag ln Portfolio t-1</i>	0.891*** (0.072)	0.767*** (0.258)	0.925*** (0.0412)
<i>AMLR</i>	0.133 (0.130)	-0.141* (0.0707)	0.215*** (0.0649)
<i>Trade Openness</i>	0.00105 (0.000922)	-0.00177 (0.00244)	0.000927 (0.000572)
<i>Stability and Violence</i>	0.0821 (0.094)	0.111 (0.0914)	-0.0122 (0.0566)
<i>Inflation</i>	-0.00435 (0.00637)	-0.00860 (0.0132)	0.00194 (0.0104)
<i>ln Labor Force</i>	0.169 (0.110)	0.315 (0.357)	0.135** (0.0613)
<i>Financial Institution Access</i>	0.0549 (0.206)	0.566 (0.629)	-0.00677 (0.176)
<i>Domestic Credit</i>	0.00328 (0.00223)	0.00866 (0.00851)	0.00172* (0.000969)
<i>Constant</i>	-2.687 (1.687)	-3.340 (4.391)	-2.686*** (0.824)
<i>Observation</i>	879	495	384
<i>No. of Group</i>	104	59	45
<i>No. of Instruments</i>	11	12	12
<i>AR (1)</i>	0.015**	0.021**	0.000***
<i>AR (2)</i>	0.990	0.602	0.108
<i>Hansen Test</i>	0.466	0.704	0.290

Robust standard error in parentheses ***p<0.01, **p<0.05, *p<0.1

Source: Author's calculations

The results of the two-step GMM estimation reported in Table 4 indicate that the lagged value of foreign portfolio investment, (*lnPortfolio t-1*) has a positive and statistically significant coefficient across all model specifications. This finding suggests a strong degree of persistence in foreign portfolio investment positions over time and is consistent with the dynamic nature of international capital allocation.⁷⁰ For the full sample, AMLR exhibits a positive but statistically insignificant relationship with foreign portfolio investment. In developed countries, however, AMLR has a positive and statistically significant effect at the 1% level, supporting the argument that stronger governance frameworks and lower money laundering risk enhance a country's attractiveness to foreign investors.⁷¹ In contrast, AMLR displays a negative and statistically significant effect at the 10% level in developing countries, suggesting that strengthening AML

⁷⁰ Arellano and Bond, "Some Tests of Specification for Panel Data."

⁷¹ Simeon Djankov, Caralee McLiesh, and Rita Maria Ramalho, "Regulation and Growth," *Economics Letters* 92, no. 3 (2006): 395–401, <https://doi.org/10.1016/j.econlet.2006.03.021>.

regulations without sufficient institutional readiness may create market frictions, increase compliance burdens, and generate uncertainty for investors.⁷²

These contrasting responses indicate that the effectiveness of AML policies is highly dependent on institutional capacity, consistent with the findings of Knack and Keefer (1995) and Campos and Nugent (2003).⁷³ The labor force variable exhibits a positive coefficient across all specifications but is statistically significant only in developed countries, highlighting the importance of labor market size and economic scale in attracting foreign investment.⁷⁴ Similarly, domestic credit as a percentage of GDP exerts a positive and significant effect in developed countries, reinforcing the argument of Beck et al. (2000) regarding the importance of financial deepening in supporting investment inflows.⁷⁵ Other control variables, including trade openness, political stability and absence of violence, inflation, and access to financial institutions, do not exhibit statistically significant effects.

The lack of significance among most control variables may be attributable to the dynamic GMM framework itself. The inclusion of the *lagged* dependent variable absorbs a substantial portion of the variation in foreign portfolio investment, thereby reducing the likelihood that control variables will display independent statistical significance.⁷⁶ The validity of the estimated models is confirmed through the Arellano-Bond serial correlation tests and the Hansen overidentification test. The significant AR(1) statistic combined with the insignificant AR(2) statistic indicates the absence of second-order serial correlation in the residuals, while the insignificant Hansen test result ($p > 0.10$) suggests that the instrument set is valid and not overidentified. Collectively, these diagnostic results support the validity and robustness of the estimated models and provide confidence in the conclusions regarding the relationship between money laundering risk and foreign portfolio investment.

Initial estimation using the linear two-step GMM model reveals a significant relationship between money laundering risk and foreign portfolio investment. To further investigate the possibility of threshold effects and varying marginal impacts, the analysis is extended using a non-linear specification that incorporates the squared term of AMLR (AMLR²). Theoretically, this relationship may reflect the existence of a threshold effect whereby stronger AML regulations initially generate adjustment costs, compliance burdens, and market resistance, but subsequently enhance investor confidence through improvements in legal certainty, transparency, and institutional credibility once a sufficient level of effectiveness is achieved. Consequently, the non-linear specification provides a more realistic representation of the complex relationship between AML effectiveness and foreign portfolio investment across countries with different levels of institutional development. Consistent with Beck et al. (2000b),

⁷² Antwi et al., "Anti-Money Laundering Measures and Financial Sector Development"; David Stasavage, "Private Investment and Political Institutions," *Economics & Politics* 14, no. 1 (2002): 41–63, <https://doi.org/10.1111/1468-0343.00099>.

⁷³ Stephen Knack and Philip Keefer, "Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures," *Economics & Politics* 7, no. 3 (1995): 207–27, <https://doi.org/10.1111/j.1468-0343.1995.tb00111.x>; Nauro F. Campos and Jeffrey B. Nugent, "Aggregate Investment and Political Instability: An Econometric Investigation," *Economica* 70, no. 279 (2003): 533–49, <https://doi.org/10.1111/1468-0335.01081>.

⁷⁴ Philip R. Lane and Gian Maria Milesi-Ferretti, "The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2004," *Journal of International Economics* 73, no. 2 (2007): 223–50, <https://doi.org/10.1016/j.jinteco.2007.02.003>.

⁷⁵ Thorsten Beck, Ross Levine, and Norman Loayza, "Finance and the Sources of Growth," *Journal of Financial Economics*, Special Issue on International Corporate Governance, vol. 58, no. 1 (2000): 261–300, [https://doi.org/10.1016/S0304-405X\(00\)00072-6](https://doi.org/10.1016/S0304-405X(00)00072-6).

⁷⁶ Roodman, "How to Do Xtabond2"; Blundell and Bond, "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models."

Law et al. (2014), and Kaufmann et al. (2011),⁷⁷ the impact of policy reforms on investment outcomes depends critically on institutional capacity. Initial reforms may generate resistance when institutional quality remains below a minimum effectiveness threshold, whereas credible and well-functioning institutions can serve as catalysts for financial market development and investment growth.

Table 5. Non-Linear Regression Results

Variables	Full Sample	Developing Country	Developed Country
<i>Lag ln Portfolio t-1</i>	0.876*** (0.144)	0.712*** (0.199)	0.929*** (0.0307)
<i>AMLR</i>	-0.480 (1.324)	-1.044* (0.0529)	0.401 (0.578)
<i>AMLR2</i>	0.0623 (0.147)	0.108* (0.0589)	-0.0216 (0.0532)
<i>Trade Openness</i>	0.00118 (0.00166)	-0.00217 (0.00278)	0.000598 (0.000398)
<i>Stability and Violence</i>	0.114 (0.114)	0.114 (0.114)	0.00412 (0.0418)
<i>Inflasi</i>	-0.00775 (0.0125)	-0.0136 (0.0136)	0.00181 (0.00809)
<i>ln Labor Force</i>	0.199 (0.232)	0.415 (0.299)	0.119** (0.0635)
<i>Financial Institution Access</i>	0.237 (0.529)	0.959 (0.655)	-0.0660 (0.125)
<i>Kredit Domestik</i>	0.00370 (0.00427)	0.00965 (0.00691)	0.00182** (0.000755)
<i>Constant</i>	-1.729 (1.882)	-2.900 (3.975)	-2.780* (1.017)
<i>Observation</i>	879	495	384
<i>No. of Group</i>	104	59	45
<i>No. of Instruments</i>	14	18	16
<i>AR (1)</i>	0.006***	0.037**	0.000***
<i>AR (2)</i>	0.827	0.505	0.054
<i>Hansen Test</i>	0.777	0.859	0.327

Robust standard error in parentheses ***p<0.01, **p<0.05, *p<0.1

Source: Author's calculations

In the non-linear specification for developing countries, the number of instruments increased from 12 in the linear model to 18 in the non-linear model, while the number of groups remained 59. The Hansen test produced a p-value of 0.859. Although the Hansen test does not reject the validity of the instruments, an excessively high p-value may indicate a loss of test power resulting from instrument proliferation. Therefore, the results should be interpreted with caution. Furthermore, in the developed-country model, the AR(2) test yielded a p-value of 0.054, which is very close to the conventional significance threshold. This finding suggests that the possibility of second-order serial correlation cannot be entirely ruled out. The instrument specification employs lags two through four of the endogenous AMLR variable within the two-step System GMM framework. To address these concerns, a robustness analysis was conducted

⁷⁷ Thorsten Beck, Asli Demirgüç-Kunt, and Ross Levine, "A New Database on the Structure and Development of the Financial Sector," *The World Bank Economic Review* 14, no. 3 (2000): 597–605, <https://doi.org/10.1093/wber/14.3.597>; Law, Tan, and Azman-Saini, "Financial Development and Income Inequality at Different Levels of Institutional Quality"; Kaufmann, Kraay, and Mastruzzi, "The Worldwide Governance Indicators."

using a more parsimonious instrument specification by restricting lag lengths (*lag limits*) and applying the collapse option in the GMM estimation procedure.

The non-linear regression results presented in Table 5 reveal the existence of a threshold effect in the relationship between money laundering risk and foreign portfolio investment, with the nature of the relationship varying across levels of economic development. For developing countries, a statistically significant AMLR threshold is identified at a value of 4.83, indicating that improvements in anti-money laundering effectiveness begin to exert a positive influence on foreign portfolio investment only after this threshold has been surpassed. Below this level, stronger AML measures may impose adjustment costs, increase compliance burdens, or create regulatory frictions that outweigh their potential benefits. Beyond the threshold, however, the gains from enhanced transparency, stronger governance, and improved investor confidence appear to dominate, resulting in higher levels of foreign portfolio investment. In contrast, although the estimated turning points for the full sample and developed countries are 3.85 and 9.28, respectively, neither threshold is statistically significant. Consequently, no reliable turning point can be inferred for these groups. This suggests that the relationship between money laundering risk and foreign portfolio investment is more complex and less dependent on threshold effects in developed economies, where institutional quality and AML frameworks are generally more mature and consistently implemented. The estimated relationships can be further illustrated through the shape of the curves presented below.

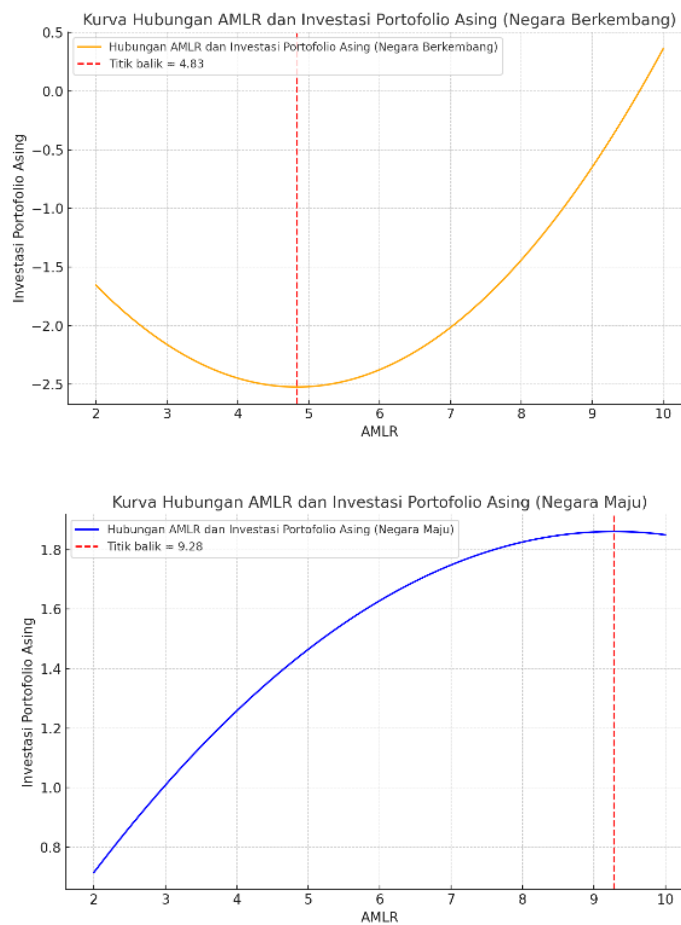


Figure 3. Relationship between AMLR and Foreign Portfolio Investment
Source: Authors' calculations

The non-linear two-step GMM estimation for developing countries reveals a statistically significant quadratic relationship between AMLR and foreign portfolio investment, characterized by a U-shaped pattern. The negative coefficient on AMLR and the positive coefficient on AMLR² indicate that, at lower levels of AML effectiveness, strengthening AML frameworks is associated with a decline in foreign portfolio investment. This initial negative effect likely reflects increased compliance costs, regulatory adjustment burdens, and uncertainty surrounding policy implementation. However, once AMLR exceeds the estimated threshold value of 4.83, the marginal effect becomes positive, suggesting that further improvements in AML effectiveness enhance investor confidence and attract greater foreign portfolio investment. This finding is consistent with Ofoeda et al. (2020) and Antwi et al. (2023),⁷⁸ who argue that the benefits of AML reforms become fully realized only after a minimum threshold of institutional effectiveness has been achieved. In contrast, no statistically significant non-linear relationship is observed for developed countries.

Given that the average AMLR value among developing countries in the sample is 3.95, which lies below the estimated threshold of 4.83, most developing countries remain on the left side of the U-shaped curve, where improvements in AMLR are still associated with a negative marginal effect on foreign portfolio investment. This finding suggests that many developing economies have not yet reached the minimum level of institutional credibility required for AML reforms to generate positive market responses. Consequently, strengthening AML regulations in the absence of broader institutional reforms may be counterproductive. The results support a phased policy approach in which AML reforms are accompanied by improvements in institutional quality, transparency, regulatory consistency, and legal stability. Previous studies similarly suggest that the early stages of AML reform in developing countries are often perceived as symbolic or cosmetic responses to international pressure rather than evidence of substantive commitment to law enforcement and governance improvement.⁷⁹ Such perceptions may explain why initial AML reforms can generate adverse responses from foreign investors. Therefore, AML initiatives should be integrated into broader governance reform agendas to enable countries to surpass the credibility threshold and transform AML compliance into a positive signal for international markets.

The control variables produce mixed results. In developed countries, both Labor Force and Domestic Credit exhibit positive and statistically significant effects, highlighting the importance of economic fundamentals and financial development in attracting foreign portfolio investment. By contrast, Trade Openness, Political Stability and Absence of Violence, Inflation, and Financial Institution Access do not display statistically significant effects across the estimated models. The validity of the GMM estimations is supported by the Arellano-Bond and Hansen diagnostic tests, which indicate the absence of second-order serial correlation and provide no evidence of instrument overidentification, thereby strengthening confidence in the model's ability to capture cross-country investment dynamics.

A comparison between the linear and non-linear specifications demonstrates that the quadratic model provides a more comprehensive representation of the relationship between AMLR and foreign portfolio investment, particularly in developing countries. While the linear model captures only the initial negative effect of AMLR, the non-linear specification reveals the existence of a turning point beyond which the effect of AML reforms shifts from negative

⁷⁸ Ofoeda et al., "Anti-Money Laundering Regulations and Financial Sector Development"; Antwi et al., "Anti-Money Laundering Measures and Financial Sector Development."

⁷⁹ Michael Levi and Peter Reuter, "Money Laundering," *Crime and Justice* 34 (2006): 289–375, <https://doi.org/10.1086/501508>; Jason Sharman, "Offshore and the New International Political Economy," *Review of International Political Economy* 17, no. 1 (2010): 1–19, <https://doi.org/10.1080/09692290802686940>.

to positive. This finding reinforces the arguments of Beck et al. (2006) and Law et al. (2014),⁸⁰ who contend that the relationship between financial regulation, institutional quality, and investment outcomes is inherently non-linear. Consequently, non-linear modeling approaches offer a more appropriate framework for developing evidence-based policy recommendations in the context of global financial regulation.

Importantly, the negative effect observed during the initial phase of AML reform should not be interpreted as evidence that AML regulations should be weakened or relaxed. Rather, the findings underscore the importance of implementing AML reforms in a structured, gradual, and institutionally supported manner to ensure that countries can surpass the credibility threshold necessary to generate positive investment outcomes. Institutional reputation plays a critical role in shaping investor risk perceptions, as credible institutions, consistent legal systems, and transparent regulatory frameworks are generally viewed as safeguards against uncertainty.⁸¹ Compliance with AML regulations serves as a signal of institutional credibility, demonstrating a country's commitment to preserving financial integrity and adhering to international standards.⁸² Effective AML enforcement reflects both administrative capacity and political commitment, while also signaling the presence of inclusive institutions that uphold the rule of law and accountable governance.⁸³ Together, these factors contribute to greater confidence among international investors and enhance a country's attractiveness as a destination for foreign portfolio investment.

Conclusion And Policy Implications

Conclusion

The linear model indicates that money laundering risk is associated with foreign portfolio investment, although the nature of this relationship varies across levels of economic development. In developed countries, lower money laundering risk is positively and significantly associated with foreign portfolio investment in the linear specification, suggesting that stronger governance and more effective AML frameworks enhance investor confidence in economies characterized by mature financial systems and established institutional structures. However, this significance is observed only in the linear model, as AMLR becomes statistically insignificant in the non-linear specification for developed countries. In contrast, the linear model for developing countries reveals a significant negative relationship between AMLR and foreign portfolio investment, implying that reductions in money laundering risk may initially generate adjustment costs and regulatory frictions when not accompanied by sufficient institutional readiness.

When the model is extended to include a quadratic AMLR term, a significant U-shaped relationship emerges, particularly among developing countries. The results indicate that strengthening AML frameworks may initially discourage foreign portfolio investment by increasing compliance costs and creating implementation uncertainty. However, once the estimated turning point (AMLR = 4.83) is surpassed, further improvements in AML

⁸⁰ Thorsten Beck, Asli Demirgüç-Kunt, and Ross Levine, "Bank Concentration, Competition, and Crises: First Results," *Journal of Banking & Finance* 30, no. 5 (2006): 1581–603, <https://doi.org/10.1016/j.jbankfin.2005.05.010>; Law, Tan, and Azman-Saini, "Financial Development and Income Inequality at Different Levels of Institutional Quality."

⁸¹ Kaufmann, Kraay, and Mastruzzi, "The Worldwide Governance Indicators"; Rodrik, Subramanian, and Trebbi, "Institutions Rule."

⁸² Sharman, "Offshore and the New International Political Economy."

⁸³ Daron Acemoglu, Simon Johnson, and James A. Robinson, "Chapter 6 Institutions as a Fundamental Cause of Long-Run Growth," in *Handbook of Economic Growth*, vol. 1, ed. Philippe Aghion and Steven N. Durlauf (Elsevier, 2005), 385–472, [https://doi.org/10.1016/S1574-0684\(05\)01006-3](https://doi.org/10.1016/S1574-0684(05)01006-3).

effectiveness generate positive effects by enhancing legal certainty, institutional credibility, and investor confidence. By contrast, AMLR remains statistically insignificant in the non-linear model for developed countries, suggesting that in economies with well-established governance systems and mature financial markets, foreign portfolio investment is less sensitive to variations in money laundering risk.

The non-linear approach provides a more nuanced and context-specific understanding of the relationship between money laundering risk and foreign portfolio investment than the linear specification. By capturing cross-country heterogeneity in institutional capacity and governance quality, the findings demonstrate that the effectiveness of AML reforms depends critically on a country's stage of institutional development. These results support the view that AML reforms in developing countries should be implemented gradually and in conjunction with broader institutional strengthening efforts. Consistent with the Kuznets-type framework and the arguments advanced by Rodrik et al. (2004) and Acemoglu et al. (2005),⁸⁴ the impact of regulatory reforms on investment outcomes is progressive rather than immediate and depends on the attainment of a minimum threshold of institutional credibility. Therefore, AML policies that are appropriately designed, proportionate, and aligned with domestic institutional capacity can serve as an important catalyst for attracting foreign portfolio investment.

Policy Implications

The findings of this study suggest that the implementation of AML standards in developing countries should be aligned with domestic institutional capacity. Strengthening AML frameworks should be undertaken gradually and guided by a risk-based approach to avoid imposing excessive burdens on institutions that lack sufficient administrative and regulatory readiness. Premature or overly stringent implementation may lead to over-compliance, increase transaction costs, slow business processes, and ultimately reduce the attractiveness of domestic markets to foreign investors. To maintain investment stability during periods of regulatory transition, governments should anticipate rising compliance costs by providing appropriate fiscal incentives, regulatory support, or capacity-building programs for domestic financial institutions and market participants.

Enhancing the credibility of AML governance is essential to ensure that stronger AML regulations do not inadvertently discourage foreign portfolio investment. This objective can be achieved through greater interagency data integration, improved supervisory infrastructure, and transparent and consistent law enforcement. In addition, the Financial Action Task Force (FATF) should continue to strengthen its role by considering not only formal compliance outcomes but also the broader economic implications of AML reforms. Greater technical assistance and institutional support for developing countries would help ensure that efforts to strengthen AML frameworks do not unnecessarily constrain the capital inflows needed to support economic development.

Limitations and Future Research

This study is subject to several limitations that should be acknowledged. First, the analysis covers the period from 2012 to 2021 and therefore does not capture developments in the global AML regime after 2021, including recent FATF mutual evaluations and the accession of several developing countries to full FATF membership. Future studies may extend the dataset to more recent years in order to assess whether the observed relationships remain stable under the evolving international AML landscape. Second, the Basel AML Index has inherent limitations

⁸⁴ Rodrik, Subramanian, and Trebbi, "Institutions Rule"; Acemoglu, Johnson, and Robinson, "Chapter 6 Institutions as a Fundamental Cause of Long-Run Growth."

as a composite indicator that combines multiple dimensions of risk, including legal quality, corruption, transparency, and political factors. Consequently, it does not allow for the precise identification of which specific dimensions exert the greatest influence on foreign portfolio investment. Future research may disaggregate the index and examine its individual components separately. Third, the quadratic regression framework employed to capture non-linearity may be less precise in identifying threshold effects than alternative approaches such as panel threshold models. Future studies could apply threshold regression techniques to provide more accurate estimates of turning points and regime-specific effects. Fourth, the analysis does not explicitly account for regional heterogeneity. Given that investor perceptions and AML-related risks may vary substantially across geographic regions, future research could conduct regional analyses to identify location-specific patterns in the relationship between money laundering risk and foreign portfolio investment. Fifth, this study does not provide a country-specific assessment of Indonesia. Because the empirical framework is based on cross-country estimation, it does not generate individual country coefficients that would permit a direct statistical evaluation of Indonesia's position. Future studies employing time-series methods or single-country case study approaches could provide more detailed insights into Indonesia's trajectory, particularly following its attainment of full FATF membership in 2023 and the potential implications for foreign portfolio investment attractiveness. Finally, it remains possible that relevant explanatory variables have been omitted from the model. Future research could incorporate more precise measures of institutional quality, governance effectiveness, and regulatory capacity, as well as interaction terms to capture more complex relationships among variables. In addition, the examination of non-linear effects could be expanded through panel threshold approaches or other advanced econometric techniques, thereby providing a richer understanding of how money laundering risk influences foreign portfolio investment across different institutional and developmental contexts.

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