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Not all investors are the same: Evidence from investor holdings of local-currency debt in Indonesia

Amr Hosny

International Monetary Fund, 1900 Pennsylvania Avenue NW, Washington, DC 20431, USA.
Email: ahosny@imf.org

Abstract

This paper examines the global and domestic factors driving different investor holdings of local currency (LC) sovereign debt in Indonesia. Using an autoregressive distributed lag co-integration approach, using monthly data for Indonesia over 2002M12-2022M12, we find that non-resident holdings of LC debt in Indonesia are mostly driven by global factors such as commodity prices and volatility in global bond markets, while domestic investors (such as domestic banks and institutional investors) are mostly driven by higher debt security issuances and Bank of Indonesia (BI) acts as a residual financier under adverse conditions. We also find evidence that foreign investors follow the "benchmark effect" and are attracted by higher domestic yields. Results are mostly robust to different specifications. These results call for a further deepening of the investor base, especially domestic nonbanks, to support market depth and reduce volatility.

Keywords: Foreign holdings, Indonesia, Local currency debt, Portfolio flows.
JEL Classification: F30; G11; G15; O16.

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Contents

Contribution of this paper to the literature

We contribute to the empirical literature on the determinants of investor holdings of sovereign debt by looking at the role of both global and domestic factors, and on different resident and non-resident investors, whereas the literature has been mostly focused on the role of global factors on non-resident holdings.

1. Introduction and Motivation

Indonesia has experienced a significant decline in the nonresident (NR) share of local-currency (LC) debt coinciding with the pandemic. Public debt reached around 40 percent of Gross Domestic Product (GDP) in 2022 from 30.6 percent in 2019 (as illustrated in Figure 1), mostly driven by higher LC debt issuances, owing to the exceptional fiscal measures deployed in 2020-22 to fight the COVID-19 pandemic, during which the fiscal rule was temporarily suspended and the BI-MoF introduced a burden-sharing financing agreement. At the same, time, the NR share of LC debt declined from 39 percent in 2019Q4 (one of the highest ratios across a large sample of EMs from Arslanalp and Tsuda (2014) to about 14 percent at end-2022. While the institutional investors' (mutual funds, insurance companies, and pension funds) share of LC debt holdings have remained broadly stable, the shares of Bank of Indonesia (BI) and domestic banks have increased during COVID years, in line with BI's primary market purchases under the BI-MoF burden-sharing financing agreement (as illustrated in Figure 2). NR holdings have shown some signs of recovery in recent months and remain mostly concentrated in long-dated securities (as illustrated in Figure 3).

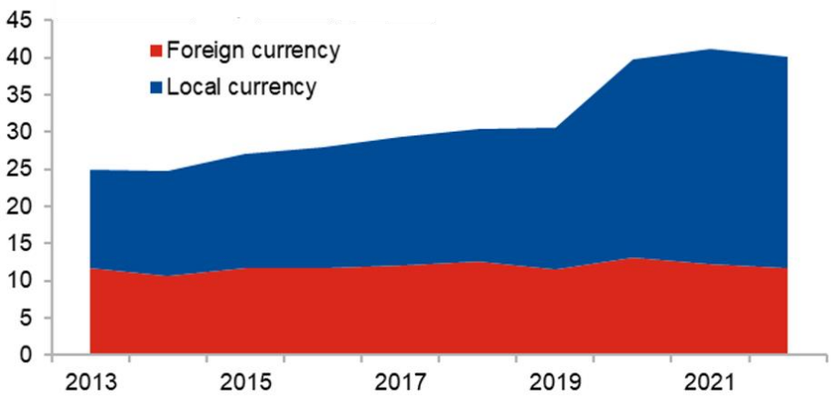

Figure 1. Public debt (By currency, in percent of GDP.

The recent fall in the NR Share of LC debt is unprecedented historically, and relative to other EMs. Since COVID-19, the decline in NR holdings of LC debt has been almost 3 percent of GDP. The decline can be broken down into two periods. In the first period, covering 2020 and 2021, large NR outflows mainly reflected the COVID shock, and BI started primary market purchases under the BI-MoF agreement amid rising fiscal deficits. The decline in NR holdings continued in 2022, amid the tightening in global financial conditions driven by the Fed tightening (also see IMF (2021)).

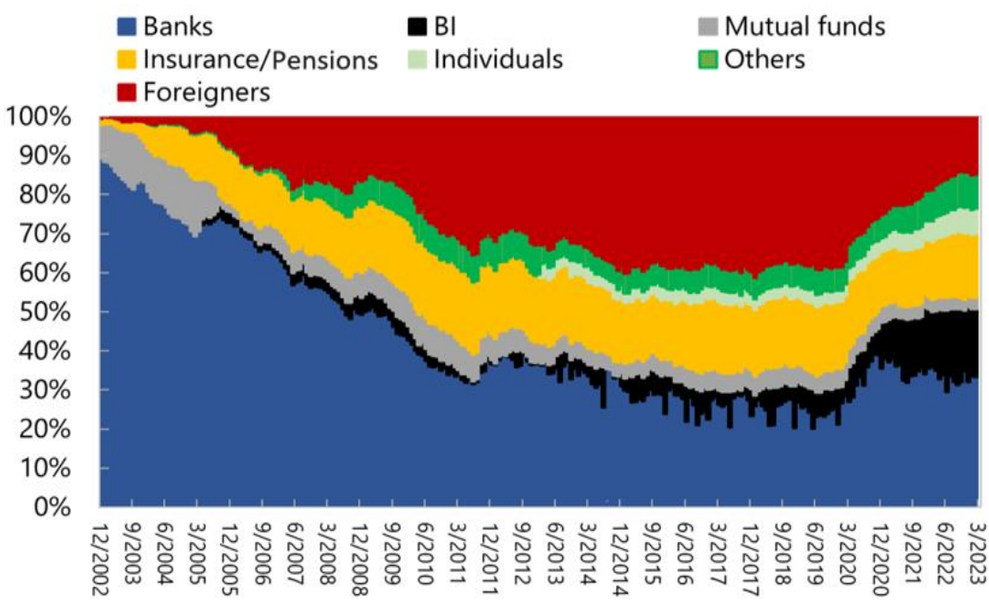

Figure 2. Investor profile Indonesia-govt. LC bonds (Share of govt securities outstanding, monthly).
Source: Ministry of Finance (MoF) & CEIC.

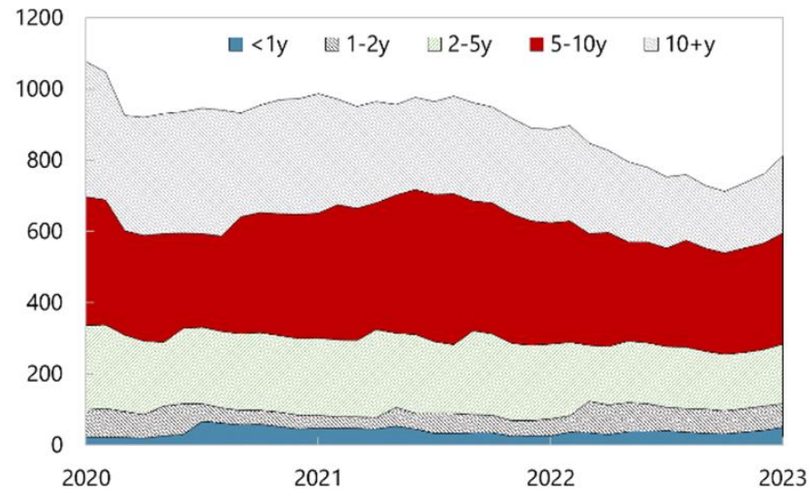

Figure 3. Foreign holdings of LC debt, by remaining maturity (In trillions, rupiah).
Source: MoF & Haver.

The NR share of LC debt in Indonesia is now close to the average Emerging Market (EM). Indonesia had the second highest NR share of LC debt in 2019Q4, just before the pandemic, but now stands at about the EM average (as illustrated in Figure 4). At the same time, the limited size and role of domestic nonbanks (institutional investors) may partially explain the historically high share of NR holdings in Indonesia (as illustrated in Figure 5).

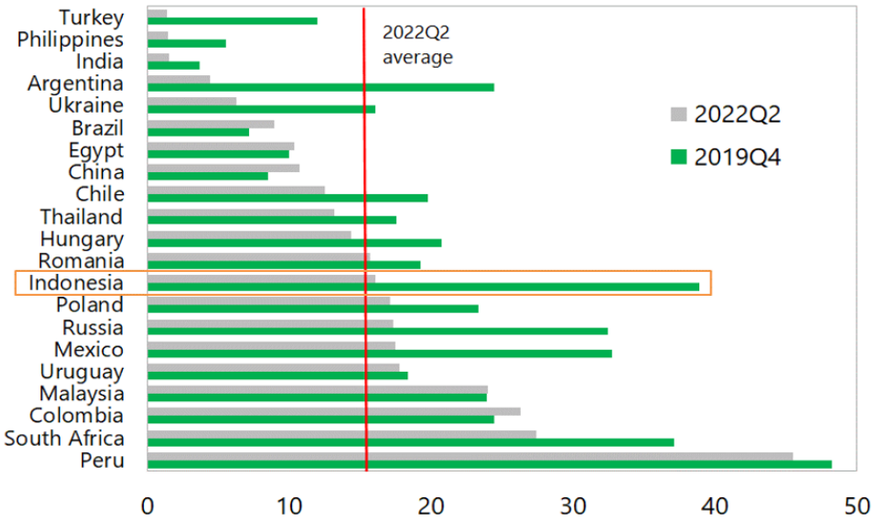

Figure 4. Foreign holdings of LC government debt securities (In percent of total).
Source: Arslanalp and Tsuda (2014).

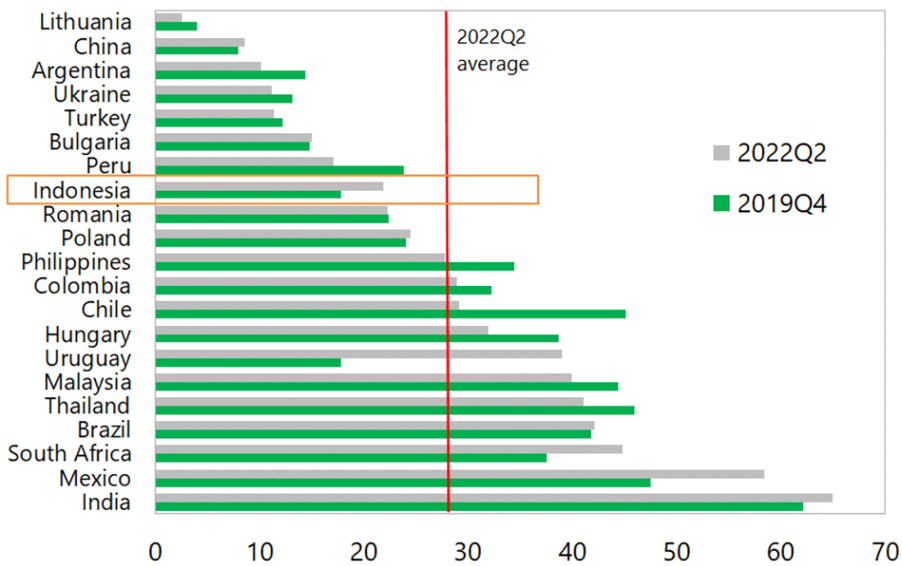

Figure 5. Domestic nonbanks' holdings of LC government debt securities (In percent of total).
Source: Arslanalp and Tsuda (2014).

Different investor profiles come with different risks. Sovereign borrowing can help buffer the economy from the impact of adverse macroeconomic shocks. But it can also make a country vulnerable to financial distress. On top of that, not all investors are the same. The literature points to several pros and cons of having a higher NR share of LC debt:

- Pros: Foreign investors can improve price discovery, increase demand for longer-maturity instruments and provide liquidity (Arslanalp & Tsuda, 2014; Bae, 2012). Greater foreign participation can reduce long-term

government bond yields due to a more diversified investor base (Arslanalp & Tsuda, 2014; Christian Ebeke & Lu, 2015; Lu & Dmitry, 2017; Peiris, 2010).[1] A higher NR share can also minimize the crowding-out of private credit and the sovereign-bank nexus (Asonuma et al., 2015; Broner, Erce, Martin, & Ventura, 2014).

- Cons: Higher NR shares can increase rollover and exchange rate risks (Calvo, Izquierdo, & Talvi, 2006). Higher NR shares can also increase risks to sudden stops or capital reversals, as these flows are more volatile and short term in nature (BIS, 2007; Calvo et al., 2006). Bhattacharya, Johnson, Nkusu, and Wang (2022) also argue that a NR investor base can be a more volatile and less stable source of funding for the sovereign. In addition, there is some evidence of increased yield volatility with higher shares of NR holdings (C. Ebeke & Kyobe, 2015; Christian Ebeke & Lu, 2015). Burger and Warnock (2007) argue that U.S. investors avoid LC bonds that have returns with historically high variance and negative skewness–features that are predominant in EMs.

Against this background, this paper examines the global and domestic factors driving different investor holdings of local currency (LC) sovereign debt in Indonesia. We contribute to the literature by looking at the role of both global and domestic factors, and on different resident and non-resident investors, whereas the literature has been mostly focused on the role of global factors on non-resident holdings (for example see Arslanalp and Tsuda (2014)).

To distinguish long-run from short-run effects, we use the autoregressive distributed lag (ARDL) co-integration approach of Pesaran, Shin, and Smith (2001) using monthly data over the period 2002M2-2022M12. We find that foreign participation in the LC debt market in the long run is positively correlated with global factors such as global commodity prices, volatility in global bond markets, and global interest rates. We also find some evidence that higher domestic yields may attract foreigners. Domestic banks and non-banks tend to increase their holdings with higher debt issuances, and BI acts as a residual financier under adverse global conditions. Results are mostly robust to different specifications.

This paper is structured as follows. After this introduction, section B presents the empirical methodology and results. Section C concludes and presents some policy implications.

2. Empirical Methodology and Results

The decision of different investors to hold LC government debt can reflect both global and domestic conditions. Domestic (or pull) factors usually include domestic bond yields, the amount of debt issuance, and different country-specific risks. Global (or push) factors typically include global commodity prices, global interest rates and financial market volatility. For a survey of the empirical literature on the drivers of capital inflows into EMs, see for instance (Koepke, 2018).

Global factors tend to carry a large weight in index-funds and decisions to invest in LC debt in EMs. Several studies argue that portfolio flows to EMs tend to be correlated, driven by the so-called "benchmark effect" (see (Arslanalp, Drakopoulos, Goel, & Koepke, 2020; Arslanalp & Tsuda, 2015; BIS, 2007; Brandão-Marques, Luis, Ichiue., & Oura., 2015)). This refers to the observation that benchmark-driven investors are typically more sensitive to global than country-specific factors, as their investments consider EMs as an asset class, thus focusing mainly on factors that affect EMs as a group, rather than on country-specific developments.[2] Raddatz, Schmukler, and Williams (2017) find that benchmarks explain, on average, between 40-70 percent of equity and bond mutual fund portfolio allocations after controlling for country-specific effects. Rey (2015) argues that capital flows are mainly driven by monetary conditions in main financial centers. Sienaert (2012) highlights the role of benchmark index inclusion, or the risk of exclusion if already included, in affecting investment decisions of institutional investors.

We model investor holdings of LC debt in Indonesia as a function of domestic and global factors. Using time-series data for Indonesia, we examine the role of both domestic and global factors in the investment decisions of different types of resident and non-resident investors (see Koepke (2018) and Hosny (2020) for a survey of the empirical literature). Specifically, using monthly data for Indonesia over 2002M12-2022M12, we estimate the following equation:

$$\text{Investor holdings}_t = \beta_0 + \beta_1 domestic_t + \beta_2 global_t + \varepsilon_t$$

Where the dependent variable represents different investor holdings of Indonesia's LC tradable debt securities. The investors include foreign investors (*LCdebt_F*), domestic banks (*LCdebt_bank*), BI (*LCdebt_BI*), and nonbank residents or institutional investors (*LCdebt_nbres*). We regress the holdings of these investor types on a set of domestic and global variables following the literature (Bae, 2012; Fang, Hardy, & Lewis, 2022; Grigorian, 2019; Koepke, 2018; Konopczak, 2015; Rey, 2015). All variables, except bond yields, are expressed in logs.

- Domestic factors include the rate of return on domestic securities, specifically the ten-year sovereign bond yield (*yield_10y*), and LC debt issuances (*issuances*).
- Global factors include an index of global commodity prices (*comm prices*) as Indonesia is a diversified commodity exporter, a measure of global financial volatility in bonds (*MOVE*),[3] as well as the ten-year US bond yield (*yieldUS_10y*) to account for the opportunity cost of investing in Indonesia.

To distinguish long-run from short-run effects, we use the autoregressive distributed lag (ARDL) co-integration approach of Pesaran et al. (2001). The long-run equation is represented in levels and the short-run equation is represented as an error correction equation in first differences. Both equations are simultaneously estimated by Ordinary Least Squares (OLS). An advantage of the ARDL procedure is that it is applied irrespective of the time-series properties of the regressors.[4] In estimating the models, we use information criteria to select the optimum lag.[5]

Results point to the importance of global factors especially for nonresidents, while domestic investor holdings are mostly associated with higher debt Security issuances, and BI acts as a residual financier under adverse conditions.

[1] Asonuma, Said, and Heiko (2015) find that high domestic banks' holdings of domestic debt (home bias) can generally reduce borrowing costs, but this effect diminishes during crisis and maybe associated with less responsive fiscal policy.

[2] Benchmark-driven investors are those who invest in countries through a fund that either tracks or closely follows a flagship benchmark index. One of such indices is the J.P. Morgan Government Bond Index-Emerging Markets (GBI-EM), which tracks local currency bonds issued by EMs. Indonesia has a weight of 10 percent in the GBI-EM index as of end-December 2021, ahead of countries like Malaysia and South Africa.

[3] The Merrill Lynch Option Volatility Expectations (MOVE) index tracks the movement in U.S. Treasury yield volatility implied by current prices of one-month options on 2-year, 5-year, 10-year and 30-year Treasuries. It is published by ICE BofAML and can be accessed at https://macrovar.com/united-states/move-index/. It has been cited that one can think of MOVE as the "VIX for Bonds".

[4] Specifically, the Pesaran et al. (2001) bounds testing approach reports two sets of critical values; an upper bound critical value assuming all variables are *I(1)*, and a lower bound assuming all are *I(0)*. If the calculated F-statistic is above the upper bound, then the variables are jointly statistically significant, indicating long-run cointegration.

[5] See Bahmani-Oskooee and Tanku (2008) for details. Panopoulou and Pittis (2004) provide evidence that ARDL generally performs better than alternative methods, such as dynamic OLS, both in terms of estimation precision and reliability of statistical inferences.

We find that foreign holdings are associated with global factors, such as global commodity prices and volatility in global bond markets. See Table 1 for full results.

Table 1. ARDL long-run model: 2002M12-2022M12 for Indonesia.

	LCdebt_f	LCdebt_banks	LCdebt_BI	LCdebt_nbres
Domestic factors:				
Yield_10y	0.249*	0.044	0.056	-0.023
	(0.149)	(0.033)	(0.063)	(0.026)
Issuances	1.102***	0.521***	1.926***	1.196***
	(0.391)	(0.093)	(0.166)	(0.073)
Global factors:				
YieldUS_10y	-0.103	-0.043	0.202*	0.015
	(0.234)	(0.083)	(0.106)	(0.049)
Comm prices	1.783**	-0.310*	-0.976**	0.187
	(0.710)	(0.185)	(0.406)	(0.134)
Move	-1.949**	-0.203	0.789***	0.427***
	(0.814)	(0.158)	(0.269)	(0.131)
Observations	227	227	206	231
R-squared	0.406	0.403	0.351	0.355
ARDL	(5,4,2,0,1,1)	(6,0,6,4,0,1)	(4,0,0,0,0,0)	(6,2,1,0,0,0)
Sample	Full	Full	Full	Full

Note: Standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

This result is in line with the "benchmark effect" of Rey (2015) and Arslanalp et al. (2020) in EMs.[6] We also find some evidence that higher domestic yields may attract foreigners. All investors seem to increase their holdings with higher debt security issuances. Holdings of resident banks and BI seem to decrease with higher global commodity prices, potentially because in such cases NR shares increase and/or banks may prefer lending to the private sector linked to commodities. The BI increases its holdings with higher debt issuances as expected, but importantly its holdings are also positively correlated with a worsening in the global factors considered in the regression, indicating that BI acts as a residual financier under adverse conditions. This result is also in line with findings from the literature on "home bias"; i.e. domestic investors are willing to hold domestic bonds under conditions that would make foreign investors exit (Bhattacharya et al., 2022).

Results are mostly robust to different specifications. We experiment with different robustness checks. This includes adding new independent variables such as the exchange rate (IDR/USD) and a measure of country risk (proxied by the ICRG index),[7] as well as different definitions of independent variables, including yield spreads (instead of domestic and U.S. yields separately), commodities (oil vs all commodities), yield maturities (5y vs 10y), a measure of global expected volatility of equities (VIX),[8] and real instead of nominal yields. We also examine different sample periods (before COVID-19), and different definitions of the dependent variable (holdings to GDP ratio, and holdings to total debt ratio instead of the nominal value of holdings).[9]

3. Conclusion and Policy Implications

In this paper we find that NR investors in Indonesia mostly respond to global factors. Using time-series econometrics on Indonesian data over 2002M2-2022M12, we find that foreign participation in the LC debt market in the long-run is positively correlated with global factors such as global commodity prices, volatility in global bond markets, and global interest rates. We also find some evidence that higher domestic yields may attract foreigners. Domestic banks and non-banks tend to increase their holdings with higher debt issuances, and BI acts as a residual financier under adverse global conditions. Even if global factors are a major driver of NR inflows, domestic policies in EMs also matter. This is in line with Ghosh, Ostry, and Qureshi (2016) and Lu and Yakovlev (2018). Amstad, Eli, and Jimmy (2016) find similar evidence, where they argue that while movements in global risk factors determine whether spreads rise or fall over time, the extent to which these spreads rise or fall depends on domestic country-specific factors. Strong policies and fundamentals during periods of capital inflows – such as macroeconomic stability, fiscal and external buffers, and institutional quality – would make the country more resilient when capital flows reverse.

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[6] Hosny (2020) finds similar evidence of the importance of global factors in NR portfolio inflows into Nigeria.
[7] The International Country Risk Guide (ICRG) index comprises 22 variables in 3 subcategories of risk: political, financial, and economic. It is available at https://epub.prsgroup.com/products/icrg, and updated monthly for 140 countries. In the regressions, we use the inverse of the ICRG index, so that higher values represent more risk, so coefficients attached to this risk index would have the same interpretation as the VIX global index.
[8] The VIX volatility index, created by the Chicago Board Options Exchange (CBOE), is a real-time market index derived from the price inputs of the S&P 500 index options. It provides a measure of market risk and investors' sentiments and is widely used in the empirical literature. It is available at http://www.cboe.com/vix. It is a wider measure of volatility compared to MOVE, as it measures volatility of the S&P 500 stock market options as opposed to that of U.S. bonds only. Simple correlation between the VIX and MOVE indices over the sample period is 0.64.
[9] Results are not shown for space considerations.

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