

# Special Topics on Financial Markets

## Local Currency Bond Market Development and Exchange Rate Volatility

### Introduction

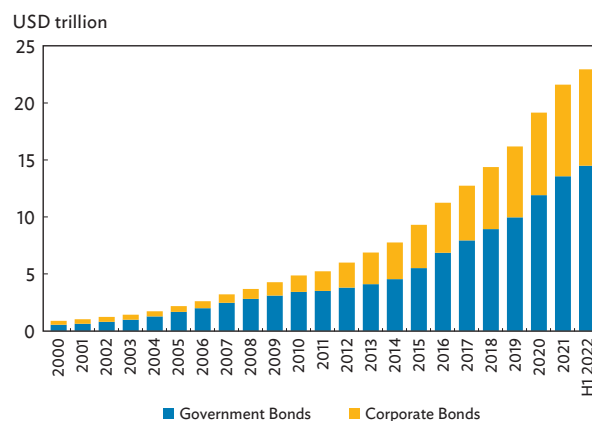
In 2022, accelerated monetary tightening in the United States (US) has led to currency depreciation and capital outflows in emerging markets.<sup>7</sup> This again highlights emerging markets' vulnerability to global shocks. Market liquidity is negatively affected as investors sell risky assets and shift funds to safe and liquid assets, which is known as flight-to-quality and flight-to-liquidity. A liquidity shortage, combined with structural issues in the market, could lead to a systemic financial crisis. For example, in the late 1990s, maturity and currency mismatches were widely documented as a key structural issue in financial markets that contributed to the 1997/98 Asian financial crisis. Eichengreen and Hausman (1999) claim that emerging markets become vulnerable to shocks because these economies have difficulty borrowing from abroad in their domestic currency or borrowing longer term. To mitigate financial fragility arising from these weaknesses, many Asian economies have put efforts into developing local currency (LCY) bond markets to channel LCY funding, especially longer-term tenors, to borrowers (Park, Shin, and Tian 2019). According to the International Monetary Fund (2016), LCY bond market development can prevent excessive cross-border capital flows, reduce excessive reliance on foreign capital, and reduce the currency mismatch problem on the balance sheet. There are studies linking LCY bond market development with financial stability by reducing foreign borrowing, providing a variety of funding maturities (especially long-term financing), and improving risk management in the banking sector (International Monetary Fund 2016; Jeanneau and Tovar 2008; Caballero, Farhi, and Gourinchas 2008; Park, Shin, and Tian 2019; Tian, Park, and Cagas 2021).

## Local Currency Bond Market Development in Emerging East Asia

The LCY bond market in emerging East Asia underwent rapid development during the past 2 decades. The size of the region's outstanding LCY bond market reached USD22.9 trillion at the end of June 2022, almost 27 times its size in 2000 (**Figure 26**). The market is dominated by government LCY bonds, which accounted for more than 60% of the region's bond market at the end of June 2022. The share of LCY bonds outstanding in the region's total bond market averaged about 90% over the past 2 decades.

After more than 20 years of development, emerging East Asia has made significant progress in channeling long-term funding into its LCY bond markets. The share of LCY bond issuance with tenors greater than 10 years increased from 6.9% in 2000 to 20.7% in the first half of 2022 (**Figure 27**). Tenors ranging from 5 years to

**Figure 26: Size of Local Currency Bonds in Select Emerging East Asian Markets**



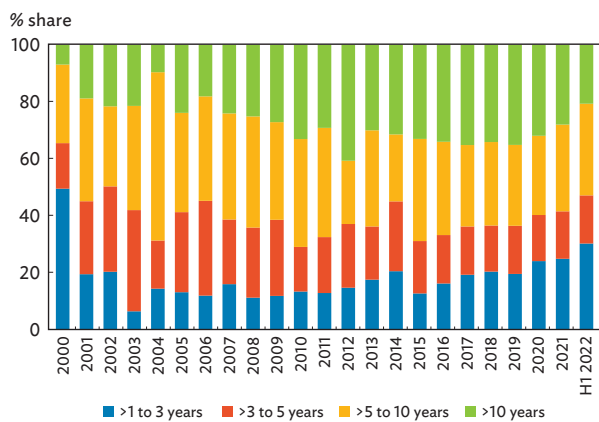
H1 = first half, USD = United States dollar.

Note: Emerging East Asia includes the People's Republic of China; Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; Thailand; and Viet Nam.

Sources: *AsianBondsOnline* and Bloomberg LP.

<sup>7</sup> This summary was written by Shu Tian (Senior Economist) and Mai Lin Villaruel (Economics Officer) based on Cheonkoo Kim, Jungsoo Park, Donghyun Park, and Shu Tian. "Local Currency Bond Market Development and Currency Stability during Market Turmoil." ADB Working Paper Series. Forthcoming.

**Figure 27: Maturity Profile of Bond Issuance in Select Emerging East Asian Local Currency Bond Markets**



H1 = first half.

Note: Emerging East Asia includes the People's Republic of China; Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; Thailand; and Viet Nam.

Sources: AsianBondsOnline and Bloomberg LP.

10 years also increased from 27.6% in 2000 to 32.1% in the first half of 2022. On average, LCY bonds with tenors of 5 years or more accounted for 60.1% of the region's annual LCY bond issuance during the past 2 decades.

### Empirical Evidence: Local Currency Bond Market and Currency Stability during Market Turmoil

This study aims to examine whether LCY bond market development can contribute to financial stability during periods of market turmoil. In particular, the study focuses on the impact of the LCY bond market development in stabilizing exchange rate volatility during stress periods. Specifically, it examines whether a greater share of LCY bonds in the overall bond market and a greater share of long-term maturities have an additional stabilizing effect on exchange rate volatility during different types of global shocks, such as financial crises, the coronavirus disease (COVID-19) pandemic, and US monetary tightening.

Empirically, the study employs fixed-effects panel regressions using annual–economy panel data.

The study covers 28 global economies with a total of 482 observations from 1989 to 2020.<sup>8</sup> The dependent

variable is the volatility of exchange rate changes, which is defined as the standard deviation of monthly exchange rate changes (against the USD) during a year. The key independent variables of interest are the size of the LCY bond market (outstanding LCY bonds) as a share of gross domestic product (GDP), the share of LCY bonds to total bonds, and the share of bonds with tenors of more than 10 years to total bonds. Following Park, Shin, and Tian (2019), the analysis controls common exchange rate volatility drivers such as inflation; the ratios of current account balance to GDP, foreign reserves to GDP, capital inflows to GDP, and portfolio flows to GDP; financial market development (including bank loans and stock market capitalization as shares of GDP); as well as market fixed effects to account for time-invariant market characteristics. To gauge the impact of LCY bond market development on exchange rate volatility during crisis, the study includes indicators for financial crises—including the Asian financial crisis, the global financial crisis, and the COVID-19 pandemic—as well as an interaction term between LCY bond market development variables and the crisis indicators in model specifications.

**Table 6** reports the estimated impacts of LCY bond market development on exchange rate volatility during the Asian financial crisis, the global financial crisis, and the COVID-19 pandemic. It is found that larger LCY bond markets experienced significantly lower exchange rate volatility during the two financial crises and the COVID-19 pandemic, as shown in columns 2 and 4, respectively. The volatility reduction effect is larger in Asian markets, as shown in column 3. In particular, a 1% larger LCY bond market as a share of GDP reduced exchange rate volatility by 0.00649 (0.31% of sample mean) during the financial crises and by 0.00795 (0.37% of sample mean) during the pandemic. In addition, a 1% larger LCY bond market as a share of GDP contributed to 0.0152 less exchange rate volatility (0.716% of sample mean) in Asian markets.

**Table 7** reports the impacts of bond market structure on exchange rate volatility. This analysis focuses on the role of LCY bonds and long-term bonds. Evidence shows that economies with a larger share of LCY and longer-term bonds in their bond market experienced less exchange rate volatility, especially during a crisis.

<sup>8</sup> The 28 global economies included in the sample are Australia; Brazil; Canada; the People's Republic of China; Colombia; Croatia; Denmark; Hong Kong, China; Hungary; India; Indonesia; Israel; Japan; the Republic of Korea; Malaysia; Mexico; New Zealand; Norway; Pakistan; Peru; the Philippines; the Russian Federation; Singapore; South Africa; Sweden; Switzerland; Thailand; and the Republic of Türkiye.

**Table 6: Local Currency Bond Market Development and Exchange Rate Volatility during Periods of Financial Uncertainty**

Variables	1	2	3	4
<i>LCY bonds as share of GDP</i>	-0.226 (-0.745)	-0.100 (-0.340)	-0.165 (-0.515)	-0.028 (-0.095)
<i>LCY bonds as share of GDP * financial crisis</i>		-0.649** (-2.309)	0.781 -1.174	
<i>LCY bonds as share of GDP * financial crisis * Asia</i>			-1.520*** (-2.842)	
<i>LCY bonds as share of GDP * COVID-19</i>				-0.795* (-1.918)
Observations	482	482	482	482
R-squared	0.257	0.265	0.287	0.157
Number of economies	28	28	28	28
Control variables	YES	YES	YES	YES
Market fixed effects	YES	YES	YES	YES

COVID-19 = coronavirus disease, GDP = gross domestic product, LCY = local currency.

Note: \* indicate statistical significance at the 10% level, \*\* at 5%, and \*\*\* at 1%. The numbers in parentheses represent robust t-statistics.

Source: Authors' calculations.

**Table 7: Impact of Local Currency Bond Market Structure on Exchange Rate Volatility**

Variables	1	2	3	4	5
<i>Share of local currency bonds</i>	-1.942** (-2.317)		-1.737* (-1.873)	-1.948** (-2.317)	-1.747* (-1.929)
<i>Share of longer tenor (&gt;10 years)</i>		-2.607** (-2.558)	-2.534** (-2.597)		-2.481** (-2.543)
<i>LCY bonds as share of GDP * financial crisis</i>				-0.608** (-2.232)	-0.554* (-1.994)
<i>Financial crisis</i>	1.335*** -5.353	1.305*** -5.313	1.319*** -5.45	1.724*** -5.162	1.674*** -5.011
Observations	468	468	468	468	468
R-squared	0.287	0.313	0.321	0.295	0.328
Number of economies	28	28	28	28	28
Control variables	YES	YES	YES	YES	YES
Market fixed effects	YES	YES	YES	YES	YES

GDP = gross domestic product, LCY = local currency.

Note: \* indicate statistical significance at the 10% level, \*\* at 5%, and \*\*\* at 1%. The numbers in parentheses represent robust t-statistics.

Source: Authors' calculations.

Specifically, a 1% larger LCY bond market as a share of the total bond market reduced exchange rate volatility by 0.019 (0.895% of sample mean), and 1% more long-term bonds (tenors of 10 years or above) as a share of the total bond market is associated with 0.026 less exchange rate volatility (1.224% of sample mean). During financial crises, a 1% larger LCY bond market as a share of the total bond market is associated with 0.006 less exchange rate volatility, as shown in column 4.

As an important source of global shocks, US monetary policy has a significant impact on global exchange rates. **Table 8** examines whether LCY bond market

development contributed to exchange rate stability in periods when US monetary policy tightening occurred. Following Bu, Rogers, and Wu (2021) in measuring US monetary policy shock data series, the monthly frequency of monetary policy shocks for each year is aggregated to derive an annual series to match the dataset. The variable (US monetary tightening) takes a value of one for a period with tightening US monetary policy and zero, otherwise. The results in Table 8 show that LCY bond market development reduces exchange rate volatility during periods with US monetary policy tightening. On average, exchange rate volatility is 0.002 lower in economies with larger LCY bond markets during

**Table 8: Local Currency Bond Market Development and Exchange Rate Volatility in Response to United States Monetary Policy Shocks**

Variables	1	2	3
LCY bonds as share of GDP * US monetary tightening	-0.231* (-1.875)	-0.202* (-1.832)	-0.225* (-1.942)
LCY bonds as share of GDP * US monetary tightening * Asia		-0.227 (-1.167)	
LCY bonds as share of GDP * US monetary tightening * emerging market			-0.257 (-1.087)
Observations	455	455	455
R-squared	0.158	0.159	0.159
Number of economies	28	28	28
Control variables	YES	YES	YES
Market fixed effects	YES	YES	YES

GDP = gross domestic product, LCY = local currency, US = United States.

Note: \* indicate statistical significance at the 10% level, \*\* at 5%, and \*\*\* at 1%. The numbers in parentheses represent robust t-statistics.  
Sources: Authors' calculations.

periods of US monetary tightening relative to smaller LCY bond markets. Such a currency stabilizing effect is more general for all markets, and is not only relevant in Asian and emerging markets, as shown in columns 2 and 3, respectively.

## Conclusion

This study provides empirical evidence to show that LCY bond market development contributes to financial stability during periods of global market turmoil. A larger LCY bond market was associated with less exchange rate volatility during recent financial crises, the COVID-19 pandemic, and US monetary policy shocks. A higher share of LCY bonds in the total bond market and a higher share of long-term bonds in the bond market are also generally related to less exchange rate volatility, with an extra stabilizing impact during financial crises. This evidence joins existing literature to show that LCY bond markets help stabilize the domestic currency during stress periods. LCY bond markets deliver such benefits by addressing the well-known “original sin in emerging market borrowing” (Eichengreen and Hausman 1999), with LCY funding and longer-tenor borrowings cushioning liquidity drains when investors sell risky assets amid a flight-to-safety and -liquidity.

An LCY bond market is only one of the factors that contributes to financial stability by fixing structural issues in the financial market. Stronger economic fundamentals, including factors such as sufficient reserves, a strong

current account performance, a sound fiscal balance, and modest inflation and domestic interest rates, also play an important role. Emerging markets should continue to broaden the investor base in their bond markets to diversify demand for different bond maturities and risk appetite, and to enhance transparency and institutional quality in financial markets to make it more accessible to global investors. Improved liquidity and enhanced hedging tools are also important factors to attract a well-diversified investor base.

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## Does Regional Trade Integration Automatically Foster Regional Financial Integration? The Case of Regional Comprehensive Economic Partnership

Well before the outbreak of the coronavirus disease (COVID-19) pandemic in early 2020, the world economy witnessed a slowdown in the momentum of economic globalization.<sup>9</sup> The seemingly unstoppable expansion of global trade and cross-border capital flows that drove global economic growth and prosperity in the postwar period have shown signs of decelerating since 2010. *The Economist* even coined the term "slowbalisation" for the noticeably slower pace of globalization that had been preceded by a golden age of globalization, which spanned from 1990 to 2010. Structural factors—such as the cost of transportation no longer falling and the growing self-reliance of the People's Republic of China's (PRC) manufacturing sector and, hence, reduced demand for imports—underlie the trends behind slowbalisation. The United States (US)–PRC trade conflict, which pitted the world's two biggest economies against one another, further dampened globalization. Then, the pandemic alerted multinational corporations, whose global supply chains were a key engine of globalization, to the risks of long supply chains. Specifically, production disruption in any one location of a long supply chain can disrupt the entire production process.

One key consequence of the deceleration of economic globalization in recent years has been the deepening of regional economic integration. In response to the high risks of distance and multistage supply chains, some firms are turning to reshoring, or the shifting of production from abroad back to the home economy. But other firms are moving production from distant foreign locations to nearby foreign locations. Generally, slowbalisation is leading to closer economic links within regions. This is especially evident in Asia, where greater intra-regional trade has gained momentum in recent years. In contrast to western Europe, where intra-regional trade has dominated trade for a long time, intra-Asian trade is a relatively recent phenomenon. Intra-Asian trade is by far the most advanced among East Asian and Southeast Asian economies, which collectively form what is referred to as "Factory Asia." In the past, Factory Asia produced manufactured goods that were exported to rich consumers in the US and other high-income economies. However, decades of world-topping economic growth elevated Asia's general living standards many times over and produced a large middle class that increasingly consumes what the region produces.

The transformation of Factory Asia into "Consumer Asia" is a powerful driver of greater intra-regional trade among Asian economies, especially East and Southeast Asian economies. The post-2010 trend toward deglobalization and regionalization will add further impetus to intra-regional trade integration, as will the post-COVID-19 shift away from global supply chains and toward regional supply chains. Rising trade protectionism and economic nationalism in advanced economies is yet another key driver of intra-Asian trade integration. While the de facto integration of Asian economies has proceeded full-steam, institutional integration has lagged behind. However, in this connection, one relatively unnoticed but potentially significant recent development was the formation of the Regional Comprehensive Economic Partnership (RCEP) free trade agreement, which came into effect on 1 January 2022. RCEP members include Australia, Brunei Darussalam, Cambodia, the PRC, Indonesia, Japan, the Republic of Korea, the Lao People's Democratic Republic, Malaysia, New Zealand, the Philippines, Singapore, Thailand, and

<sup>9</sup> This write-up was prepared by Donghyun Park (economic advisor), Shu Tian (senior economist), and Gemma Estrada (senior economics officer) of the Economic Research and Regional Cooperation Department of the Asian Development Bank based on Hyun-Hoon Lee, Danbee Park, Donghyun Park, and Shu Tian. 2022. "RCEP's Financial Integration Before and After the Global Financial Crisis: An Empirical Analysis." *The Journal of International Trade & Economic Development*. DOI: 10.1080/09638199.2022.2115106.



Viet Nam. RCEP, thus, encompasses the member economies of the Association of Southeast Asian Nations (ASEAN) plus all major economies of Asia and the Pacific except India. The total population of RCEP members is about 2.3 billion, representing 30% of the global population. The free trade agreement's share of global output is around 30.7% (Table 9).

RCEP is significant because it is the first regional trade bloc that covers all of East Asia and Southeast Asia. The free trade agreement also includes Australia and New Zealand, which have close trade links with and are geographically close to the Asia and Pacific region. In addition to being a globally significant economic force, RCEP is a powerful force in global trade. The group collectively accounted for 30.6% of total global exports and 26.5% of total global imports in 2021 (Table 10). Furthermore, as noted earlier, as a result of rapid economic growth that boosted purchasing power, the region's economies are increasingly exporting more to each other than to rest of the world. In fact, the intra-RCEP share of RCEP members' exports reached 50.4% in 2019. In contrast to such rapid de facto integration, institutional integration has remained

largely just a patchwork of bilateral deals such as the ASEAN–China Free Trade Area. In this context, the formation of RCEP is a significant development in the institutional integration of Asian economies.

Trade integration is only one dimension of economic integration, although a highly significant dimension. Another major dimension is financial integration, or the integration of the financial markets of member economies. Although RCEP economies show a high level of trade integration, their financial integration is limited. The financial markets of RCEP economies are more integrated with those of the US and other advanced economies than with each other. In light of the efforts of East and Southeast Asian economies to reduce their heavy dependence on US financial markets, as epitomized by the Chiang Mai Initiative and its multilateralization, it is worthwhile to empirically examine whether intra-regional financial integration has increased over time. Notably, the membership of the Chiang Mai Initiative is almost identical to that of RCEP except that the latter also includes Australia and New Zealand.

**Table 9: RCEP Members' GDP and GDP per Capita, 2021**

Economy	GDP (USD billion)	GDP per Capita (USD)
Australia	1,542.66	59,934.13
Brunei Darussalam	14.01	31,722.66
Cambodia	26.96	1,590.96
China, People's Republic of	17,734.06	12,556.33
Indonesia	1,186.09	4,291.81
Japan	4,937.42	39,285.16
Korea, Republic of	1,798.53	34,757.72
Lao PDR	18.83	2,551.33
Malaysia	372.70	11,371.10
New Zealand	249.99	48,801.69
Philippines	394.09	3,548.83
Singapore	396.99	72,794.00
Thailand	505.98	7,233.39
Viet Nam	362.64	3,694.02
<b>RCEP Total</b>	<b>29,540.95</b>	
<b>World Total</b>	<b>96,100.09</b>	
<b>RCEP's Share in World (%)</b>	<b>30.74</b>	

GDP = gross domestic product, Lao PDR = Lao People's Democratic Republic, RCEP = Regional Comprehensive Economic Partnership, USD = United States dollar. Source: World Bank. World Development Indicators. <https://databank.worldbank.org/reports.aspx?source=world-development-indicators> (accessed 7 October 2022).

**Table 10: RCEP Members' Merchandise Exports and Imports, 2021**

Economy	Merchandise Exports (USD billion)	Merchandise Imports (USD billion)
Australia	343.59	261.26
Brunei Darussalam	11.07	8.28
Cambodia	17.97	28.03
China, People's Republic of	3,363.96	2,687.53
Indonesia	229.85	196.04
Japan	756.03	768.98
Korea, Republic of	644.40	615.09
Lao PDR	7.62	6.53
Malaysia	299.03	237.98
New Zealand	44.87	49.46
Philippines	74.61	123.88
Singapore	457.36	406.23
Thailand	271.17	267.60
Viet Nam	335.93	331.58
<b>RCEP Total</b>	<b>6,857.46</b>	<b>5,988.48</b>
<b>World Total</b>	<b>22,393.05</b>	<b>22,592.28</b>
<b>RCEP's Share in World (%)</b>	<b>30.62</b>	<b>26.51</b>

Lao PDR = Lao People's Democratic Republic, RCEP = Regional Comprehensive Economic Partnership, USD = United States dollar. Source: World Bank. World Development Indicators. <https://databank.worldbank.org/reports.aspx?source=world-development-indicators> (accessed 7 October 2022).

Furthermore, there are conceptual reasons that suggest trade integration promotes financial integration. Most immediately, as the firms of two economies trade more with each other, the banks, insurers, and other financial institutions that facilitate trade will become more involved with their counterparts in the other economy. But more fundamentally, closer trade links between two economies improve investor knowledge about the economic structure and investment opportunities of the other economy. That is, greater bilateral trade increases investors' information and familiarity about the other economy and, hence, their confidence in investing there. As noted above, trade integration within RCEP has already progressed to the extent that over half of RCEP economies' trade is with each other. Therefore, the high and growing level of intra-RCEP trade integration may lead to greater intra-RCEP financial integration.

In connection with this, Lee et al. (forthcoming) empirically examine the IMF's Coordinated Portfolio Investment Survey data on cross-border holdings of portfolio investment (equities and debt securities) from 2001 to 2019 to examine whether RCEP economies have in fact become more financially integrated in recent years. The evidence suggests that they have not. Lee et al. (forthcoming) find that intra-RCEP integration of financial markets is limited and did not increase even after the global financial crisis, which was an event

that highlighted the risks of excessive dependence on US financial markets. In stark contrast to RCEP members, the intra-regional integration of euro area financial markets increased during the review period. Most significantly, the authors find that trade integration among RCEP economies does not promote their financial integration. That is, although RCEP economies are trading heavily with each other and that such trade is increasing over time, their financial transactions with each other are limited and not increasing over time. The evidence from the analysis indicates that deepening trade linkages among RCEP members will not automatically intensify their financial linkages.

Furthermore, the evidence suggests that even if economic regionalization in the post-COVID-19 period further expands intra-RCEP trade, this will not automatically promote intra-RCEP financial integration. The failure of financial integration to keep pace with trade integration is partly due to the fact that the USD-dominated global financial system drove the growth of intra-RCEP trade. Since trade integration does not automatically foster financial integration, financial integration cannot rely solely on de facto integration but also requires institutional integration. A good example of such institutional arrangements to foster financial integration in the region is the ASEAN+3 Bond Market Initiative, which comprises the 10 member economies of ASEAN plus the PRC, Japan, and the Republic of Korea.