Market Conjunctural–Strengthening Resilience to Challenges Ahead

Highlights

- Relative to the situation during the publication of the inaugural *ASEAN+3 Financial Stability Report (AFSR)* in late-2023, global financial conditions eased in the first half of 2024, but fluctuated with increased volatilities in the third quarter of 2024. Expectations around the Federal Reserve (Fed) policy stance, uncertainties around the growth outlook for the United States (US) and technology stock valuations have been the key drivers for the markets, while geopolitical risks have also played an important role.

- Concerns have shifted from persistent inflation and prolonged high interest rates to a risk of a growth slowdown. Meanwhile, lingering concerns that an inflation resurgence would lead to renewed rounds of central bank tightening or constrain the Fed's capacity to stabilize the market have amplified anxiety. Geopolitical risks from the tensions in the Middle East and the US presidential elections have added to the uncertainties.

- ASEAN+3 markets had benefited from the improved financial conditions in late 2023 but the markets have diverged in 2024 as they responded to idiosyncratic developments. Portfolio flows in the region were also relatively muted during the first half of 2020 as ASEAN+3 asset valuations have been relatively modest.

- Inflation remains the primary risk for macro-financial stability in ASEAN+3, but policy responses are expected to vary due to differing domestic conditions such as growth outlook, exchange rate developments, stress faced by property sector companies, and household debt leverage. If inflation resurges, central banks' actions will depend on available non-monetary measures and the spillovers from global monetary tightening. If the emerging concerns around the US growth also materialize amid high inflation, it could complicate policy responses and tighten financial conditions. The banking system remains sound and well capitalized, although with pockets of vulnerability. The importance of nonbank financial intermediaries in the region continues to rise, but they are still small relative to banks.

- Spillovers from both within and outside the region pose risks to financial stability, necessitating close monitoring. The authorities should continue to build policy space and address structural issues such as property sector weakness and high household debt. They may need to step in to support certain segments of the financial system in periods of stress, while avoiding moral hazard. The authorities must also monitor rapid changes in green financing and financial digitalization, ensuring regulatory updates to keep pace with the evolving landscape and reduce the related risks.

I. Recent Developments

Global financial conditions have eased, some risks have receded, but some remain elevated

Relative to the situation around the publication of the inaugural *AFSR 2023* in December 2023, financial conditions in major global economies eased in the first half of 2024. The easing began in November–December 2023 and remained stable through the first half of 2024 (Figure 1.1). Equity and debt markets in advanced economies and emerging markets saw gains in late 2023 while the US dollar weakened. During the first half of 2024, equity markets continued to strengthen, driven by technology stocks and strong corporate earnings, although with occasional corrections in technology stocks, especially those of the so-called "Magnificent Seven".[1] Debt markets yielded positive returns despite some rise in yields. (Figure 1.2 and Figure 1.3). Barring episodes of rising geopolitical tension, the financial market volatility remained generally lower than 2023 (Figure 1.4). Portfolio flows into emerging market debt and equity (Figure 1.5) have increased and the sovereign spreads for emerging market economies (excluding Latin America) are compressed (Figure 1.6).

During the first half of 2024, the key driver for markets was the Fed's policy outlook, with geopolitical shocks also playing a significant role. In November 2023, the Fed hinted at the end of rate hikes, fueling market expectations of rapid monetary easing in 2024 (Figure 1.7). Growing confidence that inflation would continue to decline to the Fed's 2 percent target (Figure 1.8) supported the market view that the next Fed policy action would be a series of rate cuts. However, as inflation remained sticky in 2024, the markets were forced to reassess their assumptions around the timing and size of rate cuts. This reassessment, and geopolitical events in the Middle East, caused market gyrations during the first half of 2024.

However, market focus shifted to the growth outlook during the third quarter of the year. Financial conditions tightened, with the equity market stress rising significantly in early August. The changes in market perceptions have reflected concerns around overvalued technology stocks as well as some weaker-than-expected US economic data. The sell-off was initially limited to certain sectors of the stock market but soon broadened as concerns about a US economic hard landing rose. The sell-off may have been further aggravated by an unwinding of the yen carry trade.[2] The market volatilities spiked higher, while expectations of Fed monetary easing led to a weaker US dollar and lower US Treasury yields. The equity markets saw some recovery and volatilities normalized since then. However, the sell-off served as a reminder about the fragility of market strength and the vulnerability to the risks of a US growth slowdown.

Figure 1.1. Selected Advanced Economies: Financial Conditions Indices
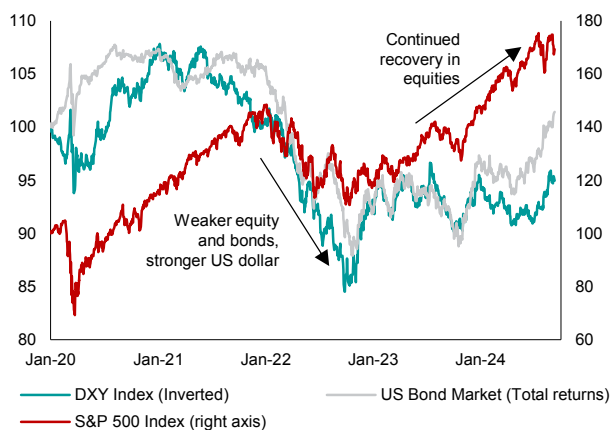*(Index)*

Financial conditions in major economies fluctuated in 2024, remaining easy during the first half and tightened somewhat during the third quarter.
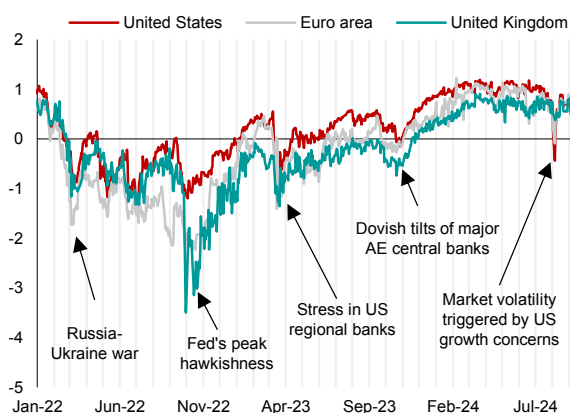
Source: Bloomberg Finance L.P.; AMRO staff calculations.
Note: Higher values of the index indicate easier financial conditions.
AE = advanced economy. Data as of 9 September 2024.

Figure 1.2. US: Equity, Bond Market, and Foreign Exchange Indices
(Index, 1 January 2020 = 100)

Equity and debt markets have yielded positive returns in the first half 2024, both in the US…

Source: Bloomberg Finance L.P.; AMRO staff calculations.
Note: DXY index refers to US dollar index. Bloomberg US Aggregate Index is used for US bond market (total returns). The S&P 500 index refers to the Standard & Poor's 500 index. Data as of 9 September 2024.

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[1] The "Magnificent Seven" refers to the seven largest and most influential stocks in the technology sector. These companies are Amazon, Apple, Google, Meta, Microsoft, Nvidia, and Tesla.

[2] The yen carry trade is an investment strategy where investors borrow funds in Japanese yen, which has had low interest rates for many years, and invest those funds in higher-yielding currencies, bonds, or equity investments. According to market participants, the unwind of the yen carry trade was triggered by multiple factors including Bank of Japan's monetary tightening on 31 July 2024 amid the weaker US growth outlook that caused markets to expect faster easing by the Fed. This led to a strong yen against the US dollar which, along with falling asset prices globally, inflicted losses on the carry trade positions. As investors closed their positions to prevent further losses, the markets entered a vicious cycle where asset prices fell and the yen strengthened further.

Figure 1.3. Emerging Markets: Equity, Bond Markets, and Foreign Exchange Indices
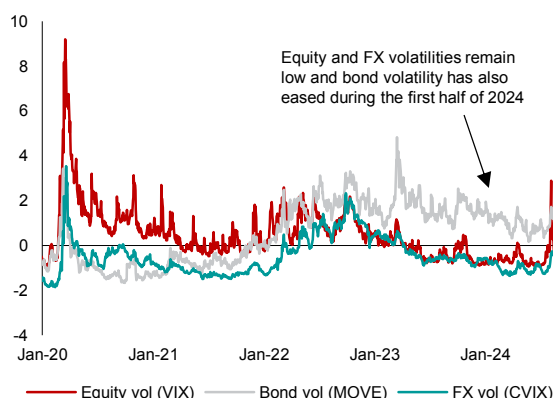*(Percent, quarter-on-quarter)*

… and emerging markets.
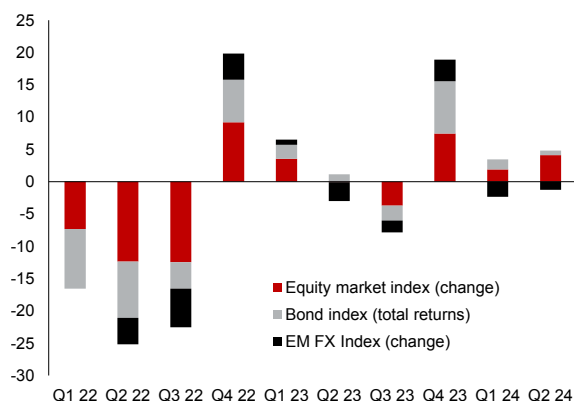
Source: Bloomberg Finance L.P.; AMRO staff calculations.
Note: EM = Emerging markets; FX = Foreign exchange. Data as of Q2 2024.

Figure 1.5. Emerging Markets: Portfolio Investment Flows
(Billions of US dollar)

Portfolio inflows continued in emerging markets in 2024.
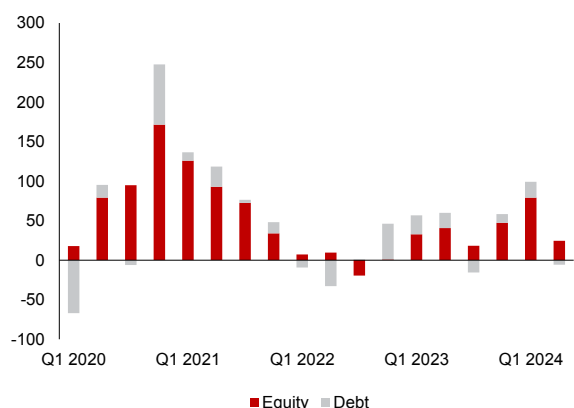
Source: Institute of International Finance via Haver Analytics; AMRO staff calculations.
Note: Data as of Q2 2024.

Figure 1.7. US: Fed Rate Expectations for End-2024 and End-2025
(Percent)

The market expects the Fed to ease monetary policy by around 100 basis points in 2024.

Source: Bloomberg Finance L.P.
Note: Data as of 9 September 2024.

Figure 1.4. US: Volatility in Key Assets and Corresponding Long-Term Averages
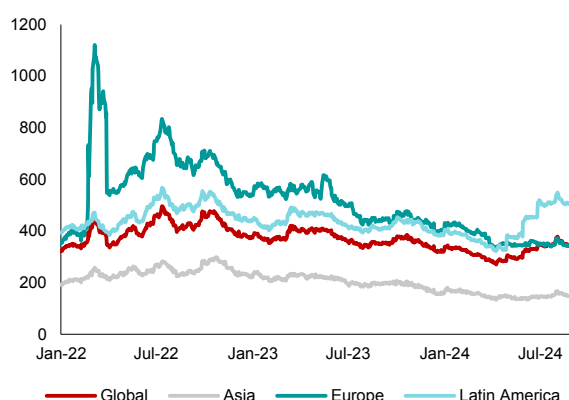*(Z-score based on data since 1 January 2010)*

Financial market volatility has eased during the first half of 2024, but increased since August.

Source: Bloomberg Finance L.P.; AMRO staff calculations.
Note: VIX refers to Chicago Board Options Exchange's Volatility Index. MOVE refers to Merrill Lynch Option Volatility Estimate Index. CVIX refers to Deutsche Bank Currency Volatility Index. FX = Foreign exchange. Vol = volatility. Data as of 9 September 2024.

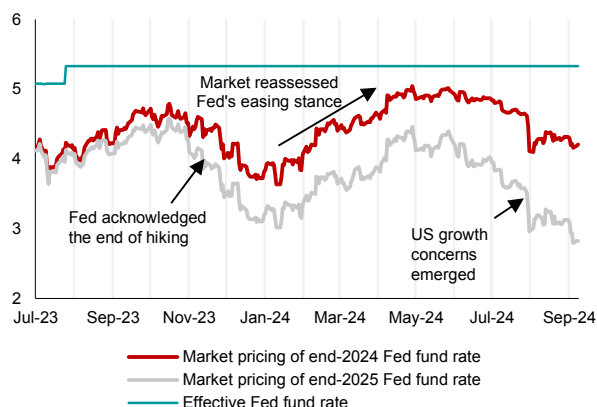**Figure 1.6. World and Selected Regions: Sovereign Spread by Region**
(Basis points)

Sovereign spreads have narrowed from 2023 in most emerging markets.

Source: Haver Analytics.
Note: Data as of 9 September 2024.

Figure 1.8. World and US: Forecasts Evolution of Growth and Inflation
(Percent)

Forecasts show that the US and global growth outlook have improved while inflation outlook remain stable.
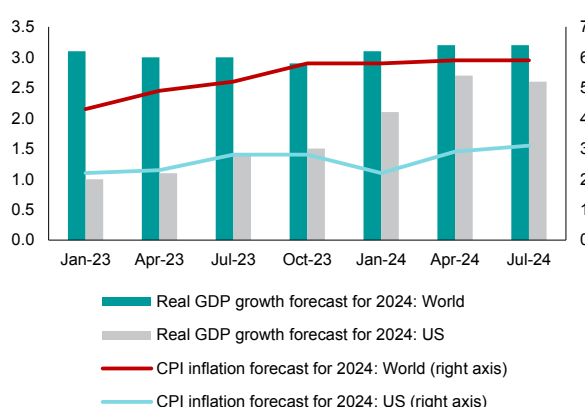
Source: IMF World Economic Outlook reports from the January 2023 edition to the July 2024 edition.

The risks highlighted in *AFSR* 2023 have evolved to varying degrees but have overall receded. These risks included the persistence (and potential resurgence) of inflation and further monetary tightening, banking sector stress, and US dollar funding stress.

- The progress on disinflation has been slow. Consequently, both market participants and policymakers had scaled back their expectations of monetary easing through the first half of 2024. The risks of interest rate hikes can rise significantly if there is a resurgence in inflation, putting pressure on central banks to tighten further.

- US regional bank equity indices remain lower than the levels seen before the March 2023 stress, but their current pricing indicates the worst may be over, with the stocks stabilizing (Figure 1.9) despite the stress in one of the regional banks, New York Community Bancorp (NYCB) in January 2024.[3]

- US dollar funding has remained stable. The risks of a funding squeeze have decreased materially as the Fed is expected to ease monetary policy and end Quantitative Tightening in the coming quarters.

However, other risks have intensified and could cloud the outlook for global financial stability

- The concerns around the US recession or hard landing injected significant volatility in the global financial markets. Meanwhile, lingering concerns that a resurgence of inflation could lead to renewed rounds of central bank tightening or limit the Fed's ability to calm the market added to market anxiety in early August.

- Risks from geopolitical tensions have increased significantly with tensions in Middle East continuing to simmer, and evolving risks from the US presidential election. Middle East tensions may affect commodity prices and market sentiments, which could raise upside risks on inflation and downside risks on

growth. Meanwhile, the upcoming US presidential election creates policy uncertainties with significant implications for ASEAN+3, potentially heightening global tensions and exacerbating economic fragmentation.

- The stress in corporate real estate (CRE)—partly reflecting a structural shift toward remote work and e-commerce following the pandemic—has intensified in the US and other major developed markets (Figure 1.10). This poses risks to banks with large exposure to CRE. During 2024, some banks reported losses on their CRE exposures, adding to concerns of financial distress.[4]

Figure 1.9. US: Banking Sector Stock Indices
*(Index, 1 January 2022 = 100)*

US banking sector indices have stabilized reflecting easing investor concerns.
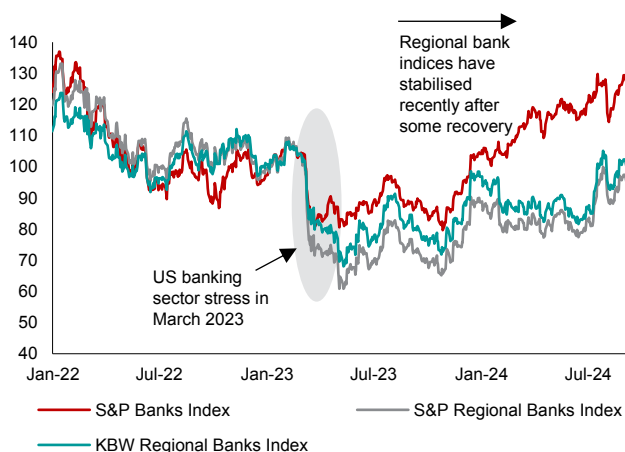
Source: Bloomberg Finance L.P.; AMRO staff calculations.
Note: KBW = Keefe, Bruyette, and Woods; S&P = Standard & Poor's. Data as of 9 September 2024.

Figure 1.10. US and Europe: Corporate Real Estate Price Indices
(Index, 2019 =100)

Corporate real estate prices continue to fall in major advanced economies.
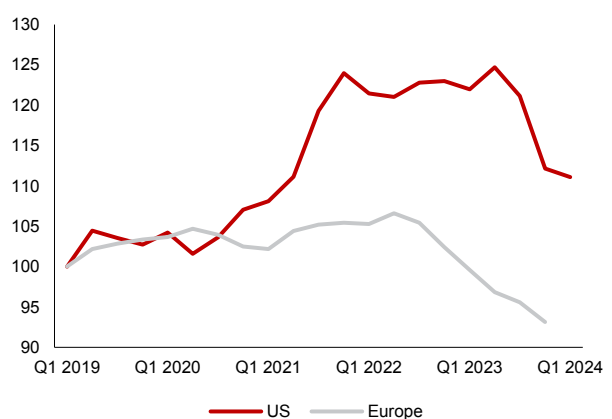
Source: Bank for International Settlements via Haver Analytics; AMRO staff calculations.
Note: Data as of Q1 2024 for the US and Q4 2023 for EU.

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[3]   The NYCB acquired distressed Signature Bank in March 2023, inheriting its high exposure to commercial real estate (CRE) loans. The weakness in CRE adversely impacted property owners. On 31 January 2024, NYCB reported unexpected losses due to soured loans and a 70-percent cut in dividends, leading to rating downgrades by Fitch and Moody's to junk status, and to the replacement of NYCB's chief executive in February.

[4]   US regional lender First Foundation on 3 July 2024 disclosed an unexpected capital infusion by a consortium of investment companies. Like NYCB, the bank also had a large portfolio of multifamily real estate loans. Japan's Aozora Bank in February 2024 announced its first loss in 15 years due to impaired loans associated with the US commercial real estate. German bank Deustche Pfanbriefbank's loan book was tied to the US commercial real estate. The S&P credit rating agency downgraded its outlook for the bank on 14 February, 2024.

Idiosyncratic factors limited the benefits to ASEAN+3 markets from easier global financial conditions

After easing across ASEAN+3 in 2023, market stress indices in 2024 have shown some divergence. Our estimates indicate market stress (Figures 1.11 to 1.14) eased across the region and across components in 2023, but the estimates have shown wider divergence in 2024.[5] The biggest drivers behind the easing market stress in 2023 were real domestic government bond yields and foreign exchange market volatility. In 2024, the stress has increased in Japan (high stock market and foreign exchange volatility) and the Philippines (weakness in real effective exchange rate or REER), while easing significantly in Korea (stabilization of real residential prices) and Thailand (lower foreign exchange market volatility). The market stress index rose in early August, most notably in Japan, Korea, and Malaysia, due to heightened stock market and foreign exchange volatilities during the global equity sell-off on 5 August.

Figure 1.11. Plus-3: Market Stress Indicators
(Index)

Market stress eased in 2024 before rising in August 2024, with the Plus-3 markets experiencing a sharper rise than ASEAN.

**Figure 1.12. ASEAN: Market Stress Indicators**
(Index)

Source: Bloomberg Finance L.P.; Haver Analytics; AMRO staff calculations.
Note: The Market Stress Index is based on the Mispricing Risk (Refined) proposed in Hennig, Iossifov, and Varghese (2023) which attempts to capture the slack in financial conditions. The Mispricing Risk (Refined) is constructed using a simple average of indicators of price growth and volatility transformed into within-economy percentiles. The measure of risk uses real equity market returns, equity market volatility, domestic sovereign bond yield volatility, sovereign foreign exchange risk spreads, foreign exchange market volatility and real house price growth. We introduce two additional parameters, real domestic government bond yield and growth of real effective exchange rate (REER), which are included in the construction of Mispricing Risk (Unrefined) as high frequency data are available. We also flip the sign of the resultant index so that higher values of the index indicate less slack in financial conditions, to create the Market Stress Index. Data as of Data as of 9 September 2024.

Figure 1.13. Selected ASEAN+3: Contributors to Change in Market Stress from End-2022 to End-2023
(Index)

Market stress eased across ASEAN+3 in 2023…
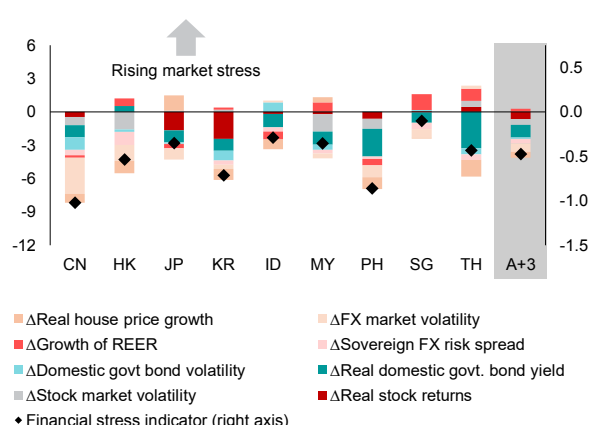
Source: Bloomberg Finance L.P.; Haver Analytics; AMRO staff calculations.
Note: A rise in stock market volatility, real domestic government yields, domestic government bond yield volatility, sovereign foreign exchange risk spread, and foreign exchange market volatility; and a fall in real stock market returns, growth of REER and real house prices contribute to higher market stress. FX = foreign exchange; govt. = government; REER = real effective exchange rate; Δ = change in; CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; A+3 = Average of Selected ASEAN+3. Data as of 9 September 2024.

Figure 1.14. Selected ASEAN+3: Contributors to Change in Market Stress from End-2023 to August 2024
(Index)
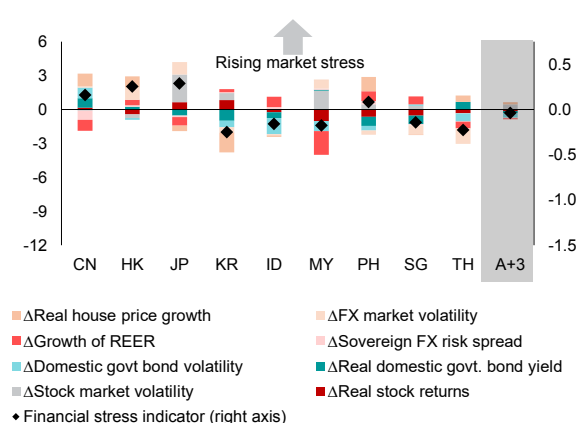
… but there has been divergence in 2024.

Source: Bloomberg Finance L.P.; Haver Analytics; AMRO staff calculations.
Note: A rise in stock market volatility, real domestic government yields, domestic government bond yield volatility, sovereign foreign exchange risk spread, and foreign exchange market volatility; and a fall in real stock market returns, growth of REER and real house prices contribute to higher market stress. FX = foreign exchange; govt. = government; REER = real effective exchange rate; Δ = change in; CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; A+3 = Average of Selected ASEAN+3. Data as of 9 September 2024.

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5   Based on the methodology laid out in Hennig, Iossifov and Varghese (2023). The Market Stress Index is based on the Mispricing Risk (Refined) proposed in Hennig, Iossifov, and Varghese (2023) which attempts to capture the slack in financial conditions. The Mispricing Risk (Refined) is constructed using a simple average of indicators of price growth and volatility transformed into within-country percentiles. The measure of risk uses real equity market returns, equity market volatility, domestic sovereign bond yield volatility, sovereign foreign exchange risk spreads, foreign exchange market volatility and real house price growth. Two additional parameters—real domestic government bond yield and growth of real effective exchange rate (REER)—are introduced into the analysis. These are included in the construction of Mispricing Risk (Unrefined) as high frequency data are available. The sign of the resultant index is also flipped, so that higher values of the index indicate less slack in financial conditions, to create the Market Stress Index.

ASEAN+3 markets generally followed global trends but were also affected by idiosyncratic factors. The spillovers from the US technology stocks were limited in ASEAN+3, with only IT and communications stocks in some economies responding to the rally in first half of 2024 and the sharp sell-off in July and August (Box 1.1). On average, ASEAN+3 equity markets underperformed US equities, while the bond yields were less sensitive to changes in in the US Treasury yields. A wider interest rate differential exerted depreciation pressures on regional currencies during the first half of 2024. However, as the Fed policy easing became imminent, US Treasury yields eased and narrowed the interest rate differential, helping regional currencies strengthen against the US dollar (Figures 1.15 to 1.18).

• Japan's currency and equity markets were outliers in the region for most of 2024. The yen remained sensitive to interest rate differentials. Until July 2024, the outperformance of the stock

market was driven by a weak yen, which helped improve corporate earnings, and enhanced corporate governance frameworks.[6] However, the sell-off in Japanese equity markets and rapid yen appreciation in early-August partially reversed the changes seen earlier in the year.

• The other notable exception was Thailand where equities and the baht underperformed most regional peers amid weaker growth and political uncertainties for most of the first half of 2024. However, the uncertainties eased during the third quarter, and Thai equities and the baht recovered, amid weakness in the US dollar.

• Chinese government bond yields fell in 2024 as inflation remained very low and the People's Bank of China maintained its monetary policy stance to support growth. China's equity markets recovered from a slump in January and February 2024 amid government efforts to support the property markets and implement capital market reforms.[7]

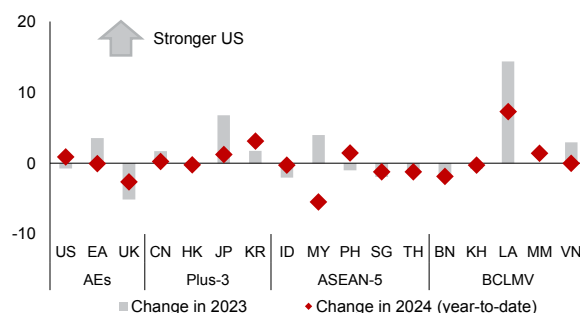**Figure 1.15. Selected ASEAN+3: Changes in Equity Markets**
(Percent, log changes)

Most ASEAN+3 equity markets strengthened in 2024…
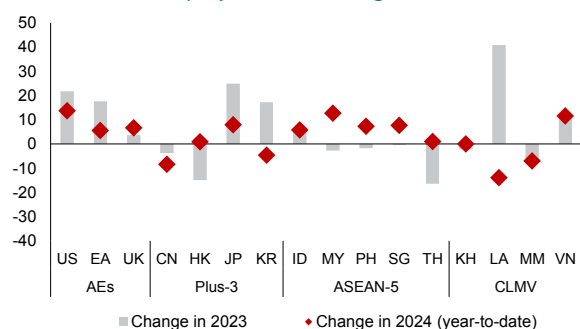
Source: National authorities via Bloomberg Finance L.P.; Bank for International Settlements; Haver Analytics; AMRO staff calculations.
Note: The DXY Index is used to determine the change in the US dollar. AEs = advanced economies; CN = China; EA = euro area; HK = Hong Kong; ID = Indonesia; JP = Japan; KH = Cambodia; KR = Korea; LA = Lao PDR; MM = Myanmar; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; UK = United Kingdom; US = United States. VN = Vietnam. Data for 2024 (year-to-date) as of 9 September 2024.

Figure 1.16. Selected ASEAN+3: Changes in 10-Year Bond Yields
(Basis points)

… while bond yields were mixed.
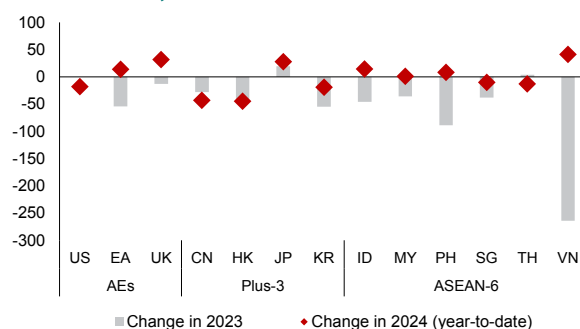
Source: National authorities via Bloomberg Finance L.P.; Bank for International Settlements; Haver Analytics; AMRO staff calculations.
Note: The DXY Index is used to determine the change in the US dollar. AEs = advanced economies; CN = China; EA = euro area; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; UK = United Kingdom; US = United States. VN = Vietnam. Data for 2024 (year-to-date) as of 9 September 2024.

Figure 1.17. Selected ASEAN+3: Exchange Rates against the US Dollar
*(Percent, log changes)*

ASEAN+3 currencies generally reversed their weakness against the US dollar in the third quarter of 2024…

Source: National authorities via Bloomberg Finance L.P.; Bank for International Settlements; Haver Analytics; AMRO staff calculations.
Note: The DXY Index is used to determine the change in the US dollar. AEs = advanced economies; BN = Brunei; CN = China; EA = euro area; HK = Hong Kong; ID = Indonesia; JP = Japan; KH = Cambodia; KR = Korea; LA = Lao PDR; MM = Myanmar; MY = Malaysia; H = Philippines; SG = Singapore; TH = Thailand; UK = United Kingdom; US = United States. VN = Vietnam. Data for 2024 (year-to-date) as of 9 September 2024.

Figure 1.18. Selected ASEAN+3: Nominal Effective Exchange Rates
(Percent, log changes)

… and were mixed on on a NEER basis in 2024.
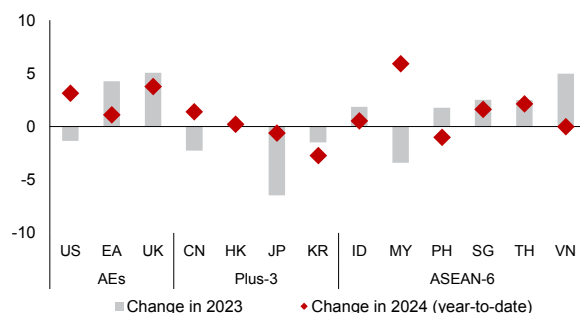
Source: National authorities via Bloomberg Finance L.P.; Bank for International Settlements; Haver Analytics; AMRO staff calculations.
Note: The DXY Index is used to determine the change in the US dollar. AEs = advanced economies; CN = China; EA = euro area; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; UK = United Kingdom; US = United States. VN = Vietnam. Data for 2024 (year-to-date) as of 9 September 2024.

[6]   Enhancements to corporate governance frameworks include revisions to the Japan's Corporate Governance Code which called for stronger commitment to capital efficiency and shareholder returns from listed companies: (1) Securing the rights and equal treatment of shareholders (including minority and foreign), (2) Appropriate cooperation with stakeholders (such as employees, customers, business partners, and so on) other than shareholders, (3) Ensuring appropriate information disclosure and transparency (in both financial and nonfinancial information), (4) Responsibilities of the board, including setting broad direction of corporate strategy, establishing an appropriate risk-taking environment, and carrying out objective oversight of management, (5) Dialogue with shareholders to listen to their views and concerns, explain business policies to them, and develop an understanding of positions.

[7]   The State Council issued a "Nine-Point Guideline" in April 2024 which encourages dividend payments, ensures the quality of new stock offerings and strengthens corporate governance.

Box 1.1:

Sectoral Performance of Equities

US equity markets have seen a strong recovery in 2023 and 2024. While the Fed's pivot away from a hawkish stance was an important driver, the recovery was also helped by a strong performance by technology stocks in first half of 2024, especially those standing to benefit from the increasing demand for artificial intelligence (AI) products, and strong corporate earnings. The AI-related stocks, which are primarily concentrated in the Information Technology and Communications sectors, have led the rally in US stocks in 2023 and 2024 (Figure 1.1.1). Corporate earnings have also been strong since early 2023 as many companies successfully implemented cost-cutting measures while the spillovers to the broader economy were limited. Since 2022, the gap between the number of companies reporting better earnings than analysts expected versus those reporting worse, has widened (Figure 1.1.2).

Figure 1.1.1: Selected ASEAN+3 and US: Sectoral Equity Performance
*(Year-to-date, percent log changes)*

	2023											2024										
	US	CN	HK	ID	JP	KR	MY	PH	SG	TH	Avg*	US	CN	HK	ID	JP	KR	MY	PH	SG	TH	Avg*
Overall	22	-14	-20	2	23	21	-3	1	-1	-15	-1	13	-2	-11	-1	9	-6	11	10	13	3	3
Energy	-5	15		-31	26	-5	-11			-8	-3	3	8		29	18	-14	-14			-5	4
Materials	10	-18		-12	34	11	-10			-21	-3	5	-3		6	-5	-42	-15			-25	-14
Industrials	17	-22	-13	-13	26	16	-2	-2	16	-21	-2	11	3	2		12	-11	25	12	-8	-2	4
Consumer discretionary	34	-17	-15	-23	28	26	-5	9	5	-21	-2	5	-6	-46	-48	0	4	0	0	-20	-9	-14
Consumer staples	-2	-27	-18	-5	7	-20	-8	-26	-16	-25	-15	16	-27	10	-4	7	6	-1	-26	-13	17	-4
Health care	1	-24	0	-26	3	20	-5			-2	-5	13	-28	0	8	15	16	11			11	5
Financials	12	-11	-24	13	23	13	-1	13	0	-8	2	17	8	-17	5	23	29	20	23	16	10	13
Information technology	43	-5	0		35	32	14		-26	6	8	17	-9	0		3	-12	-1		0	14	-1
Communication services	43	-6	-3	4	13	5	-4	-9	-16	-4	-2	14	11	7	-27	9	-23	0	13	45	28	7
Utilities	-10	-18	0	0	33	-14	3	18		-42	-3	20	7	12	0	10	14	19	1	-8	-15	4
Real estate	7	-38	-25	0	17		0	0	-2	-8	-7	9	-29	-12	0	9		0	-2	-7	-8	-6

Source: MSCI indices via Bloomberg Finance L.P.; AMRO staff calculation.
Note: MSCI indices are based on the Global Industry Classification Standard (GICS). The average is calculated by taking simple averages across the ASEAN+3 economies. Avg = Average; CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; US = United States; YTD = year-to-date. 2024 data as of 9 September 2024.

The author of this box is Prashant Pande.

Figure 1.1.2. US: S&P 500 Corporate Earnings Surprises
(z-score)
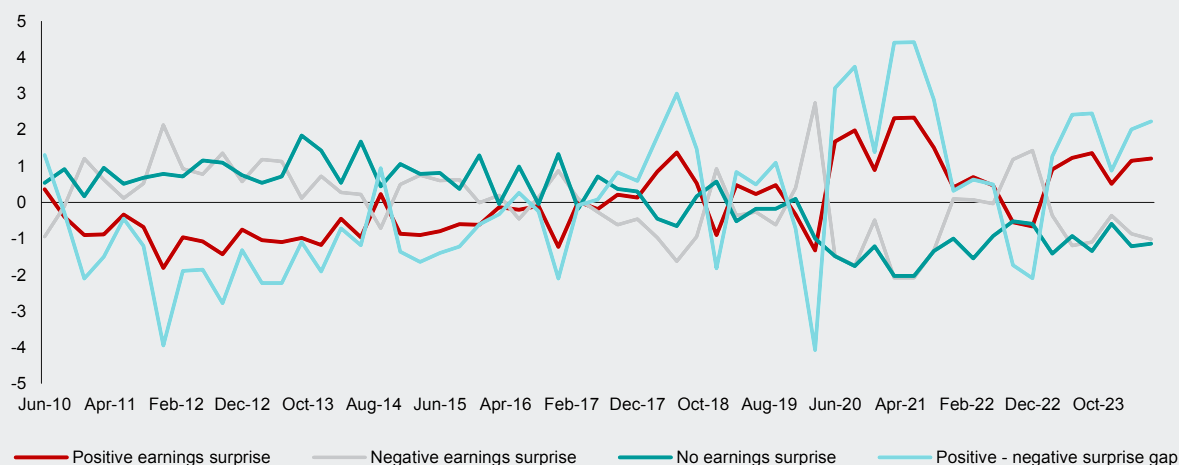
Source: Bloomberg Finance L.P.; AMRO staff calculations.
Note: z-score is calculated based on quarterly data from Q2 2010. S&P = Standard & Poor's. Data as of Q2 2024.

In ASEAN+3 markets, the equity markets have also responded to idiosyncratic factors and have not performed as well as their US counterparts. The equity sell-off in early August was also, on average, more severe for ASEAN+3 than the US and further increased the divergence. Financial sector stocks have been the leaders in 2024 and, banks in Japan and Korea have led the rally. Japanese banks benefitted from expectations of rising interest rates while Korean banks have been the primary beneficiaries from higher investor confidence due to the "Corporate Value-Up" program launched earlier in the year.[1] IT and communications sectors have also strengthened due to spillovers from the US markets and stocks from Malaysia and Singapore have benefitted. Consumer discretionary sector in Hong Kong and Indonesia, and materials sector in Korea and Thailand have seen significant declines while the real estate sector stocks have also lagged, with shares in Thailand, Hong Kong and China seeing the most weakness.

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[1]   On 26 February 2024, Korea's Financial Services Commission unveiled the Corporate Value-Up program that aims to bolster domestic stock market through attracting foreign investments and to reduce the so-called "Korea discount", referring to the gap in valuations between local firms and global peers due to various factors. Basically, the framework comprises of three pillars: (1) supporting listed firms in preparing, disclosing and rolling out of their value-up plans; (2) supporting investors in better assessing firms' corporate value through evaluating their initiatives and performances; and (3) establishing a dedicated system to support the execution of the program over the mid- to long-term (FSC 2024).

Portfolio flows in ASEAN+3 present a mixed picture as the region's asset valuations have been lackluster relative to elsewhere (Figures 1.19 to 1.22). Debt flows in most regional debt markets surged in November 2023 but lost momentum in the first half of 2024. As US Treasury yields rose and became more attractive for investors, emerging debt markets in ASEAN+3 experienced outflows. The exception was Korea, where foreigners increased bond holdings on expectations of monetary easing later in the year. Indonesia's government bonds saw outflows largely because their valuations against US Treasuries deteriorated (Box 1.2), while fiscal uncertainties

led to reduced demand for Thai debt securities. Korea also stood out in equity flows as demand for artificial intelligence related stocks surged and spilled over to related Korean companies. Foreign investors reduced their holdings of Thai equities amid stock and currency weakness. That said, as the Fed's monetary easing became imminent during the third quarter, US treasury yields eased, and valuations improved for ASEAN+3 bond enabling a strong inflow in August. Fed's policy easing, if accompanied with a low volatility environment, could help ASEAN+3 markets receive inflows over the coming months.

Figure 1.19. Emerging Markets: Annual Portfolio Flows
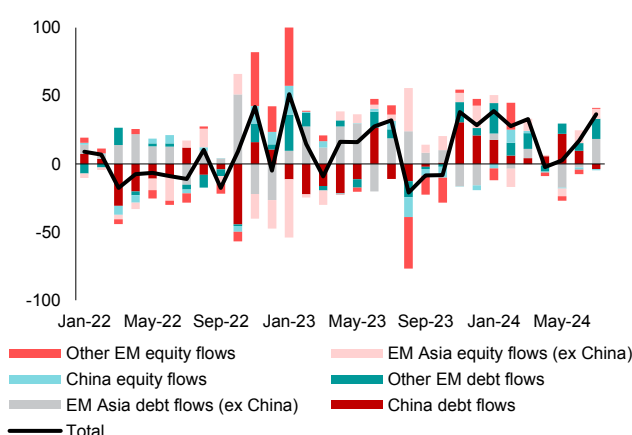*(Billions of US dollar)*

Foreign portfolio inflows into emerging markets continued in 2024…
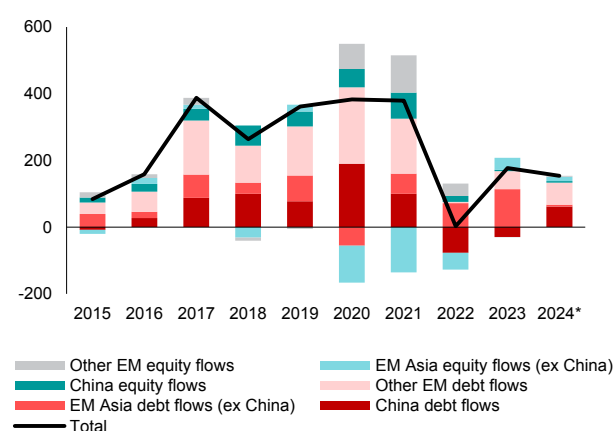
Source: The Institute of International Finance via Haver Analytics; AMRO staff calculations.
Note: EM = emerging market. Data as of June 2024.

Figure 1.20. Emerging Markets: Monthly Portfolio Flows
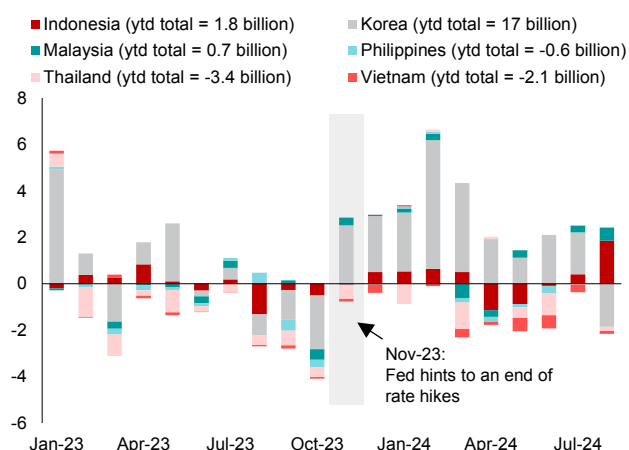*(Billions of US dollar)*

… but lost momentum in the first half of 2024.

Source: The Institute of International Finance via Haver Analytics; AMRO staff calculations.
Note: EM = emerging market. Data as of July 2024.

Figure 1.21. Selected ASEAN+3: Monthly Equity Flows
(Billions of US dollar)

In 2024, Korean equity and debt markets received strong inflows while foreign investors reduced their holdings of Thai assets.

Source: National authorities; Bloomberg Finance L.P; Haver Analytics; AMRO staff calculations
Note: Data as of August 2024.

Figure 1.22. Selected ASEAN+3: Monthly Debt Flows
(Billions of US dollar)
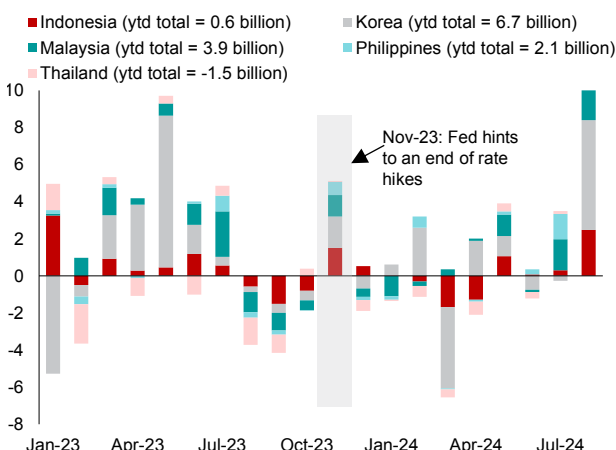
Source: National authorities; Bloomberg Finance L.P; Haver Analytics; AMRO staff calculations.
Note: The debt flows data includes foreign investments in local currency debt only. The data consists only of government bonds for Indonesia and the Philippines, and government and corporate bonds for other markets. Data as of August 2024.

Box 1.2:

ASEAN+3 Asset Valuations

The continued strengthening of US equities further stretched their valuations, while valuations remain attractive for ASEAN+3 markets. The price-to-earnings ratio rose further, and the equity risk premium fell further for US equity markets. In ASEAN+3, only Japanese stock markets saw a comparable change in valuations. The price-to-earnings ratios fell for Hong Kong, Korea, the Philippines and Thailand stock markets while remaining broadly unchanged for China, Indonesia, Malaysia and Singapore (Figure 1.2.1). The equity risk premium rose for most ASEAN+3 economies (Figure 1.2.2). These indicators taken together show that ASEAN+3 equities are cheaper than their US counterparts and provide a better expected yield than the domestic bonds.

The yield differential of domestic bonds remains negative against the US (Figure 1.2.3), with Indonesia and Philippines

being the exceptions. The spreads have moved in favor of the US since last year, leading to slower inflows in ASEAN+3 debt markets. The foreign exchange hedged valuations for bonds have worsened since 2023 but are still positive and indicate that foreign investors can still receive a positive carry-on bond investments using shorter-tenor foreign exchange hedges (Figure 1.2.4). The valuation could become more attractive as the US Fed moves closer to easing its monetary policy as the yield differential will move in favor of ASEAN+3 bond markets.

Overall, the valuations indicate that the ASEAN+3 equity and bond markets offer attractive valuations for foreign investors and could benefit from portfolio inflows during periods of low volatility and easing global interest rates.

Figure 1.2.1. US, Euro area, and Selected ASEAN+3: Forward Looking Price-to-Earnings Ratios
*(Ratio)*

■ Average (2024, YTD) ◆ Average (2023)
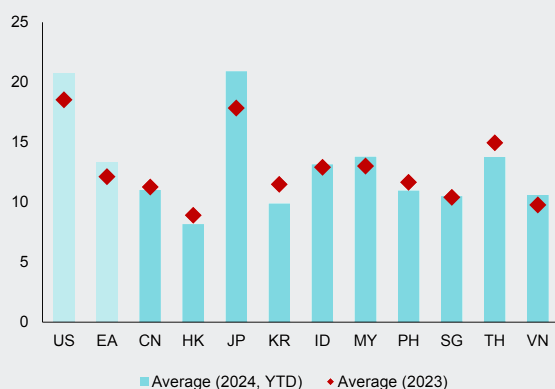
Source: Bloomberg Finance L.P.; AMRO staff calculations.
Note: The forward-looking price-to-earnings ratio used is for the benchmark equity indices of the respective markets. EA = Euro area; CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; US = United States; VN = Vietnam; YTD = year-to-date. Data as of 9 September 2024.

Figure 1.2.2. US, Euro area, and Selected ASEAN+3: Equity Risk Premiums
(Percent)


■ Average (2024, YTD) ◆ Average (2023)
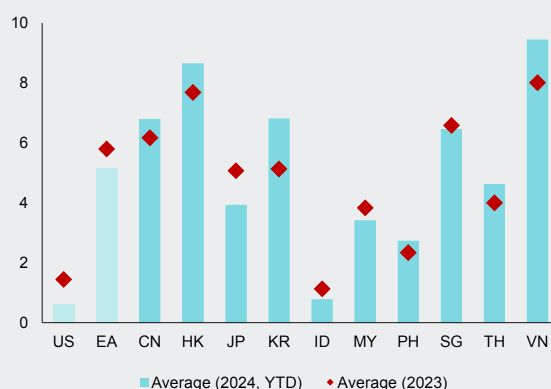
Source: Bloomberg Finance L.P.; AMRO staff calculations.
Note: The Equity Risk Premium is calculated as the difference between forward-looking earnings-per-share for benchmark equity indices of the respective markets and the domestic 10-year bond yield. EA = Euro area; CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; US = United States; VN = Vietnam; YTD = year-to-date. Data as of 9 September 2024.

Figure 1.2.3. Euro area and Selected ASEAN+3: 10-Year Yield against 10-year US Treasury Yield
(Basis points)

■ Average (2024, YTD) ◆ Average (2023)
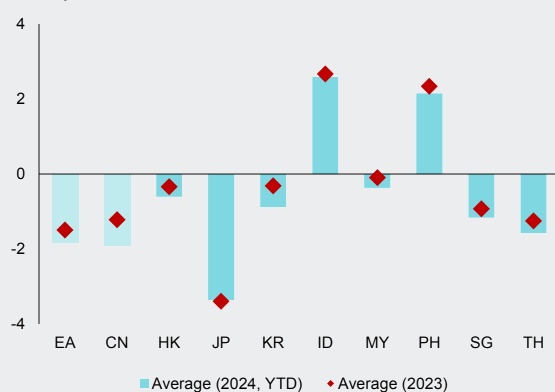
Source: Bloomberg Finance L.P.; AMRO staff calculations.
Note: EA = Euro area; CN = China; GFC = global financial crisis; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; YTD = year-to-date. Data as of 9 September 2024.

Figure 1.2.4. Euro area and Selected ASEAN+3: FX Hedged 10-Year Yield against 10-year US Treasury Yield
(Basis points)

■ Average (2024, YTD) ◆ Average (2023)
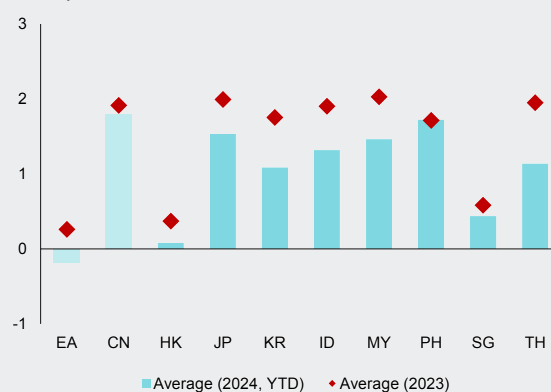
Source: Bloomberg Finance L.P.; AMRO staff calculations.
Note: The domestic 10-year bonds are assumed to be foreign exchange hedged for one-year using foreign exchange forwards. EA = Euro area; CN = China; GFC = global financial crisis; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; YTD = year-to-date. Data as of 9 September 2024.

The authors of this box are Prashant Pande and Junjie Shi.

Most ASEAN+3 central banks are on hold and some are waiting for the right conditions to start cutting policy rates

Central banks in ASEAN+3 have eased the pace of rate hikes since the second half of 2023. The pace decelerated significantly from the first half of 2023 to the second half of 2023, with only Indonesia and Japan having raised interest rates during the first half of 2024 (Figure 1.23). For most economies in the region, policy rates are likely to have peaked, and most central banks are expected to cut rates (Figure 1.24), with some already having commenced easing. However, there are exceptions:

- China and Vietnam eased monetary policy in 2023 to support domestic growth. China further eased its monetary

policy settings in July 2024 to provide further financial support for the economy.

- The Bank of Japan (BOJ) kept its ultra-easy monetary policy settings in 2023 as it waited for evidence of sustainable and stable achievement of the 2 percent price stability target by an intensified virtuous cycle between wages and prices.[8] The BOJ exited its negative interest rate regime in March 2024 and further raised the policy rates in July 2024. Market pricing suggests that market participants expect the BOJ to continue rate hikes in the coming quarters.

Figure 1.23. Selected ASEAN+3: Policy Rate Changes
(Basis points, semiannual changes)

The pace of rate hikes has eased in ASEAN+3 as compared with 2023 and some central banks have commenced easing.
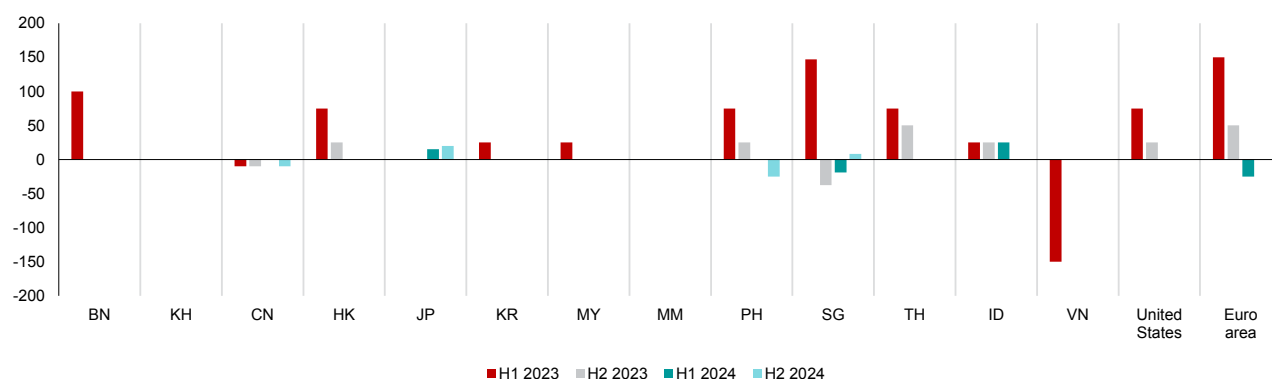
Source: National authorities via Haver Analytics; AMRO staff calculations.
Note: H1 = first half of the year; H2 = second half of the year; BN = Brunei, KH = Cambodia; CN = China; HK = Hong Kong; JP = Japan; KR = Korea; MY = Malaysia; MM = Myanmar; PH = Philippines; SG = Singapore; TH = Thailand; ID = Indonesia; VN = Vietnam; For Brunei, we use the standing facility lending rate. For China, we use the People's Bank of China 7-day reverse repurchase yield. For Hong Kong, we use the Base Rate. Data for 2024 as of 9 September.

Easing inflationary pressures amid resilient growth suggests that regional central banks may not be in a hurry to deviate from their current monetary stance. Inflation across most ASEAN+3 economies have eased from 2023 to 2024, while growth is projected to be stronger in 2024 (Figure 1.25). Easing inflationary pressures have allowed central banks to stop hiking rates, with the inflation trajectory likely to be the biggest determinant of the timing of rate cuts. Some central banks may also prefer to keep monetary policy settings unchanged for longer, as they acknowledge the uncertainty around the inflation trajectory and want to be sure that inflation expectations are well-anchored around the inflation targets. However, beyond the inflation trajectory and expectations, other factors may influence central bank decisions around rate cuts.

- For the Bank of Korea, the decision on the timing of policy easing would depend on the effect on foreign exchange market volatility, housing prices, and household debt.

- Financial stability has also been a key consideration for the Bank of Thailand.[9] With the economy converging to its potential, long-term macro-financial stability considerations may allow the central bank to maintain its policy stance for a longer period.

- Bank Indonesia's (BI) monetary policy is also directed toward maintaining a stable exchange rate to prevent inflationary effects of a weaker currency. This prompted the central bank to hike in April 2024 to support the rupiah (Table 1.1).

- Bangko Sentral ng Pilipinas eased its policy rate in August 2024 as inflation remained on target-consistent path and the macroeconomic outlook supported a calibrated shift to less restrictive monetary policy.

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[8] After adjusting the yield curve control (YCC) framework in July and October 2023, the BOJ exited the negative interest rate policy by scrapping the YCC on 19 March 2024. Furthermore, the BOJ announced the uncollateralized overnight call rate as its new policy rate and decided to encourage it to remain at around 0 to 0.1 percent, compared to the previous effective range of -0.1 to 0 percent. On 31 July, the BOJ lifted the policy rate again to "around 0.25 percent" and decided it would reduce the amount of its monthly outright government bond purchases such that it will be about JPY 3 trillion in Q1 2026.

[9] The Bank of Thailand has taken measures through bank and nonbank financial institutions to reduce risks related to high household debt. These include offering loan products that are suitable to customers' needs and repayment capabilities, aligning interest rates to borrowers' risk profiles, communicating to debtors on negative effects of persistent debt, and ensuring customers receive complete and accurate information on the products, among others.

Exchange rates are an important consideration for many regional central banks, and they have used various measures to support their currencies during the first half of 2024. While most regional central banks have maintained higher policy rates and have intervened in foreign exchange markets (including verbal interventions) to limit the volatility of their currencies, some have taken other measures to support their currencies.

- Bank Negara Malaysia worked with the government to encourage government-linked companies, government-linked investment companies and corporates to repatriate their foreign earnings to help reduce the depreciation pressures on the ringgit.

- BI has implemented a multifaceted approach to support the rupiah and attract portfolio inflows. The BI has enhanced the interest rate structure of money markets to maintain attractive

yields and introduced new investment instruments like Bank Indonesia Rupiah Securities (SRBI), Bank Indonesia Forex Securities (SVBI), and Bank Indonesia Forex Sukuk (SUVBI). These measures have also deepened the money market and strengthened monetary operations. Additionally, BI has stabilized the rupiah through interventions in the spot market, domestic non-deliverable forwards (DNDF), and secondary market for government securities.

- Korean authorities have been working with the National Pension Service (NPS), which is a large domestic investor, to manage the market impact due to NPS's US dollar demand. The measure includes maintaining a swap line with the Bank of Korea for NPS to borrow US dollars. This helps to ease the foreign exchange market imbalance between supply and demand by absorbing the demand in the spot market through swaps.

Figure 1.24. Selected ASEAN+3: Market-Implied Changes in Policy Rates
*(Basis points)*

Most ASEAN+3 central banks are expected to lower interest rates in coming months.

Source: Bloomberg Finance L.P.; AMRO staff calculation
Note: Bars denote the cumulative changes in market-implied policy rates in a respective time horizon. The 12-month data point is not used for the Philippines due to its pricing irregularities. Data as of 9 September 2024.

Figure 1.25. Selected ASEAN+3: Expected Changes in Real GDP Growth and Inflation, 2023 versus 2024
(Percentage points)

Resilient growth and easing inflation have encouraged most ASEAN+3 central banks to maintain their policy stance.
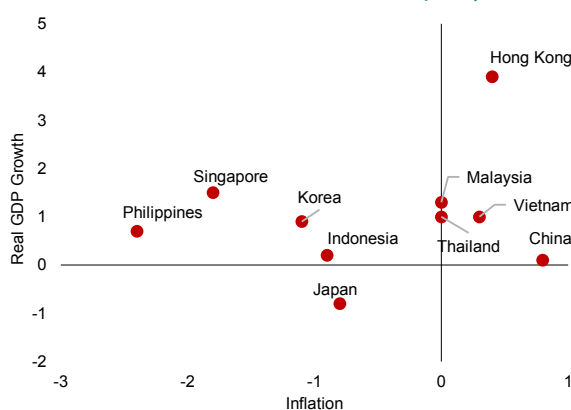
Source: AMRO ASEAN+3 Regional Economic Outlook 2024 July.
Note: The difference is calculated as 2024 forecasts minus 2023 actual data.

Table 1.1. Selected ASEAN+3, US and EU: Recent Hiking and Easing Cycles

ASEAN+3 central banks have ended their hiking cycles with China, Japan and Vietnam being the exceptions.

Economy	Change in key policy rate since July 2021 (basis points)	Months from first hike to last hike	2021 July	2022	2023	2024 August
Korea	300	17				
Singapore		12				
United States	**525**	**16**				
Hong Kong	525	16				
Malaysia	125	12				
The Philippines	425	17				
Europe	**425**	**14**				
Indonesia	275	20				
Thailand	200	13				
Vietnam	50	2				
Japan	35					
China*	-50					

Policy rate hikes / Policy rate cuts

Source: Bloomberg, AMRO staff compilation.
Note: The orange bars show the period between the first and last hikes from July 2021 to August 2024. The blue bars show the duration between the first and the last cut during the same duration. The bars do not denote the pace or extent of rate changes but the change in policy rates during this period is shown in the second column. For China, we use the People's Bank of China 7-day reverse repurchase yield. For Hong Kong, we use the Base Rate. Data as of 9 September 2024.

The foreign exchange reserves for ASEAN+3 economies remain ample (Figure 1.26).[10] After increasing for most of the economies in 2023, foreign exchange reserves fell in 2024 (Figure 1.27). The fall can be attributed to a stronger US dollar (which reduces the dollar value of non-US dollar assets in the reserves) for most of the year and sporadic interventions taken by regional central banks to manage the volatility in the exchange rate. Though foreign exchange reserves have fallen, this has been driven by the foreign currency assets component of the reserves and central banks have continued to build their reserve holdings of gold. There seems to be a gradual shift in reserve allocation and almost all ASEAN+3 central banks (where data are available), now hold a greater share of their reserves in gold than at the end of 2021 (Figure 1.28). This is consistent with the trend of rising gold reserves globally and it is likely that in line with the global trend, regional central banks are also reducing their allocation of foreign reserves to US dollar assets (Douglass, Goldberg, and Hannaoui 2024).

Figure 1.26. ASEAN+3: Reserve Adequacy

The foreign exchange reserves for ASEAN+3 economies remain ample.
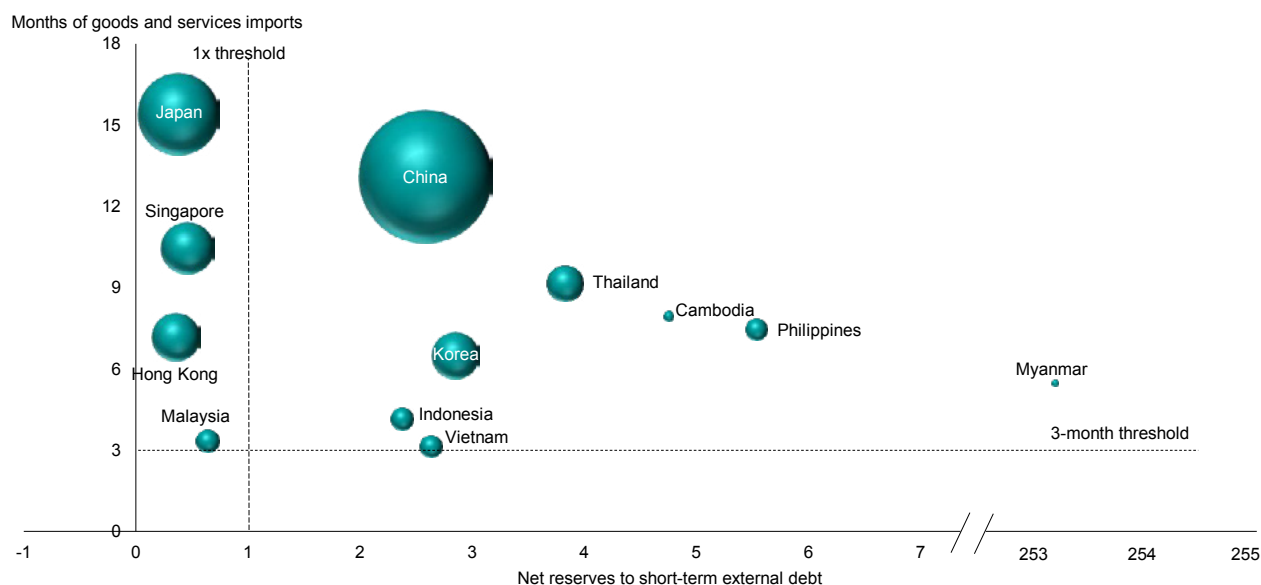

Source: National authorities; International Monetary Fund; World Bank; AMRO staff calculations.
Note: Data for reserves are sourced from either national authorities or IMF IFS database and they are as of June 2024, except Cambodia, Vietnam (November 2023), Lao PDR (March 2024) and Myanmar (March 2021). Data for short-term external debt are sourced from IMF Quarterly External Debt Statistics database and they are as of Q1 2024, except Lao PDR, Myanmar (end-2021) and Vietnam (end-2023). Data for goods and services imports are sourced from either national authorities or IMF IFS database and they are as of Q1 2024, except Myanmar (Q3 2020). The size of the bubble denotes the relative amount of each economy's net international reserves in US dollars. Excludes Lao PDR due to data unavailability for recent short-term external debt.

Figure 1.27. Selected ASEAN+3: Changes in Foreign Reserves, 2023 and 2024
(Billions of US dollar)

ASEAN+3 central bank reserves have broadly reduced in 2024…
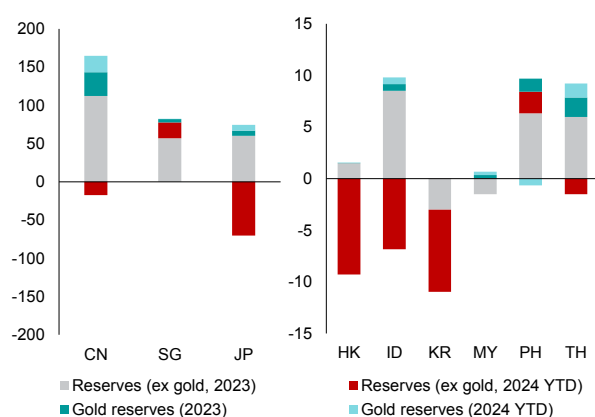
Source: Haver Analytics; AMRO staff calculation
Note: CN = China; SG = Singapore; JP = Japan; HK = Hong Kong; ID = Indonesia; KR = Korea; MY = Malaysia; PH = The Philippines; TH = Thailand; YTD = year-to-date. Data as of June for 2024.

Figure 1.28. Selected ASEAN+3: Share of Gold in Foreign Reserves
(Percent for both scales)

… but holding of gold in reserves has continued to rise.
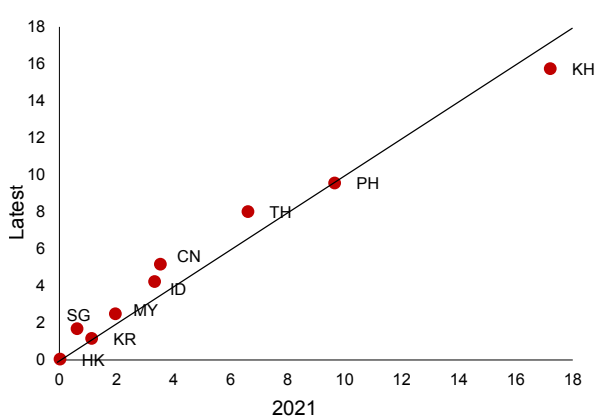
Source: Haver Analytics; AMRO staff calculation.
Note: KH = Cambodia; CN = China; HK = Hong Kong; ID = Indonesia; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand. Data as of June 2024.

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[10] The reserve coverage for Lao PDR is below the three-month threshold of exports prescribed by the International Monetary Fund. Malaysia's reserve cover to external short-term debt has improved since last year and significant holdings of liquid external assets and the profile of short-term external debt liabilities further reduce the vulnerability. In Japan, Hong Kong, and Singapore, although official reserves are low on external short-term debt, public institutions and private businesses hold sizable external assets.

Debt–to–GDP ratios in many ASEAN+3 economies remain significantly higher than pre–pandemic

In 2023, ASEAN+3's total debt-to-GDP ratio—including corporate, household, and government debt—increased by 10 percentage points relative to 2022, exceeding 290 percent (Figure 1.29). The rise was driven largely by corporate and government debt, while household debt increased only modestly. Although interest rates in some economies have started to decline, the overall debt burden would likely remain high due to increased debt levels and the slow pace of interest rate reductions.

Vulnerability to high corporate debt continues to stem mainly from certain types of companies and certain sectors. Based on data available as of the end of 2023, listed companies

maintained strong interest coverage ratios (ICRs) due to better disclosure and risk controls, although the ratio of vulnerable companies increased slightly relative to the level reported in the *AFSR* 2023. Meanwhile, many unlisted companies, particularly micro, small, and medium sized enterprises (MSMEs), with a stable share in corporate debt (Figure 1.30), are facing increased difficulties in debt servicing due to high interest rates (Figure 1.31). Corporate debt continued to be concentrated in the property and construction, manufacturing, and raw materials sectors. Debt levels in these sectors stabilized in 2023 after rising in 2022, which was driven by the post-pandemic resumption in activity. Stress in the property and construction sector remains elevated in 2024.

Figure 1.29. Selected ASEAN+3: Corporate, Government and Household Debt
*(Percent of GDP, Percent)*

ASEAN+3's total debt-to-GDP ratio rose by 10 percentage points from 2022, driven by corporate and government debt.
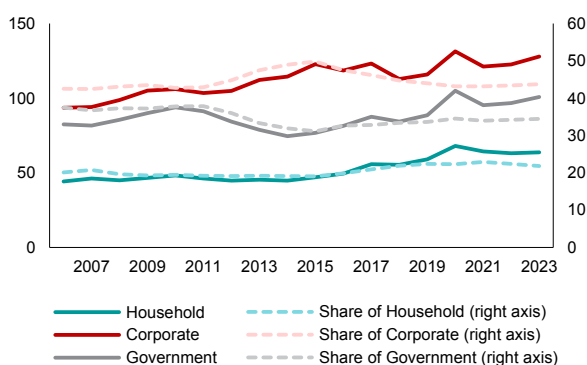
Source: Bank for International Settlements (BIS); AMRO staff calculations.
Note: Data covers all economies reporting nonfinancial debt data to the BIS. Selected ASEAN+3 includes China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Singapore, and Thailand. Government debt data for these economies in nominal value, except for Korea, which reports market value.

Figure 1.30. ASEAN+3: Share of Corporate Debt by Firm Type
(Percent)

Listed firms' share of corporate debt in ASEAN+3 have increased.
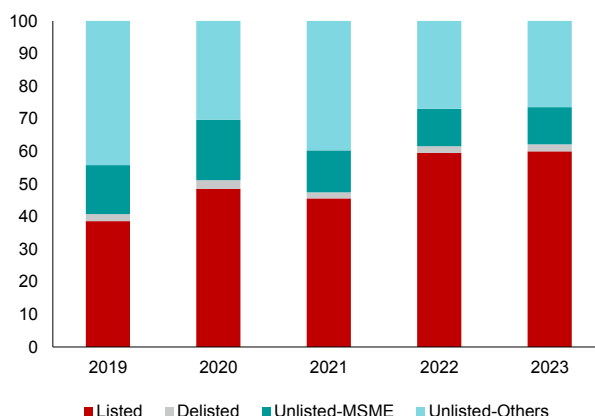
Source: Orbis; AMRO staff calculations.
Note: MSME = micro, small, and medium enterprise. Unlisted-Others refers to other sub-groups than MSMEs in the "unlisted" category.

Figure 1.31. ASEAN+3: Share of Corporate Debt by Interest Coverage Ratio (ICR) Range
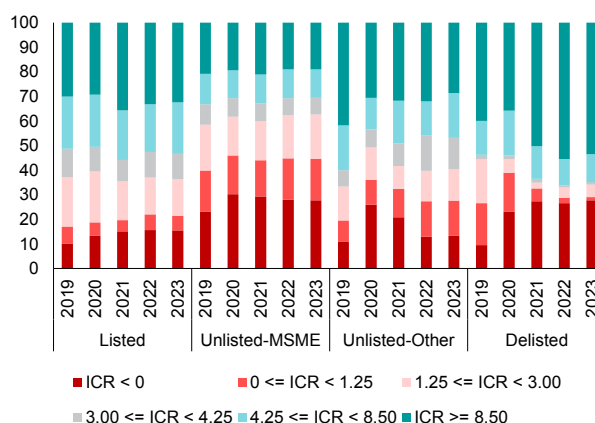*(Percent of debt)*

Many unlisted MSMEs are facing increased difficulties in meeting their debt obligations in recent years.

ASEAN
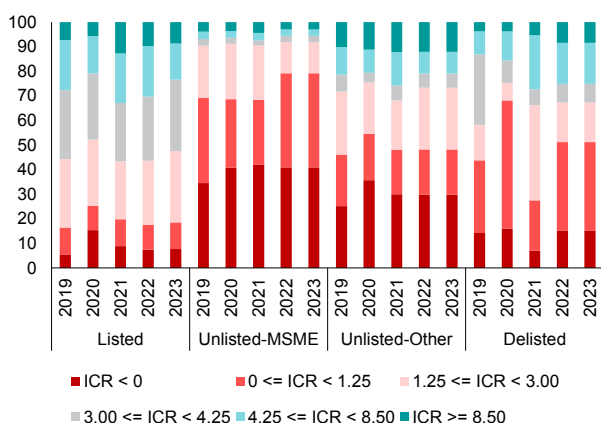
Source: Orbis; AMRO staff calculations.
Note: MSME = micro, small, and medium enterprise; ICR = interest coverage ratio.

Plus-3

Source: Orbis; AMRO staff calculations.
Note: MSME = micro, small, and medium enterprise; ICR = interest coverage ratio.

The government debt-to-GDP ratio continued to rise in ASEAN+3 economies and the interest payment burden also increased. In the Plus-3 economies, the government debt-to-GDP ratio increased except for Japan, while the ratio in ASEAN countries remained stable, with mixed outcomes in individual countries (Figure 1.32). The interest payment-to-GDP ratio also increased significantly in 2023 for most ASEAN+3 economies as a result of higher debt levels and high interest rates (Figure 1.33). Due to the longer maturity of government debt (Figure 1.34) and the local currency denomination of the bulk of the debt, rollover risks are low in most economies in the short term, with only a few having significant debt with maturities by the end of 2025 (Figure 1.35).

The household debt burden in some ASEAN+3 economies increased, but some countries, such as Japan and Korea, experienced a reduction in their debt burden in 2023. According to AMRO's estimates, household debt burdens in 2023 have generally increased amid higher interest rates, except in China, Japan, and Korea (Figure 1.36), where they have eased slightly compared to 2022.[11] Meanwhile, house prices within the region in 2023 have converged to their "fundamental values", which are estimated by AMRO's macroeconomic model, especially in the Plus-3 economies (Figure 1.37).[12] This convergence suggests that the risk of a sharp fall in housing prices has diminished.

Figure 1.32. Selected Economies: Government Debt
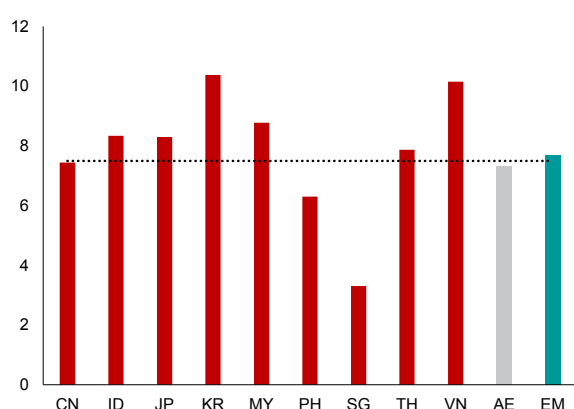*(Percent of GDP)*

ASEAN+3's government debt-to-GDP ratio has risen in recent years.
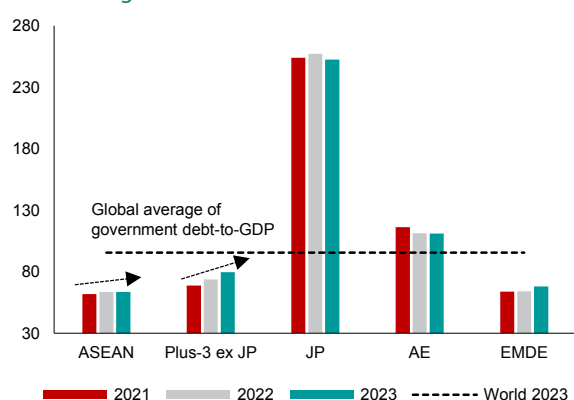
Source: IMF World Economic Outlook April 2024; AMRO staff calculations.
Note: The dotted line is the weighted average of government debt-to-GDP of the World in 2023. A group's average is calculated as a GDP-weighted average of individual economies' ratios. ASEAN = Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam, Plus-3 ex Japan = China, Hong Kong, and Korea, AE = Advanced economies, EMDE = Emerging market and developing economies. Most data are calendar year-based, except for a few economies, including Hong Kong, Singapore, and Thailand, which report data based on their fiscal years.

Figure 1.33. Selected ASEAN+3: Government Interest Payments
(Percent of GDP)

Elevated debt levels and rising interest rates have driven up government interest payments.
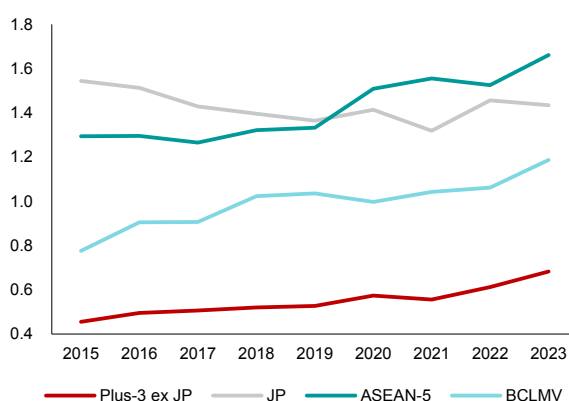
Source: National authorities via CEIC and Haver Analytics; AMRO (2024b); AMRO staff calculation.
Note: The interest payments are based on fiscal years and are computed using simple averages among the economies within the specific group. Plus-3 ex Japan = China, Hong Kong, and Korea; JP = Japan; ASEAN-5 = Indonesia, Malaysia, Philippines, Singapore, and Thailand; BCLMV = Brunei, Cambodia, Laos, Myanmar, and Vietnam.

Figure 1.34. Selected Economies: Weighted Averages of Remaining Maturity of Government Securities, 2023
(Number of years)

Long average maturities of government bonds limit rollover risks.

Source: IMF Fiscal Monitor April 2024; AMRO staff calculations.
Note: The dotted line is a simple average of maturities of advanced economies and emerging market economies. CN = China; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; VN = Vietnam; AE = advanced economies; EM = emerging markets and developing middle-income economies.

Figure 1.35. Selected Economies: Maturity Profiles of Government Bonds, 2024
(Percent of total outstanding government bonds)

Only a few economies in the region have significant debt maturing by the end of 2025.
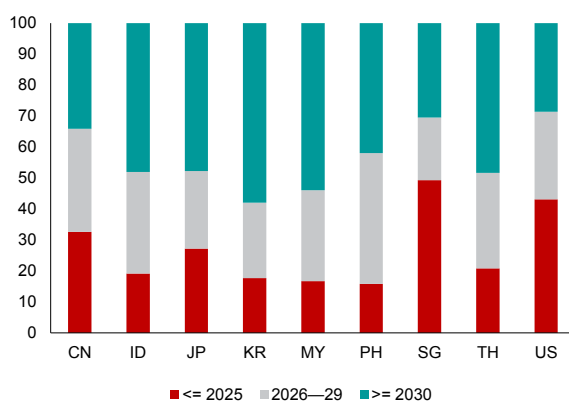
Source: Bloomberg Finance L.P; AMRO staff calculations
Note: Bond outstanding ratios maturing by 2025, between 2026 and 2029, and in or after 2030, respectively, to the total government outstanding amount. CN = China; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; US = United States. Data as of 30 June 2024.

[11]   For detailed discussion, please refer to AFSR 2023. Our estimates, based on aggregate data and assumptions of 10-year loan maturity, could understate the actual debt burden. The actual burden may be greater, particularly in emerging market economies where loan terms are typically short and household income constitutes a small share of GDP.

[12]   For detailed discussion, please refer to AFSR 2023. Fundamental drivers include real household income, stock market, mortgage rate and real credit to the household. To illustrate the gap between the actual rise in real house price and the increase predicted by model fundamentals, they are indexed to 100 in 2015 which is a year when the gap was generally small.

Figure 1.36. Selected ASEAN+3: Estimated Household Debt Burdens
(Percent of GDP)

Household debt burdens generally increased in 2023 amid higher interest rates.
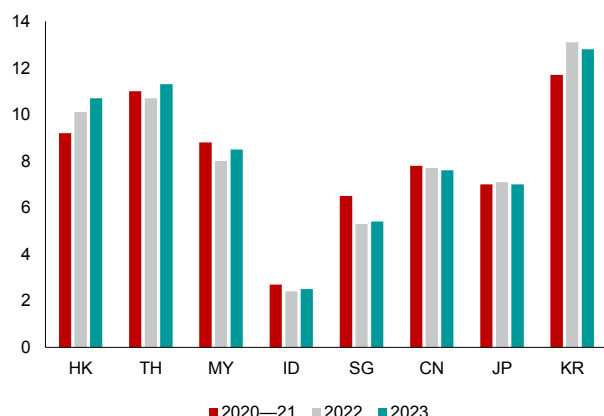
Source: National authorities; Bank for International Settlements; AMRO staff calculation.
Note: The debt burden is estimated by multiplying household debt by the interest rate and assuming a 10-year average debt maturity using the formula in Drehmann and others (2015). CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; SG = Singapore; TH = Thailand.

Figure 1.37. Selected ASEAN+3: Real House Price versus Predicted Value from A Model of Fundamental House Prices
(Index, 2015 = 100)

House prices in 2023 across the region converged to their fundamental values.
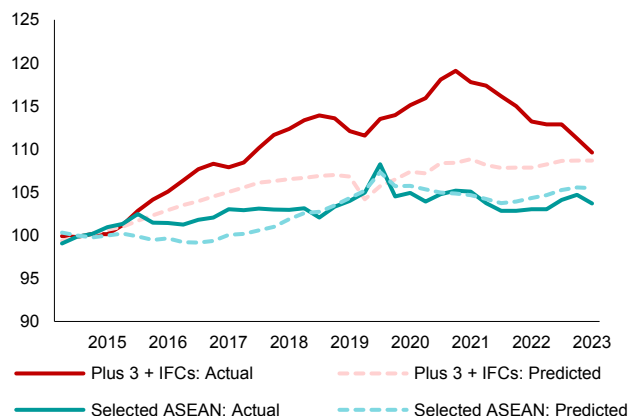
Source: National authorities; International Monetary Fund; Bank for International Settlements; AMRO staff estimates.
Note: Selected ASEAN economies included are Indonesia, Malaysia, Philippines, and Thailand. IFC = international financial center. Plus-3 and IFCs include China, Japan, Korea, Hong Kong, and Singapore.

ASEAN+3 financial institutions remain relatively sound, but pockets of vulnerabilities remain

In 2023, ASEAN+3 banks demonstrated resilience with strong capital buffers, effectively mitigating credit risks. ASEAN banks reported higher capital adequacy ratios (CARs) compared with banks in other regions. Plus-3 banks, though having relatively lower CARs than those of ASEAN banks, maintained levels comfortably above regulatory requirements (Figure 1.38) while boasting some of the world's lowest nonperforming loan ratios (Figure 1.39).

Despite stable credit quality and profitability, there are pockets of vulnerabilities in the banking system. First, heightened risks in the property and construction sectors could worsen banks' asset quality in some economies. As suggested in Chapter 2, the asset quality of bank loans in these sectors, as measured by property-related non-performing loan ratios, has deteriorated, especially in some plus-3 economies. Second, while deposits still account for the largest share of bank liabilities, the ratio of nondeposit liabilities to total liabilities shows an upward trend, with ASEAN+3 banks gradually shifting to market financing via bonds

and repurchase operations.[13] This can expose banks to greater market risks and financial market volatility, such as an increase in the cost of raising funds from the market during a shock.[14]

The nonbank financial intermediaries (NBFIs) sector in ASEAN+3 has continued to grow, in contrast to the declining share of NBFIs in total financing in other regions (Figure 1.40). The share of NBFIs in total financing in ASEAN+3 rose in 2023 although it remains significantly smaller than the banking sector. As emphasized in *AFSR 2023*, NBFIs offer a diversified range of financial products and market intermediation services, but they can also pose risks to financial stability. The main risks include potential liquidity pressures due to mismatches between NBFI asset and liability maturities, increased vulnerability to financial shock due to high leverage, the risk of contagion through interconnectedness with the banking sector, and the likelihood of engaging riskier activities where regulation is loose. Given the increased role of NBFIs, it is imperative to enhance surveillance and monitoring to mitigate potential risks.

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[13] Ratio of non-deposit liabilities to total liabilities (percent, 2010 → 2022 → 2023): (ASEAN ex SG) 21.94 → 23.70 → 23.77, (Plus-3 ex HK) 12.59 → 19.74 → 20.57, (IFC) 25.50 → 32.16 → 31.63

[14] For example, the turmoil in the US and European banking sectors in 2023 hurt sentiment in the Plus-3 economies, leading to higher credit default swap (CDS) spreads and lower bank equity prices, which drove up the costs associated with securing market funding.

Figure 1.38. Selected Regions: Total Capital Adequacy Ratios (CARs)
(Percent)

ASEAN+3 banks showed resilience with robust capital buffers, mitigating credit risks.
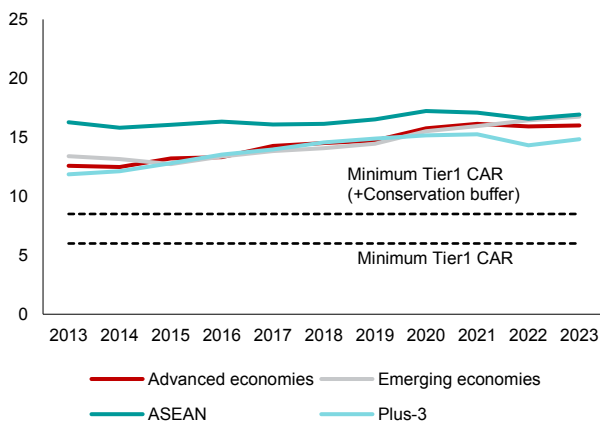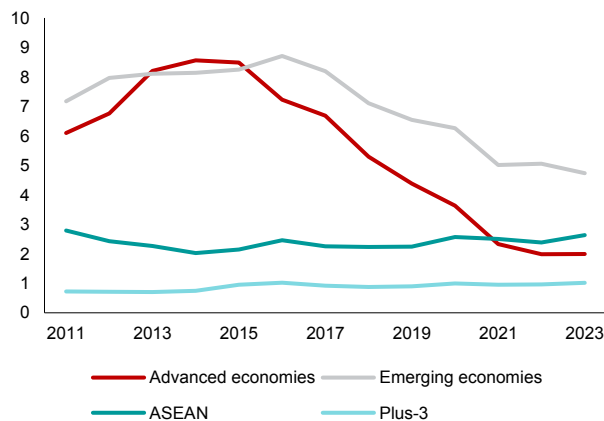

Source: National authorities; International Monetary Fund via Haver Analytics; AMRO staff calculations.
Note: The CARs are computed based on simple averages amongst economies in the specific region. Due to data availability, ASEAN economies not covered are Lao PDR, Myanmar, and Vietnam. Advanced economies refer to selected economies in North America and Western Europe. Emerging economies refer to selected economies in Latin America and Eastern Europe. For countries that have not released end-2023 data, use the latest quarter data. Data for 2024 is as of Q1 2024. For countries that have not released Q1 2024 data, the most recent available quarter's data is used.

Figure 1.39. Selected Regions: Nonperforming Loan Ratios
(Percent)

Banks in the region maintain high asset quality, with some of the world's lowest nonperforming loan ratios.


Source: National authorities; International Monetary Fund via Haver Analytics; AMRO staff calculations.
Note: The nonperforming loan ratios are computed based on simple averages amongst economies in the specific region. Due to data availability, Lao PDR, Myanmar, and Vietnam are excluded from the analysis for ASEAN. Advanced economies refer to selected economies in North America and Western Europe. Emerging economies refer to selected economies in Latin America and Eastern Europe. For countries that have not released end-2023 data, use the latest quarter data. Data for 2024 is as of Q1 2024. For countries that have not released Q1 2024 data, the most recent available quarter's data is used.

Figure 1.40. World and ASEAN+3: Financing of Nonfinancial Private Sector by Banks and NBFIs
(Percent of GDP; percent)

NBFIs represent a smaller share of total financing than banks but continue to grow in ASEAN+3.
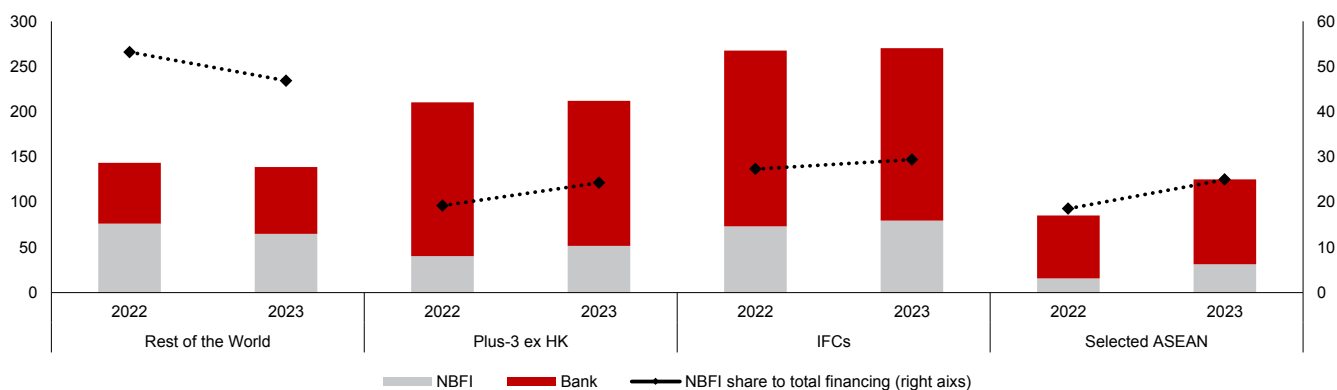
Source: Bank for International Settlements via Haver Analytics; AMRO staff calculations.
Note: Plus-3 ex HK consists of China, Japan and Korea. International financial centers (IFCs) consist of Hong Kong and Singapore. Selected ASEAN consists of Indonesia, Malaysia, and Thailand. NBFI = nonbank financial intermediary..

II. Risks

Markets juggle the twin threats of inflation resurgence and weak growth

The Fed's easing cycle seems imminent, but new risks are surfacing while old risks continue to loom. First, while inflation has continued to ease, disinflation has proceeded at a pace slower than market expectations (Figure 1.41). The final stretch of achieving disinflation has proved difficult, largely because services inflation has been persistent. Second, the risks around growth outlook have emerged, with rising concerns of a severe growth slowdown and, in an extreme scenario, a recession.

The worst-case scenario would be stagflation where high inflation (potentially triggered by commodity price hikes amid heightened geopolitical tensions) is accompanied by a recession. Persistent inflation in such a scenario might force the Fed to hike rates again, triggering a sharp repricing in global markets that currently are expecting monetary easing (Figure 1.42), and thus further weighing on the economic outlook.

Figure 1.41. US: Inflation and Inflation Data Surprises
(Percentage points; percent)
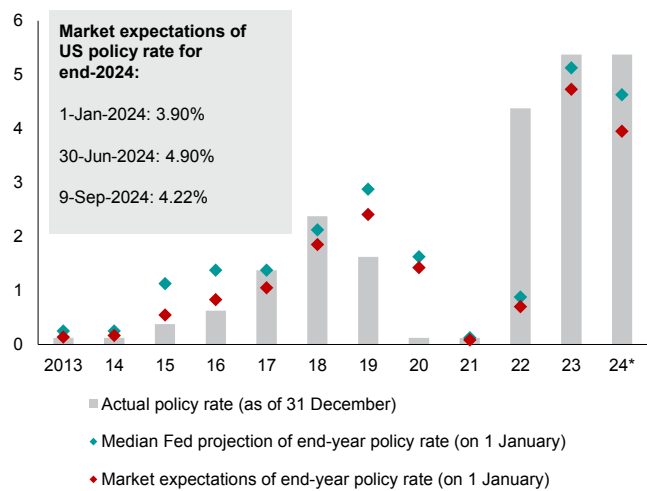
The disinflation has been slower than expected.
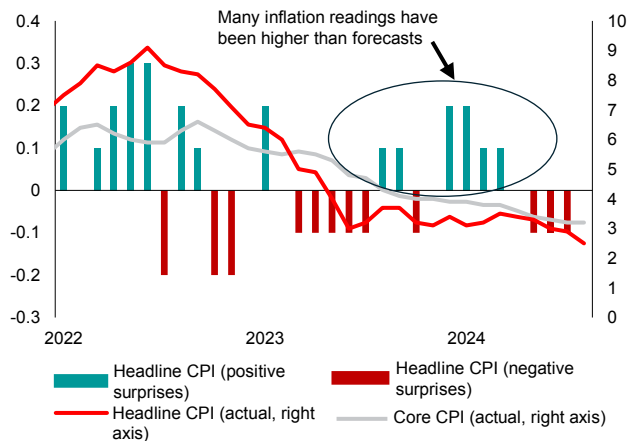
Source: Bloomberg Finance L.P.; AMRO staff calculations.
Note: Headline CPI surprise is calculated as the difference between actual and forecast median of Bloomberg economist survey. CPI = consumer price index. Data as of August 2024.

Figure 1.42. US: Projected versus Actual Policy Rates
(Percent)

Markets continue to expect the Fed to ease monetary policy.

Market expectations of US policy rate for end-2024:
1-Jan-2024: 3.90%
30-Jun-2024: 4.90%
9-Sep-2024: 4.22%

Source: Bloomberg Finance L.P.; Haver Analytics; AMRO staff calculations.
Note: The projected (at the start of year) is the latest available market pricing and median dots on 1 January for end-year policy rates. The intra-meeting change in market projections shows the average and median change in the market projections for the policy rates of each meeting during the year from the day after the previous meeting. Fed = Federal Reserve. Data for 2024 is as of 9 September 2024.

Rising geopolitical uncertainties could impact financial stability through multiple channels

Geopolitical uncertainties have increased since the publication of AFSR 2023. The risks can be broadly divided into three categories, each presenting a separate set of financial stability challenges for ASEAN+3:

- Commodity price hikes and shipping costs: Simmering conflicts in the Middle East have to date been contained and have not escalated. Nevertheless, the conflicts have impacted global supply chains. Geopolitical uncertainty, along with OPEC+'s production cut, had kept oil prices elevated and shipping costs high. Attacks on ships in the Red Sea, rerouting of ships, the reduced availability of ships/container and port congestion, have all increased the costs of transportation (Figure 1.43). These factors may feed into prices and could stall the disinflationary process.

- Renewed trade tensions: The outcome of the US presidential elections will have a material effect on US economic policy. Presidential candidates have threatened major trading partners with higher tariffs and sanctions, and greater restrictions on technological access. A major shift in the US fiscal and monetary stance under the new administration will also have important implications for global and ASEAN+3 markets. Overall, uncertainty in the global economy and financial system will remain elevated heading into the US elections.

- Investor sentiment: Geopolitical fragmentation could cause the world to split into distinct economic blocs (Gourinchas 2022). An escalation of conflicts could lead to heightened risk aversion and capital outflows from regional markets, leading to turbulent financial markets.

Figure 1.43. Brent Crude Oil Price and Shipment Cost
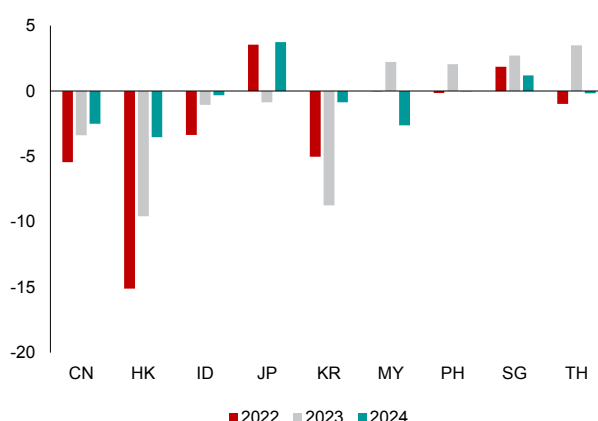*(US dollar per barrel; thousands of US dollar)*

Oil prices remain elevated while container freight rates have risen recently.
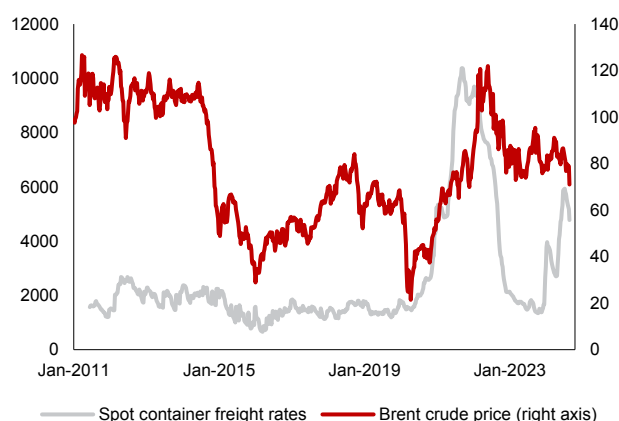
Source: Bloomberg Finance L.P.
Note: Data as of 6 September 2024.

Figure 1.44. Selected ASEAN+3: Residential Property Price Indices
(Percent)

Property prices in many ASEAN+3 economies have declined in the past few years.

Source: BIS residential property price database.
Note: CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = The Philippines; SG = Singapore; TH = Thailand. Data as of Q1 2024.

More risks and vulnerabilities can affect financial stability

This section is a snapshot of other risks and vulnerabilities in the region that could have material spillovers to financial stability. These risks are discussed in greater detail in the Feature Analysis and Chapters of this report.

- Spillover risks: The interconnectedness of ASEAN+3 economies and financial systems has increased in the past decade, potentially amplifying spillovers within the region if one or more economies were hit by financial shocks. Notably, the major financial centers of ASEAN+3, with their extensive external connections, are a potential source of transmission of shocks to the region. The Feature Analysis, *ASEAN+3 Financial Interconnectedness and Potential for Spillovers*, discusses the channels of spillover risks from within and outside ASEAN+3.

- Property Sector: The property market in some ASEAN+3 economies has seen a downturn in the past few years, even as the pace of decline has eased recently (Figure 1.45). High interest rates and financially vulnerable developers can pose risks to financial stability in some economies. Chapter 2, *Vulnerabilities and Potential Spillovers Stemming from Property Developer Financing*, examines the financial conditions of property developers, and the potential spillovers from the sector to financial markets.

- US Dollar Reliance: Though the risks related to US dollar liquidity shocks have receded, the issue of reliance on

US dollars still poses risks in the medium term. The reliance makes the ASEAN+3 financial system vulnerable to US dollar liquidity shortage during periods of market stress. It also acts as a transmission channel for shocks arising from shifts in US monetary policy and global financial conditions. Chapter 3, *Implications of US Dollar Reliance in ASEAN+3*, studies these risks and the role played by various participants in ASEAN+3's US dollar supply chain in transmitting and amplifying these risks.

- Green Finance: Green finance has grown rapidly in the ASEAN+3 region, largely through the issuance of green bonds. The benefits of green finance for environmental and economic sustainability, and the need for authorities to facilitate this shift, are well recognized. However, the transition needs to be carefully managed, to avoid creating new risks for financial stability. *Box 1.4* dives deeper to examine issues such as greenwashing, and the risks of stranded assets.

In an AMRO survey, member authorities were asked about their opinions about various financial stability risks. The survey was conducted in June 2024. Most of the respondents saw a medium or high likelihood of the risks related to spillovers from US monetary policy and geopolitical risks to materialize. However, most respondents were not much concerned about the risks emerging from US dollar funding, property market, corporate and household debt, and NBFI activities. See Box 1.3 for details.

Box 1.3:

Member Survey Results for Financial Stability Risks

In a survey conducted by AMRO, member authorities were asked their opinions on financial stability risks. The survey was conducted in June 2024. Key takeaways from the survey for financial stability risks are:

- **Broad risk evaluation:** More than 70 percent of respondents see a medium or high likelihood of the risks related to spillovers from US monetary policy and geopolitical risks to materialize. More than 50 percent of respondents see a low likelihood of financial risks emerging from US dollar funding, property market, corporate and household debt, and NBFI activities (Figure 1.3.1).

- **US dollar funding:** 20 percent of the respondents regard US dollar funding as "significantly important" for the financial stability of their economy while the other 80 percent see it as "moderately important". A majority, 60 percent, are concerned about the capital outflow pressures during the US dollar funding stress while 40 percent believe that small and medium sized banks are vulnerable to funding stress (Figure 1.3.2).

- **Property developers:** Two-thirds of the respondents evaluate property developers in their economy as being "moderately distressed", and another 13 percent see them as "significantly distressed" (Figure 1.3.3). The respondents believe that sluggish property demand, oversupply and

excess inventories, and refinancing risks to be the biggest issues for property developers (Figure 1.3.4).

- **Spillovers risks:** Two-thirds of respondents show concerns about the spillovers from global factors such as commodity prices and global policy uncertainty while 47 percent are concerned with cross-sector spillovers to their economies. More authorities are concerned about intra-ASEAN+3 spillovers than spillovers from advanced economies (outside ASEAN+3) (Figure 1.3.5). The authorities are concerned about spillovers due to various scenarios, including divergence in global and ASEAN+3 monetary policies, geopolitical risks from US elections and tensions in the Middle East, the risk of a slowdown in the US, Europe, and China, commodity price volatility, geopolitical fragmentation, and the upside risks to inflation.

- **Green finance:** For a vast majority (87 percent) of respondents, issues related to greenwashing are "not significant" or only "somewhat significant" to financial stability (Figure 1.3.6). However, about two-thirds expect a "medium impact" from transition risks on financial institutions in their economy (Figure 1.3.7). 13 percent respondents expect a "high impact" from transition risks on concerns around (1) banking sector exposure to manufacturing sector and small and medium sized enterprises and 2) higher regulatory and compliance costs, and asset devaluation.

Figure 1.3.1. Broad Risk Evaluation
(Percent of total responses)

Source: Authority Survey; AMRO staff compilation.

Figure 1.3.2. Importance of US Dollar Funding on Financial Stability Across Different Sectors
(Percent of total responses)
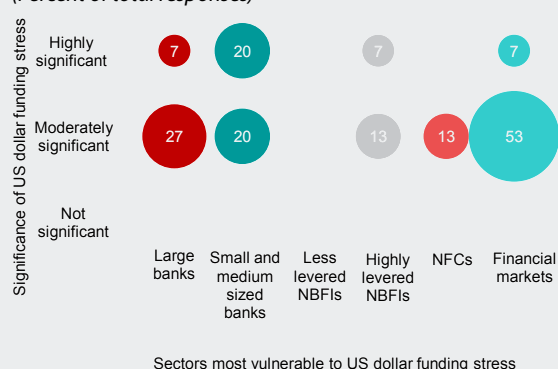
Source: Authority Survey; AMRO staff compilation.
Note: The bubble size corresponds to the percent of authorities who selected the combination(s) of level of "Significance of US dollar funding stress" and vulnerable sector. Authorities were first asked to rate the significance of US dollar funding stress. Then, they were given a multiple-choice question about sectors they would expect to be affected the most. For example, 53 percent of authorities that think that US dollar funding is "moderately significant" and expect "financial markets" to be affected most. NBFIs = nonbank financial institutions; NFCs = nonfinancial corporations;

The author of this box is Prashant Pande.

Figure 1.3.3. Impact of Real Estate Distress on Financial Stability
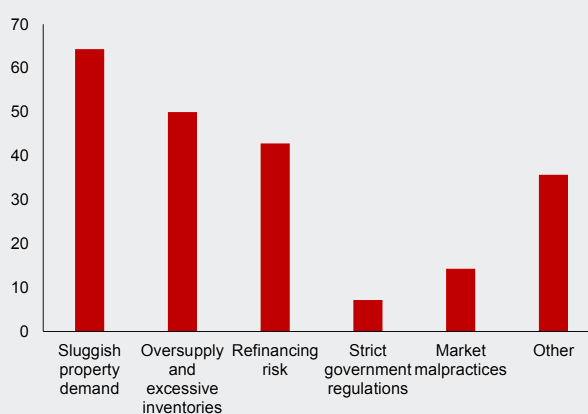*(Percent of total responses)*

Source: Authority Survey; AMRO staff compilation.
Note: The bubble size corresponds to the percent of authorities evaluating the level of distress in the property developer sector and the impact on the economy's financial stability. For example, 62 percent of surveyed authorities that think that the property developers are moderately distressed, and that when under distress, there will be medium impact on the economy's financial stability.

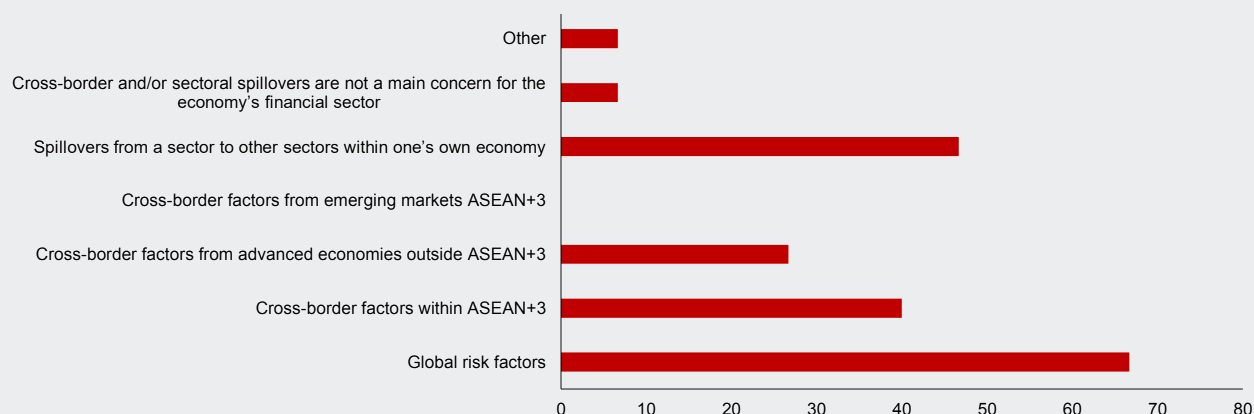**Figure 1.3.4. Challenges Faced by Property Firms**
(Percent of total responses)

Source: Authority Survey; AMRO staff compilation.

Figure 1.3.5. Linkages and Relevant Spillovers for Financial Sector
(Percent of total responses)

Source: Authority Survey; AMRO staff compilation.

Figure 1.3.6. Prevalence of Greenwashing Risks
(Percent of total responses)
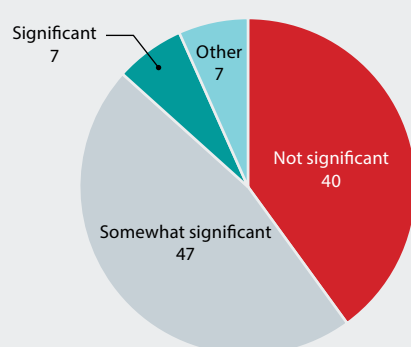
Source: Authority Survey; AMRO staff compilation.
Note: For "other", authorities are requested to specify, in which the response is that banks had put in place relevant systems and controls to help mitigate potential greenwashing risks arising from their offering of green and sustainable products, along with good practices identified with the industry.

Figure 1.3.7. Expected Impact of Climate Transition Risk
(Percent of total responses)
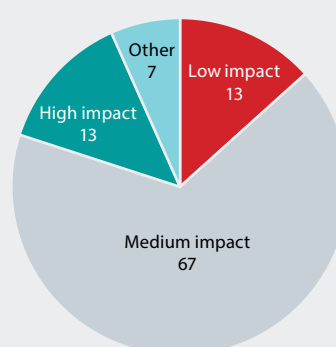
Source: Authority Survey; AMRO staff compilation.
Note: For "other", responses include that results based on climate risk stress test exercises indicated that high-emission sector exposures of the industry are not high, and that the banks will remain resilient to climate related shocks given their strong capital buffers built over time.

III. Policy Discussion

Some risks highlighted in the 2023 AFSR have receded, but other risks have intensified with potential spillovers to financial stability. On balance across ASEAN+3, the financial stability risk in 2024 appears to be lower than in 2023. As such, the authorities can use this period to rebuild policy space and financial buffers while continuing to be vigilant of emerging risks.

Higher inflation driven by external factors remains a key risk for regional economies. ASEAN+3 authorities have managed inflationary pressures well, using a combination of monetary and non-monetary measures. Interest rate hikes in ASEAN+3 has been more moderate than seen in many advanced and emerging market economies outside the region, thanks to the strong credibility of the monetary authorities in anchoring inflation expectations and the skillful combination of fiscal and monetary policies to contain inflation and support growth. That said, domestic inflation may rebound due to exogenous geopolitical and weather-related factors that exert pressure on fuel and food prices. These same risk factors could cause the Federal Reserve and major central banks to turn hawkish again. Central bank response within ASEAN+3 to a resurgence in inflation would depend on domestic circumstances in individual economies and their susceptibility to spillovers from global monetary tightening. Some of the measures that authorities could consider include:

- Monetary policy to be calibrated for moderating domestic demand while at the same time supporting the currency to avoid excessive volatility and mitigate imported inflation.

- In economies where growth is weak and monetary policy has little room to respond, the burden to curb inflation may fall on fiscal policy.

- Non-monetary measures could be used to tackle supply-side inflation. Authorities have used price and income measures in the past to contain inflation while alleviating pressure on monetary policy. These measures are meant to be temporary and are typically selective and targeted to achieve maximum effect while minimizing fiscal costs.

Inflation remains the key focus of central banks but issues pertaining to financial stability also need to be monitored and managed. The financial system looks stable with large banks maintaining sufficient capital and liquidity buffers. However, the exposure of smaller banks and NBFIs needs to be carefully monitored. One of the more salient vulnerabilities arises from exposure to the property and construction sectors, which are under stress as discussed in Chapter 2 In the event of rising financial sector stress, the authorities may need to provide support to ring-fence such events and prevent financial contagion, while also avoiding moral hazard. Some examples of ASEAN+3 authorities working toward managing risks from specific sectors include:

- China announced a wide range of policy measures in May 2024 to support the real estate sector recovery, including measures to alleviate financing strains on property developers and companies closely linked to real sector (such as in construction). An important objective is to ensure the completion of housing projects for delivery to homebuyers, which is key for instilling confidence and improving sentiment. Banks are encouraged to continue providing supportive financing for the real estate sector, while managing their credit risks prudently.

- To manage the risks from high household debt, the Bank of Thailand is working with banks and NBFIs to ensure that lenders are offering suitable debt solutions to clients while rolling out measures to ensure the success of debt restructuring programs.

Rising geopolitical or growth risks may test the resilience of ASEAN+3 financial system and can pose a challenge to financial stability. Beyond the effect on inflation, a severe escalation of geopolitical stress or a global growth slowdown could cause investor risk aversion, leading to capital outflows, sell-off in the stock markets, and currency depreciation. Risk-averse investors tend to exit more volatile assets first, and in doing so could exacerbate market turbulence. Authorities may need to act swiftly to facilitate orderly market adjustments to external shocks and manage the resultant cross-border flows. That said, measures in response to market stress are no substitute for building economic resilience and fostering investor confidence in economies with solid fundamentals. On the other hand, an environment of monetary easing by the Fed amid low volatility can encourage foreign inflows in the ASEAN+3 economies. While it may not be an immediate concern, authorities may remain vigilant on potential asset price misalignments and excessive credit growth, and may implement appropriate surveillance and risk mitigation measures as needed.

US dollar liquidity risks appear low but can reemerge in adverse market conditions. The ASEAN+3 financial system has built up large US dollar assets and relies heavily on external funding from financial markets and financial institutions outside ASEAN+3. This makes the region vulnerable to US dollar funding shortages during adverse market conditions, including global economic shocks (such as COVID-19), financial shocks (such as the global financial crisis) or geopolitical tensions. Chapter 3 recommends managing the risks related to reliance on US dollars in the short-term while pursuing longer-term diversification from the US dollar. A regional self-help mechanism such as the CMIM can play a crucial role during BOP crises by providing short-term liquidity support.

The authorities should focus on rebuilding policy space while monitoring risks. As discussed in *ASEAN+3 Regional Economic Outlook 2024* (AMRO 2024a), the current period of positive growth prospects can be used to build resilience against potential risks. Government debt-to-GDP ratios have been rising in most economies of the region, and authorities may aim to reduce government debt-to-GDP while balancing the spending needs for sustainable and inclusive growth. As noted in the *ASEAN+3 Fiscal Policy Report 2024: Transitioning to Fiscal Normality* (AMRO 2024b) authorities should strive to strike the right balance between restoring fiscal buffers and carrying out an active fiscal policy. The authorities could also rebuild foreign exchange reserves during periods of capital inflows, to boost market confidence and as policy buffers against extreme market volatility.

The impact of climate change and its effects on the financial system are among the longer-term issues needing to be addressed. Containing sustainability and financial stability risks requires the development of robust frameworks for climate-related financial disclosures, conducting regular stress tests for climate risks, and promoting green finance initiatives. As discussed in Box 1.4., while the risks from green finance are assessed as low for now, it is important to remain vigilant and adaptive to emerging trends. This proactive approach to the new funding channel not only provides the necessary capital for the green transition, but also ensures that potential risks are mitigated from an early stage, fostering a more resilient financial system.

Finally, the authorities should continue to keep pace with technological developments and safeguard financial stability while harnessing the benefits of digitalization. The rise of digitalization offers opportunities to enhance financial inclusion and efficiency but also introduces risks that need careful management. Essential steps include enhancing digital infrastructure, promoting fintech innovations through a proactive risk management framework, and establishing strong cybersecurity measures.[15] Central banks and regulatory authorities need to keep pace with the latest technology and ensure that policy and regulatory frameworks are updated and calibrated to manage new risks associated with digital currencies and payment systems, and other digital financial services.

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[15]   This includes minimizing operational, compliance and security risks. Many authorities in ASEAN+3 have used the regulatory sandbox regime to experiment on fintech innovation within pre-defined boundaries while limiting the risks to consumers and the financial system. (https://www.mas.gov.sg/news/speeches/2019/opening-address-at-the-asia-pacific-risk-management-council-q2-meeting)

Box 1.4:

Green Finance in ASEAN+3: Expansion and the Associated Risks

Green finance products, which have gained much popularity over the past decade, are debt and equity instruments issued by public or private entities, specifically designed to direct investments toward mitigating or adapting to climate change (AMRO 2023).

Like the rest of the world, issuance of green finance products has gained prominence in ASEAN+3 region , particularly in the Plus-3 economies. As of March 2024, the region accounted for 19.1 percent of global green bond issuance, with notable issuance in foreign currencies, posing exchange rate risks to borrowers, particularly when servicing the debt (Figures 1.4.1 and 1.4.2). The use of green bond funds varies across the region, with significant investments in energy and transportation. Going forward, the ASEAN+3 region's green bond market is expected to expand significantly in the next five years, driven primarily by Plus-3 economies (Figure 1.4.3). The market share of the region is projected to increase to between 30 percent and 60 percent of the global green bond market by 2028 (Figure 1.4.4).

The environmental and economic benefits of green finance are well recognized (See for example, Sachs and others 2019, IMF 2020a, IMF 2020b, and IMF 2021a). Nevertheless, they may be accompanied by financial stability risks. Among these, are two salient risks most relevant for the ASEAN+3 region:

• Greenwashing: One of the primary risks associated with the rapid growth of green finance in the ASEAN+3 region is greenwashing. This occurs when firms misrepresent their business practices as being environmentally friendly or sustainable, thereby securing cheaper financing under false claims. In the region, this risk is particularly pronounced in sectors like real estate, where empirical analysis has shown that firms increase their carbon emissions after issuing green bonds. This not only undermines the environmental goals of green finance but also poses financial stability risks. As investors realize that their environmental expectations of the firms are not being met, they could withdraw their investments and other investors could also follow suit due to herd

mentality. Consequently, asset prices could plummet, leading to financial distress. Although the immediate financial stability risks of greenwashing are currently minimal—due to the relatively small proportion of green bonds in the total bond market—these risks could escalate as the market grows.

• Stranded assets: Investments in carbon-intensive sectors may lose significant value due to declining demand and pro-environment regulatory changes aimed at promoting greener alternatives—and these investments could be deemed as "stranded assets". In the ASEAN+3 region, where banks have varying levels of exposure to these sectors, the devaluation of stranded assets could erode their capital adequacy ratios (CAR), potentially threatening financial stability. A simulation exercise indicates that recalibrating risk-weighted assets (RWA) to account for the increased risk of stranded assets could lead to a 5 percent to 12 percent increase in RWA for banks in the region. While ASEAN+3 banks are generally resilient with robust capital buffers, the potential for increased RWA underscores the need for enhanced risk management practices to account for risks from sectors affected by climate-related policies, in the transition towards becoming a greener economy.

While reaping the benefits of green financing, policymakers need to minimize the associated potential financial stability risks. To support sustainable investments, central banks could explore tools such as incentivizing green projects with lower interest rates and addressing market challenges like information asymmetry. Enhancing green taxonomies is also vital to clearly define sustainable activities, thereby preventing greenwashing, and maintaining investor confidence through a globally accepted and recognized green certification. Furthermore, integrating climate-related risks into banking regulation is crucial to managing the financial stability risks posed by stranded assets and ensuring a smooth transition to a low-carbon economy. These measures are essential for aligning green finance with both environmental and economic objectives.

Figure 1.4.1. Selected ASEAN+3: Green Bond Issuance Amount
*(Billions of US dollar)*
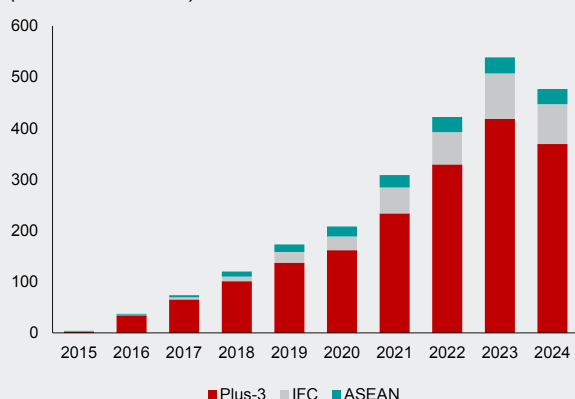
Source: Refinitiv; AMRO staff calculations.
Note: Data are as of 15 August 2024. Data covers all economies issuing green bonds. Plus-3 includes China, Japan and Korea. ASEAN includes Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Vietnam. IFC includes Hong Kong and Singapore, Green bond share represents the percentage of share of ASEAN+3 green bonds in global green bond market.

Figure 1.4.2. Selected ASEAN+3: Share of Green Bonds by Currency Denominations
*(Percent)*
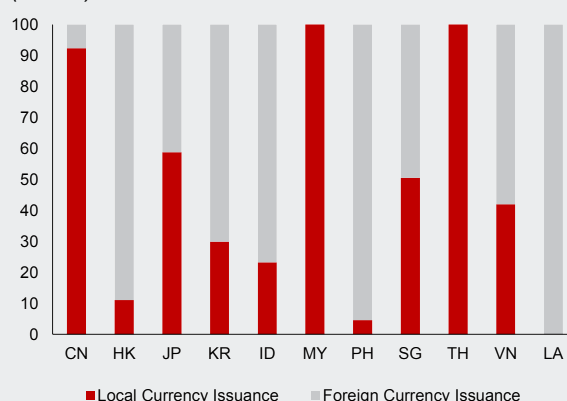
Source: Refinitiv; AMRO staff calculations.
Note: CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KH = Cambodia; KR = Korea; LA = Lao PDR; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand; VN = Vietnam.

Figure 1.4.3. ASEAN+3: Past and Predicted Future Green Bond Market Size
(Billions of US dollar)

Figure 1.4.4. Selected ASEAN+3: Predicted Market Share in the Global Green Bond Market
(Percent)
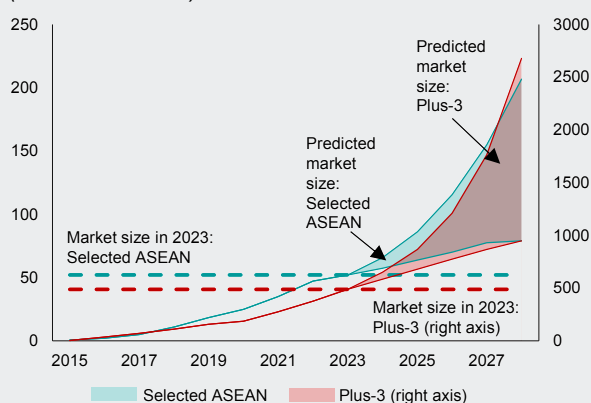
Source: Refinitiv; national authorities via Haver Analytics and CEIC; IMF WEO database; European Commission Directorate-General for Joint Research Centre carbon emissions datasets; World Bank WDI database; the OECD GGI database; AMRO staff estimates.
Note: The different future growth trajectories of the green bond market size shown in the figure are derived from various forecast results obtained by inputting different combinations of the X variables into the time series econometric forecasting model. Selected ASEAN economies are Indonesia, Lao PDR, Malaysia, Philippines, Singapore, Thailand, and Vietnam. Global market includes ASEAN+3, European Union and the United States.

Feature Analysis. ASEAN+3 Financial Interconnectedness and Potential for Spillovers

Highlights

- Intraregional interconnectedness among ASEAN+3 economies is growing, although the region remains susceptible to macro-financial shocks from major advanced economies and other exogenous shocks.

- Singapore's and Hong Kong's extensive external connections expose their financial systems to cross-border spillovers. As major global financial hubs, they transmit shocks across financial systems throughout the region. Japan's financial system is highly connected with developed economies, while China's financial system is more connected with Hong Kong.

- Individual ASEAN+3 economies are not only recipients of inward spillovers but also sources of outward spillovers to advanced and emerging market economies, within and outside ASEAN+3.

- The increasing interconnectedness among ASEAN+3 financial systems warrants stronger regional surveillance and closer cooperation. Strengthening cross-border surveillance and data sharing, conducting regional stress testing, enhancing home-host supervision, and ensuring liquidity support are critical measures.

I.   Overview

Cross-border financial intermediation in the ASEAN+3 region has intensified significantly over the past few decades, leading to increased regional financial interconnectedness and contagion risks. This trend has significantly reversed the previous dominance of the United States (US), United Kingdom (UK), and European financial services firms in ASEAN+3. Instead, intra-ASEAN+3 financial transactions have surged, driven by the integration of regional financial markets and the growing interdependence among ASEAN+3 economies. Hong Kong and Singapore have emerged as major financial hubs, intermediating cross-border funds and promoting a more intraregional financing pattern. Furthermore, regional frameworks and agreements, such as the ASEAN Banking Integration Framework (ABIF), have contributed to the expansion of cross-border financing within the region. While these developments enhance efficiency, competition, and overall financial market development, they also introduce spillover risks and the potential for financial contagion (Remolona and Shim 2015).

Policymakers in ASEAN+3 need to better understand interconnectedness and potential spillovers in their financial systems so that they can mitigate financial stability risks. It is crucial to identify the potential sources of shocks, assess likely transmission channels across sectors and borders, and formulate policy responses to stress. Key questions to consider include:

•   Global versus regional spillovers: Are global risk factors, such as the Chicago Board Options Exchange's Volatility Index or VIX, commodity price shocks, and shocks from advanced economies (outside ASEAN+3) still the primary sources of spillovers, or have intra-ASEAN+3 cross-border factors become more significant? To what extent do developments in other emerging market economies matter to financial stability in the ASEAN+3 region?

•   Sectoral interconnectedness: How significant are spillovers from one sector to another within an economy (e.g., from real estate to the financial sector), and how important are cross-border sectoral spillovers (e.g., from the real estate sector in one economy to other economies in the region)?

•   Potential shock scenarios: What stress scenarios should policymakers be most concerned about, to anticipate, mitigate, and prepare responses for when risks materialize? Is the trigger likely to originate from within or outside the region, which sectors are most at risk (banking sector, property, or corporate), and what is the nature and direction of the shock? Would ASEAN+3 economies be evenly impacted, or would some be more at risk than others?

This Feature Analysis studies cross-border contagion and interconnectedness in ASEAN+3 financial systems.[16] Section II maps the foreign exposures of ASEAN+3 banks in order to identify potential sources of risk transmission and contagion. Section III examines cross-border and sectoral networks within ASEAN+3 using market price data. Section IV evaluates the effect of global shocks on individual ASEAN+3 financial systems, such as US banking sector distress, US dollar exchange rate fluctuations, and increases in industrial metal prices. It also analyses the effects of regional shocks, such as banking distress in a financial center and disturbances in China's real estate sector on other sectors within China and across ASEAN+3 economies. Section V summarizes the findings and discusses the policy implications for ASEAN+3 financial regulators.

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[16]   This analysis relies on the forthcoming AMRO Working Paper by Kevin Cheng and Ruperto Pagaura Majuca: "ASEAN+3 Financial Interconnectedness".

# II. Stylized Facts on ASEAN+3 Cross-Border Banking Claims and Liabilities

This section maps the cross-border exposures of ASEAN+3 banks using data from the Bank for International Settlements (BIS) Locational Banking Statistics (LBS). The LBS data measures claims and liabilities, including intra-group positions of banking offices within reporting countries, which helps analyze the geographic distribution of international banking activities and intra-group transfers in cross-border banks. This information identifies potential sources of risk transmission and contagion through bank lending and funding channels (Briccio and Xu 2019). Below are some key facts on ASEAN+3 cross-border borrowing and lending based on the LBS.

- Japanese banks are highly connected with advanced economies such as North America and the UK. They receive most of their cross-border funding from these regions and extend a significant portion of their lending there. Due to low domestic interest rates, Japanese banks seek higher yields abroad and their cross-border claims are significantly higher than their cross-border liabilities (Figure F1.1).

- In contrast, China's cross-border lending and borrowing are primarily with banks based in Hong Kong (Figure F1.2). Specifically, Hong Kong has extensive connections to China, directing a certain portion of its cross-border lending there while receiving a significant portion of its cross-border borrowing from China (Figure F1.3). Subsidiaries of international banking groups and foreign branches in Hong Kong have substantial China-related lending (IMF 2021b), making Hong Kong a key conduit for foreign banks' lending into China.

- Korean banks are well connected with banks from the US, the UK, and Europe (Figure F1.4). They also have strong ties with

banks from Hong Kong and Singapore, as well as Japan, and they extend a considerable amount of lending to ASEAN economies.

- Singapore's financial system is highly open, serving as a crucial global and regional financial hub, particularly with ASEAN+3 economies. Cross-border lending accounts for approximately 60 percent of the total exposure of Singapore banks (MAS 2023). As a regional financial center, Singapore intermediates credit from advanced economies to emerging markets in Asia (Figure F1.5), including funding from parent banks to their foreign branches, which then extend loans to corporates from their home country (IMF 2019).

- Among ASEAN economies, only the Philippines provides detailed information on banking claims and liabilities with country-specific source and direction information to the BIS locational banking statistics. This data offers insight into ASEAN cross-border banking activities. The Philippine financial system comprises mainly banks with low direct cross-border exposure, following a traditional domestic-centric commercial banking model reliant on deposits and lending primarily to large nonfinancial corporations (NFCs) (IMF 2021c). A significant portion of Philippine banks' cross-border liabilities comes from advanced economies such as the US and UK, as well as from regional financial centers. The Philippines also holds claims on banks in these advanced economies, regional financial centers, and other regional banks (Figure F1.6).

- Overall, ASEAN+3 claims and liabilities have notably increased, with significant growth observed within the region itself (Figures F1.1 to F1.6).

Figure F1.1. Japan: Cross-Border Claims and Liabilities, Q4 2005 and Q4 2023
(Billions of US dollar)

Japanese banks are highly connected with banks from advanced economies.
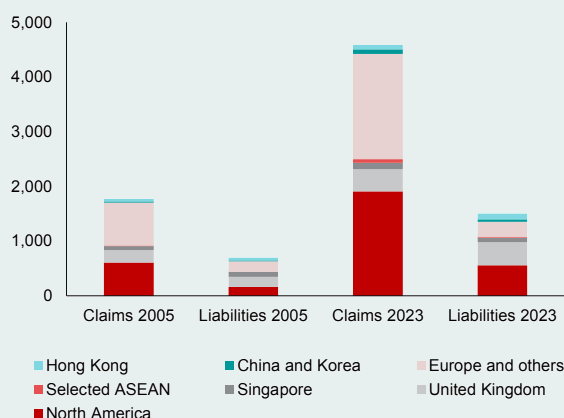
Source: BIS locational banking statistics; AMRO staff calculations.
Note: The reporting ASEAN+3 economy is Japan. North America is US and Canada. Selected ASEAN is Malaysia, Thailand, Indonesia, Philippines, Vietnam, Lao PDR, and Myanmar. Europe and others are all other banking jurisdictional not otherwise classified (mostly from Europe).

Figure F1.2. China: Cross-Border Claims and Liabilities, Q4 2014 and Q4 2023
(Billions of US dollar)

China's cross-border lending and borrowing activities are predominantly conducted with banks in Hong Kong.
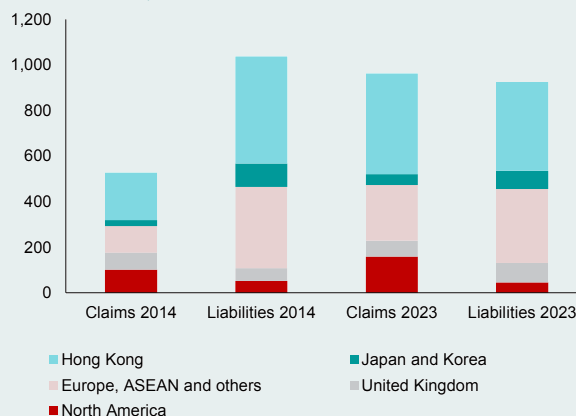
Source: BIS locational banking statistics; AMRO staff calculations.
Note: Since China does not report breakdown of cross-border data by economy, the chart above is based on data from China's counterparty reports. Singapore also does not report breakdown of cross-border data by economy. North America is the US and Canada. Europe, ASEAN and others are all other banking jurisdictional not otherwise classified.

Figure F1.3. Hong Kong: Cross-Border Claims and Liabilities, Q4 2014 and Q4 2023
(Billions of US dollar)

Hong Kong channels most of its cross-border lending to China and receives the majority of its cross-border borrowing from there.

- China, Japan and Korea
- Selected ASEAN
- Europe and others
- Singapore

Source: BIS locational banking statistics; AMRO staff calculations.
Note: The reporting economy is Hong Kong. North America is the US and Canada. Selected ASEAN is Malaysia, Thailand, Indonesia, Philippines, Vietnam, Lao PDR, and Myanmar. Europe and others are all other banking jurisdictional not otherwise classified (mostly from Europe).

Figure F1.4. Korea: Cross-Border Claims and Liabilities, Q4 2005 and Q4 2023
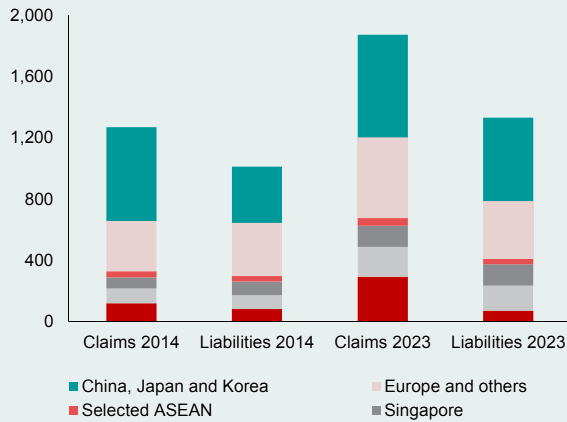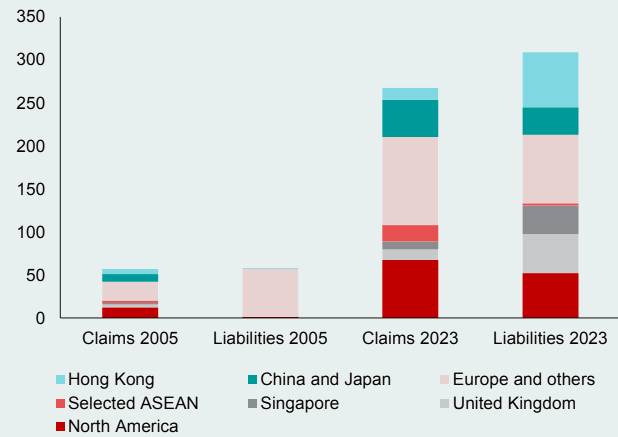*(Billions of US dollar)*

Korean banks are well connected with banks from advanced economies, regional financial centers, and Japan, while also providing substantial lending to ASEAN.

- Hong Kong
- Selected ASEAN
- North America
- China and Japan
- Singapore
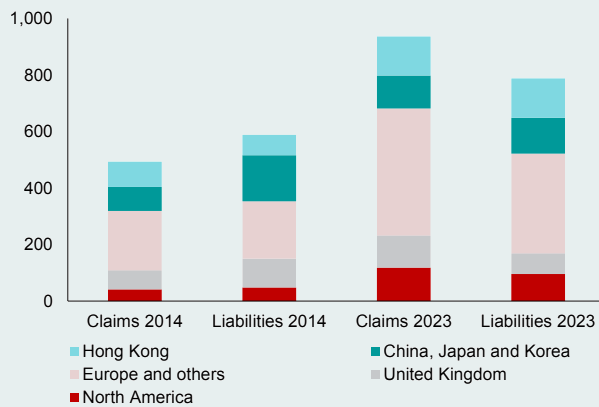- Europe and others
- United Kingdom

Source: BIS locational banking statistics; AMRO staff calculations.
Note: The reporting ASEAN+3 economy is Korea. North America is US and Canada. Selected ASEAN is Malaysia, Thailand, Indonesia, Philippines, Vietnam, Laos, and Myanmar. Europe and others are all other banking jurisdictional not otherwise classified (mostly from Europe).

Figure F1.5. Singapore: Cross-Border Claims and Liabilities, Q4 2014 and Q4 2023
(Billions of US dollar)

Singapore's financial system is exceptionally open, functioning as a vital global and regional financial hub.

- Hong Kong
- Europe and others
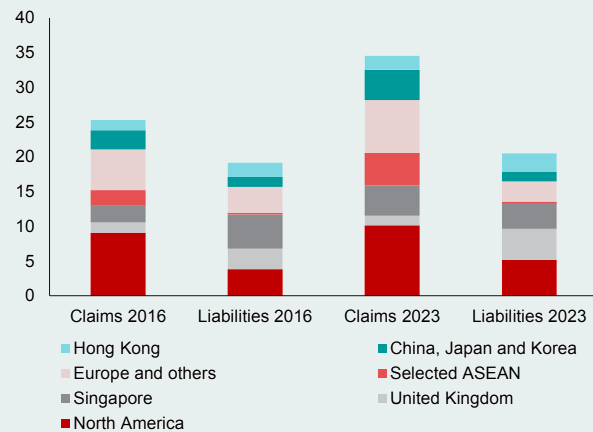- North America
- China, Japan and Korea
- United Kingdom

Source: BIS locational banking statistics; AMRO staff calculations.
Note: North America is the US and Canada. Europe and others are all other banking jurisdictional not otherwise classified. Since Singapore does not report breakdown of cross-border data by economy, the chart above is based on data from Singapore's counterparties' reports. China also does not report breakdown of cross-border data by economy, so BIS statistics does not capture bilateral flows between Singapore and China. However, the MAS had reported that 47 percent of lending by local domestic systemically important banks (DSIBs) went to China as of Q2 2018 (IMF 2019).

Figure F1.6. Philippines: Cross-Border Claims and Liabilities, Q4 2016 and Q4 2023
(Billions of US dollar)

A significant portion of Philippine banks' cross-border liabilities and claims are tied to advanced economies and regional financial centers.

- Hong Kong
- Europe and others
- Singapore
- North America
- China, Japan and Korea
- Selected ASEAN
- United Kingdom

Source: BIS locational banking statistics; AMRO staff calculations.
Note: The reporting ASEAN+3 economy is the Philippines. North America is the US and Canada. Selected ASEAN includes Malaysia, Thailand, Indonesia, Vietnam, Lao PDR, and Myanmar. Europe and others are all other banking jurisdictional not otherwise classified (mostly from Europe).

III. Cross–Border, Cross–Sector and Interbank Contagion Analysis

This section analyzes interconnectedness and contagion risks using daily market and financial asset price data based on the Diebold and Yilmaz (2012, 2014) methodology. While the second section used bank exposure data to analyze direct cross-border credit and funding risks, the interconnectedness measure used in this section also captures indirect links, such as investor perceptions or other market-based linkages.[17] This involves utilizing information from the forecast error variance decomposition of daily equity returns (see Annex 1.2 for technical details).[18] This section uses equity returns data to analyze ASEAN+3 interconnectedness, and the Working Paper (see footnote 16) further examines interconnectedness using bond market and exchange rate data.

This section examines:

- inward spillovers to the ASEAN+3 financial systems;

- outward spillovers from ASEAN+3; and

- cross-border connectivity in ASEAN+3 banking and insurance sectors.

Furthermore, the Working Paper includes analyses of domestic cross-sector spillovers, and firm-level cross-border interbank spillovers.

Inward spillovers into an ASEAN+3 economy are measured by the percentage of equity return variability in that economy attributable to shocks from exogenous factors or the equity returns of advanced economies, emerging market economies, or other ASEAN+3 economies. If equity returns in an ASEAN+3 economy are not affected by shocks to a particular global factor, the spillover from that global factor to that ASEAN+3 economy is deemed to be zero. Likewise, outward spillovers from ASEAN+3 are measured by the proportion of the variation in global factors and equity returns in other economies explained by shocks originating from ASEAN+3 equity returns. Cross-border banking and insurance connectivity, as well as domestic cross-sector spillovers, are defined analogously.

Inward spillovers to ASEAN+3

Spillovers to ASEAN+3 are decomposed into several channels:

- exogenous factors (such as the VIX, energy prices, metal prices, agricultural price index, US dollar foreign exchange rate, and macroeconomic risk);

- advanced economies (non-ASEAN+3) spillover channels;

- emerging market economies (non-ASEAN+3) channels; and

- intra-ASEAN+3 spillovers.

Global factors have significant spillover effects on ASEAN+3 financial systems. Japan and Korea, and the regional financial centers (Hong Kong and Singapore), Malaysia and the Philippines are most exposed to global factors such as the VIX, macroeconomic risk, commodity prices, and the US dollar exchange rate. Figure F1.7 shows that among these global factors, the VIX volatility index and macroeconomic risk have the most prominent impact on ASEAN+3 equity price returns. For example, 6.3 percent of the variation in total equity returns in Japan's stock market is attributable to shocks in the VIX volatility index.

The financial markets of developed economies (North America, the UK, and Europe) have strong contagion effects on ASEAN+3, as

indicated by the percentage of variation in ASEAN+3 stock market returns attributable to shocks in the stock market returns of these developed economies. All ASEAN+3 economies have significant links to financial systems in developed economies, with equity returns in Hong Kong, Japan, Korea, Malaysia, the Philippines, and Singapore being particularly sensitive to shocks from developed markets (Figure F1.8). The impact of developed economies on ASEAN+3 is significantly stronger compared to the moderate spillover effects from emerging market economies outside the region (such as Latin America and Gulf Cooperation Council economies).

ASEAN+3 intraregional spillovers are significant. Regional financial centers Hong Kong and Singapore play key roles for intermediating finance within and into the region. Consequently, spillovers involving these centers are central to regional dynamics. Hong Kong, serving as a gateway to China, has the strongest bilateral links with China (Figure F1.9). The second strongest links are between Hong Kong and Singapore. Significant bilateral links also exist between Hong Kong and Korea, Singapore and Korea, and from Singapore to regional economies such as Indonesia, Malaysia, and Thailand. Korea is the third major hub of financial connectivity in the region after Hong Kong and Singapore. Japan and the Philippines have the least exposure to financial spillovers from other ASEAN+3 economies, as they are more exposed to advanced economies (Figure F1.10).

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[17]   This measure of interconnectedness captures direct links (for example, through funding links discussed in the previous section as well as US dollar financing (as discussed extensively in Chapter 3 of this report), common exposure (to the same assets or risks), or behavioral factors such as herding behavior.

[18]   Diebold and Yilmaz (2014) have demonstrated that variance decompositions are weighted directed networks, and that they measure both the vulnerability of economies, sectors or firms to systemic shocks, and their contributions to systemic risks.

In summary, among ASEAN+3 economies, the regional financial centers (Hong Kong and Singapore) and the more developed and open financial markets of Korea, Japan, and Malaysia would receive the most inward spillovers, while China receives the least (Figure F1.10).

- Global and advanced economy factors remain significant sources of spillovers, particularly for the regional financial centers, Japan, Korea, Malaysia, and the Philippines. China

receives most of its inward spillovers not directly from advanced economies but through Hong Kong, which also receives significant spillovers from China.

- Among global factor spillovers, Japan, Korea, the regional financial centers, and Malaysia and the Philippines are most affected by VIX volatility index and macroeconomics risk (Figure F1.7).

Figure F1.7. Selected ASEAN+3: Top Spillovers from Global Factors
(Percent)

Japan and Korea, and the regional financial hubs of Hong Kong and Singapore, as well as Malaysia and the Philippines, are most exposed to global factors.
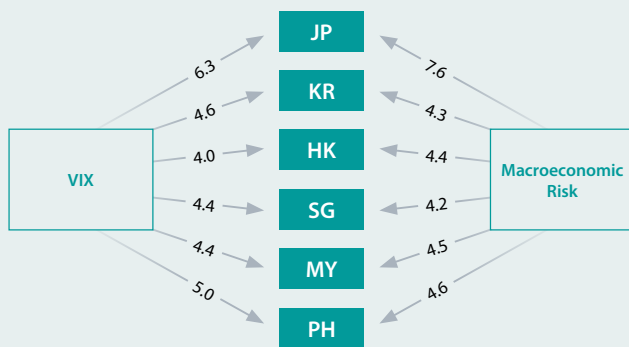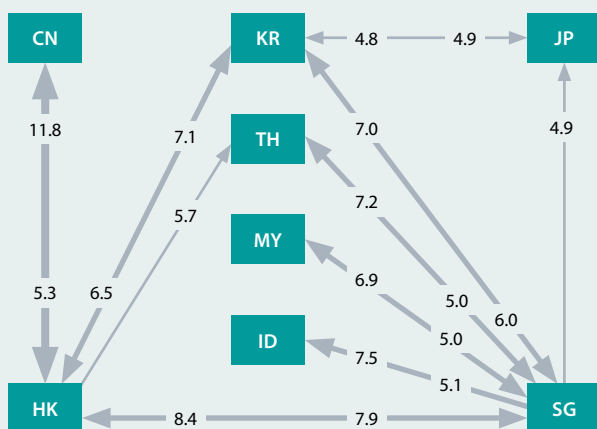
Source: AMRO staff calculations.
Note: The numbers associated with the directed arrows reflect the size of the importance of spillover transmission channel, as calculated using the approach of Diebold and Yilmaz (2012, 2014). These numbers represent the percentage of the movement of equity returns of each ASEAN+3 economy that is explained by a shock from a global factor. See Annex 1.2 for technical details. JP = Japan; KR = Korea; HK = Hong Kong; SG = Singapore; MY = Malaysia; PH = the Philippines; VIX =. VIX volatility index.

Figure F1.8. Selected ASEAN+3: Top Spillovers from Non-ASEAN+3 Advanced Economies
(Percent)

Advanced economies have significant strong contagion effects on ASEAN+3, particularly on the regional financial centers, Japan, Korea, Malaysia, and the Philippines.

Source: AMRO staff calculations.
Note: The height of the bars reflects the size of the importance of spillover transmission channel, as calculated using the approach of Diebold and Yilmaz (2012, 2014). The figures represent the percentage of total equity return variability of each ASEAN+3 economy that is explained by a shock from advanced economies outside the ASEAN+3 region. See Annex 1.2 for technical details. JP = Japan; PH = the Philippines; SG = Singapore; KR = Korea; MY = Malaysia; HK = Hong Kong; TH = Thailand; ID = Indonesia; CN = China.

Figure F1.9. Selected ASEAN+3: Intraregional Spillovers
(Percent)

Spillovers involving the regional financial centers are central to regional dynamics.
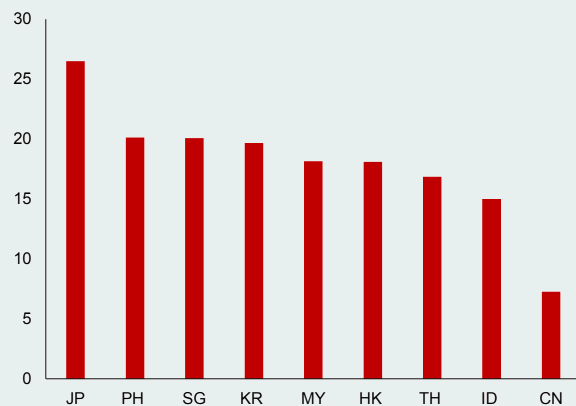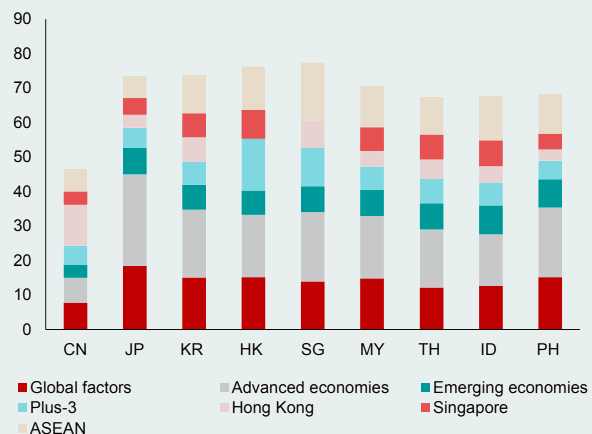
Source: AMRO staff calculations.
Note: The size of the directed arrows reflects the size of the importance of spillover transmission channel, as calculated using the approach of Diebold and Yilmaz (2012, 2014). The numbers displayed in the directed arrows represent the percentage of total equity return variability of each ASEAN+3 economy that is explained by a shock from another ASEAN+3 economy. See Annex 1.2 for technical details. CN = China; HK = Hong Kong; JP = Japan; KR = Korea; MY = Malaysia; SG = Singapore; TH = Thailand; ID = Indonesia.

Figure F1.10. Selected ASEAN+3: Inward Spillovers by Channel
(Percent)

The regional financial centers, along with the more developed and open markets of Japan, Korea, and Malaysia, receive the most inward spillovers.

Source: AMRO staff calculations.
Note: The numbers reflect the size of the importance of spillover transmission channel, as calculated using the approach of Diebold and Yilmaz (2012, 2014). The figures represent the percentage of total equity return variability of each ASEAN+3 economy that is explained by a shock from a spillover source. See Annex 1.2 for technical details. CN = China; JP = Japan; KR = Korea; HK = Hong Kong; SG = Singapore; MY = Malaysia; TH = Thailand; ID = Indonesia; PH = the Philippines.

Outward spillovers from ASEAN+3

Individual ASEAN+3 economies not only receive inward spillovers from global factors, non-ASEAN+3 advanced and emerging market economies, and other ASEAN+3 economies, but also serve as significant sources of outside spillovers. Among the regional economies, Hong Kong and Singapore generate the most outward spillovers overall, affecting global factors, non-ASEAN+3 advanced and emerging market economies, and other ASEAN+3 economies. This is not surprising since the two are international financial hubs and Hong Kong's stock exchange ranked fifth-largest globally in terms of market capitalization at the end of 2020. With more than 80 percent of Hong Kong's market capitalization tied to China-related companies (IMF 2021b), a substantial portion of these outward spillovers can be attributed to them.

Figure F1.11 shows that significant outward spillovers originate from within the region, particularly from the regional financial centers (Hong Kong and Singapore), Korea, and Thailand. Hong Kong exerts a significant impact on industrial metals commodity prices while the regional financial centers exert notable influence on macroeconomic risk. Additionally, Singapore exerts some influence on the VIX volatility index. For example, shocks to Hong Kong's equity returns account for 2.4 percent of the movements in industrial metal prices (Figure F1.12). Meanwhile, the greatest influence on developed economies coming from ASEAN+3 originates from the regional financial centers, Japan and Korea, and from Thailand. For instance, shocks to Singapore's equity returns explain 4.1 percent of the variation in the UK's equity returns (Figure F1.13). Most of the ASEAN+3 effects on emerging markets also stem from the regional financial centers, and Thailand.

Figure F1.11. Selected ASEAN+3 and Regions: Financial Markets' Interconnectedness
(Percent for both scales)

ASEAN+3 economies not only receive inward spillovers but also act as significant sources of outward spillovers, particularly from the regional financial centers.
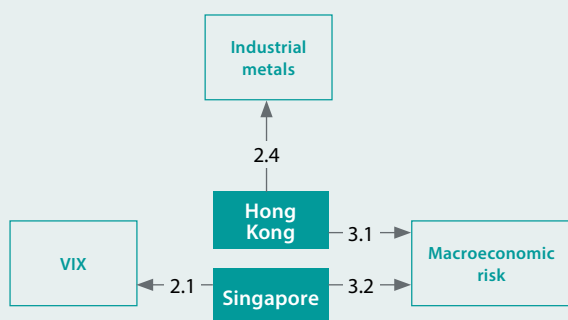

Source: AMRO staff calculations.
Note: The numbers reflect the size of outward spillovers (total spillovers given to global factors and other economies) and inward spillovers (total spillovers received from global factors and other economies) using the approach of Diebold and Yilmaz (2012, 2014). NA = North America, LA = Latin America, EU = Europe, UK = United Kingdom, GC = Gulf Cooperation Countries, CN = China, JP = Japan, KR = Korea, HK = Hong Kong, SG = Singapore, MY = Malaysia, ID = Indonesia, PH = Philippines; TH = Thailand. See Annex 1.2 for technical details.

Figure F1.12. Selected ASEAN+3: Top Spillovers to Global Factors
(Percent)

The regional financial centers exert a notable influence on global factors.
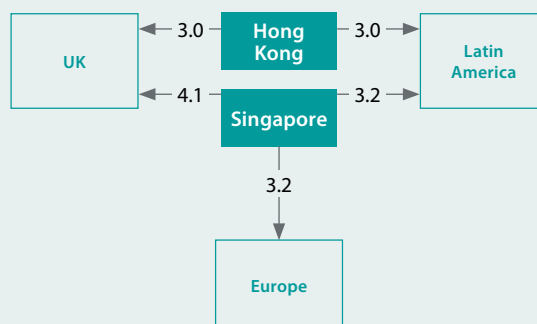

Source: AMRO staff calculations.
Note: The numbers displayed in the directed arrows represent the percentage of the movement of the global factor that is explained by a shock from an ASEAN+3 equity return, as calculated using the approach of Diebold and Yilmaz (2012, 2014). See Annex 1.2 for technical details. VIX = CBOE Volatility Index.

Figure F1.13. Selected ASEAN+3: Top Spillovers to Non-ASEAN+3 Economies
(Percent)

The top spillovers from ASEAN+3 to non-ASEAN+3 economies originate from the regional financial centers.

Source: AMRO staff calculations.
Note: The numbers displayed in the directed arrows represent the percentage of the movement of the equity returns of the non-ASEAN+3 region that is explained by a shock from an ASEAN+3 equity return, as calculated using the approach of Diebold and Yilmaz (2012, 2014). See Annex 1.2 for technical details. UK = United Kingdom.

By dynamically mapping spillovers over time, two general patterns emerge. Contagion and spillovers tend to escalate during periods of financial instability or stringent financial conditions. For instance, beginning from the relatively tranquil phase of 2005, the total spillover index surged during the Fed tightening in between the second quarter and the third quarter of 2006, and again during the GFC,

the European debt crisis, and the COVID-19 crisis (Figure 1.14). Additionally, net spillovers from ASEAN+3—calculated as the difference between spillovers originating from ASEAN+3 and those directed towards it—have shown a tendency to increase relative to external factors, particularly evident in the trends following the GFC and the European debt crisis (Figure 1.15).

Figure F1.14. Rolling Total Spillovers
(Percent)

Contagion effects often intensify during periods of financial instability, as seen in the Global Financial Crisis, the European debt crisis, and the COVID-19 pandemic.

Source: AMRO staff calculations.
Note: The numbers represent the rolling total spillovers, as calculated using the approach of Diebold and Yilmaz (2012, 2014).

Figure F1.15. Rolling Net Spillovers
(Percent)

Net spillovers from ASEAN+3 have generally increased relative to external factors, particularly after the GFC and the European debt crisis.

Source: AMRO staff calculations.
Note: The numbers represent the rolling net spillovers, as calculated using the approach of Diebold and Yilmaz (2012, 2014).
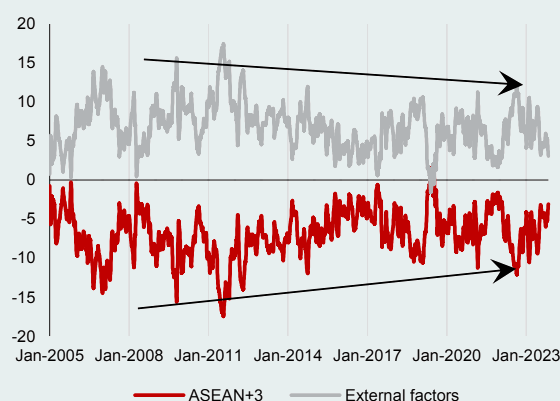
Cross–border sectoral spillovers

This subsection analyzes the cross-border connectivity of the ASEAN+3 banking, insurance, real estate, and sovereign sectors. For each sector, a vector autoregression of sector-specific equity returns for each economy was performed, and connectivity was calculated using the Diebold-Yilmaz (2014) methodology. For example, to measure banking sector connectivity, a vector autoregression of banking stock equity returns from North America, the UK, Europe, and various ASEAN+3 economies was conducted. Connectivity between these economies' banking systems was calculated by summing the total spillovers shared between these sectors (see Annex 1.2 for technical details). The intensity of the total spillovers between two economies is ranked from highest to lowest, with the top third indicating high connectivity, the middle third moderate connectivity, and the bottom third low connectivity. The results are now summarized.

The banking systems of advanced economies continue to have strong impacts on ASEAN+3 banks. All ASEAN+3 banking systems, except China's and Vietnam's, are either highly or moderately connected to banks in North America, the UK, or Europe.

- Japanese and Korean banks, and the regional financial centers' banks (Hong Kong and Singapore) are particularly highly connected to banks in North America, the UK, and Europe.

- Malaysian, Thai and Indonesian banks also have strong connections with European banks.

- Hong Kong banks are well connected with Singaporean and Thai banks and moderately connected with Malaysian and Indonesian banks. Singaporean banks are highly connected with Indonesian, Malaysian, and Thai banks and moderately connected to Philippine banks. Notably, Malaysian banks are highly connected to banks in Indonesia, and Thailand, and moderately connected to Philippine banks, making them important for ASEAN banking spillovers.

- Chinese banks have moderate connectivity with banks in Hong Kong and Singapore, and low connectivity with the rest, while Vietnamese banks have low connectivity with banks in other economies (Figure F1.16).

ASEAN+3 insurers are highly or moderately connected to insurers in North America, the UK, and Europe. The connections between insurers in China and Hong Kong are also robust (Figure F1.17).

Similarly, interconnections between the real estate sectors of advanced economies (North America, the UK, and Europe) and those of ASEAN+3 economies are significant, except for China and Vietnam. Interconnections between advanced economies and ASEAN+3 are particularly high for Japan and Singapore. China and Vietnam's real estate sectors generally have low connectivity with others,

except that China has strong interconnections with Hong Kong and moderate interconnections with Singapore (Figure F1.18).

Finally, strong and moderate connections between the advanced economies and ASEAN+3 are also present for sovereign bonds. These connections are especially strong for Japan, Korea, and the regional financial centers, and more moderate for other ASEAN countries. Hong Kong is also highly connected with Singapore and Korea. Additionally, Singapore has substantial connections with Korea and China (Figure F1.19).

Figure F1.16. Selected ASEAN+3 and Regions: Bank-to-Bank Connectivity

All ASEAN+3 banking systems, except China's and Vietnam's, are either highly or moderately connected to banks in North America, the UK, or Europe.
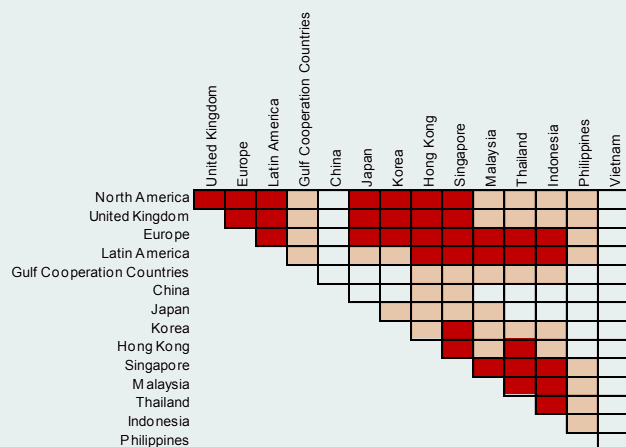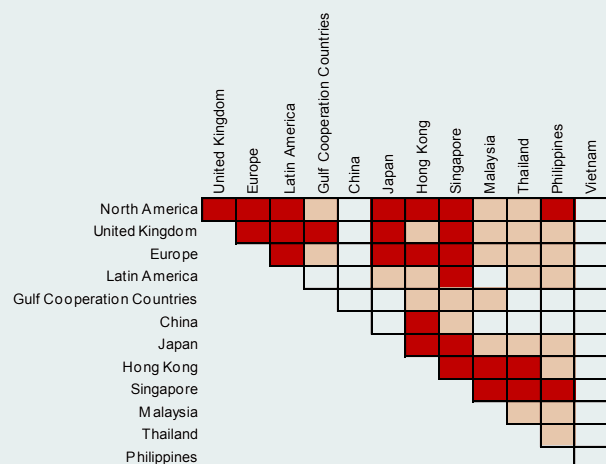

Source: AMRO staff calculations.
Note: The chart depicts the intensity of total (both to and from) implicit financial linkages among the banking sectors of various economies. The colors represent the strength of the linkages, measured in quantiles: white indicates the bottom third of all linkages, pink signifies the middle third, and red denotes the top third.

Figure F1.17. Selected ASEAN+3 and Regions: Insurer-to-Insurer Connectivity

Similarly, ASEAN+3 insurers are highly or moderately connected to insurers in North America, the UK, and Europe.

Source: AMRO staff calculations.
Note: The chart depicts the intensity of total (both to and from) implicit financial linkages among the insurance sectors of various economies. The colors represent the strength of the linkages, measured in quantiles: white indicates the bottom third of all linkages, pink signifies the middle third, and red denotes the top third.

Figure F1.18. Selected ASEAN+3 and Regions: Real-Estate-to-Real Estate Connectivity

Interconnections between the real estate sectors of advanced economies and those of ASEAN+3 economies are also significant, except for China and Vietnam.

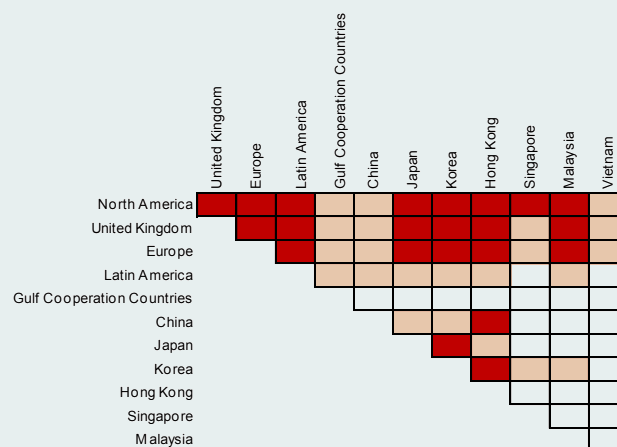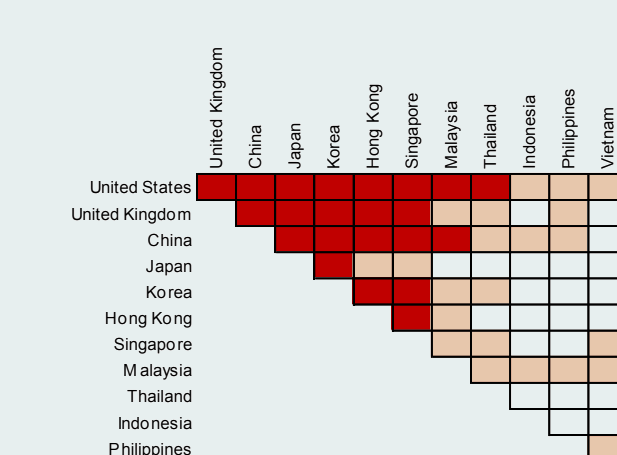Source: AMRO staff calculations.
Note: The chart depicts the intensity of total (both to and from) implicit financial linkages among the real estate sectors of various economies. The colors represent the strength of the linkages, measured in quantiles: white indicates the bottom third of all linkages, pink signifies the middle third, and red denotes the top third.

Figure F1.19. Selected ASEAN+3 and Regions: Sovereign-to-Sovereign Connectivity

Strong and moderate connections between the advanced economies and ASEAN+3 are also evident in sovereign bonds.

Source: AMRO staff calculations.
Note: The chart depicts the intensity of total (both to and from) implicit financial linkages among government bond indices of various economies. The colors represent the strength of the linkages, measured in quantiles: white indicates the bottom third of all linkages, pink signifies the middle third, and red denotes the top third.

IV. Risk Scenarios Impact Analysis

This section examines how various risk scenarios can potentially affect ASEAN+3 financial systems. Specifically, it simulates the impact on ASEAN+3 of: (a) shocks to the banking sector in the North America, Singapore and elsewhere; (b) US dollar FX rate appreciation; (c) shocks to industrial metal commodities; and (d) the influence of China's real estate sector on other sectors of its domestic economy and on the real estate sectors of other ASEAN+3 economies. Key findings are:

- Banking sector shocks: Shocks to the banking sector in North America, UK, and developed Europe remain significant contagion risks for ASEAN+3 regional banks. Although banking systems in the regional financial centers have also become systemically important within the region, North American banks are particularly important for banks in Hong Kong, Japan, and Korea (Figure F1.20).[19] Singaporean banks have the greatest impact on banks in Hong Kong, Indonesia, Korea, and Thailand (Figure F1.21).

- US dollar shock: ASEAN+3 financial systems are highly susceptible to US dollar movements. Hong Kong is most affected by US dollar foreign exchange fluctuations due to the Hong Kong dollar's official peg to the US dollar. This link makes Hong Kong's open financial system vulnerable to capital outflows when the US dollar appreciates (Figure F1.22). US dollar appreciation also negatively affects other ASEAN+3 stock markets. On a positive note, stock markets in Hong Kong and other ASEAN+3 economies are expected to benefit from anticipated US rate cuts in the coming quarters.

- Commodity shocks: Among ASEAN+3 stock markets, China, Hong Kong, and Korea are most impacted by developments in industrial metals. Metals are vital to the global economy as they are essential intermediate inputs for industrial production and construction. Metal production and consumption are concentrated in a few countries, with China being a major hub for both. Consequently, China and Hong Kong are the ASEAN+3 financial systems significantly influenced by metal prices (Figure F1.23), making metal prices a particularly important global spillover to these economies. Major producers in Latin America and consumers of industrial metals in North America, UK and Europe are also significantly affected by metal prices. Looking ahead, developments in rare earth metals are worth monitoring, as they could become crucial for supply chains in the US, China, and other economies aiming to lead in high-technology sectors.

- China real estate shocks: Shocks to China's real estate sector have a significant impact on other sectors within China but the impact is short-lived. The shocks do not greatly affect other ASEAN+3 real estate sectors, except for Hong Kong. A 1 percent decrease in China's real estate stock returns would reduce stock returns in the construction, insurance, and industrial sectors by 0.6 percent; the telecommunications, information technology, and media sectors by 0.5 percent; and the banking, oil, gas, and coal sectors by 0.4 percent (Figure F1.24). Additionally, it would decrease Hong Kong's real estate sector stock returns by 0.3 percent but have a minimal effect on the real estate sectors of other ASEAN+3 economies (Figure F1.25).

Figure F1.20. Selected ASEAN+3: Impact of Shock to North American Banks
(Percent)

Shocks to the banking sector in North America continue to pose significant contagion risks for ASEAN+3 regional banks.
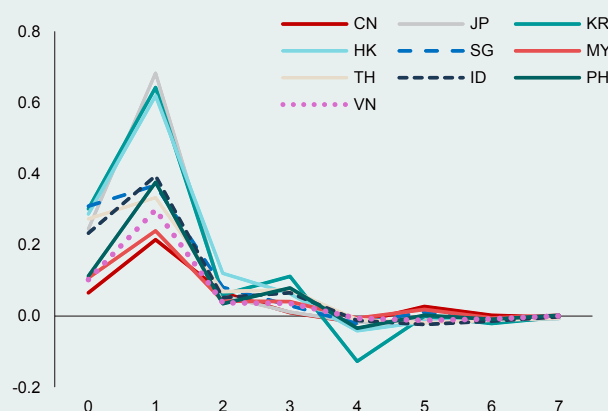
Source: AMRO staff calculations.
Note: The figure depicts generalized impulse responses of ASEAN+3 banking systems to a 1 standard deviation shock to North American banks, using daily data. CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; VN= Vietnam.

Figure F1.21. Selected ASEAN+3: Impact of Shock to Singaporean Banks
(Percent)

Singaporean banks also have significant spillover effects on banks in the region.
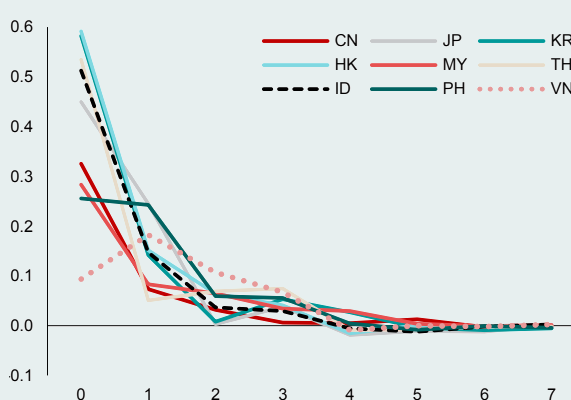

Source: AMRO staff calculations.
Note: The figure depicts generalized impulse responses of ASEAN+3 banking systems to a 1 standard deviation shock to SG banks, using daily data. CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; TH = Thailand; VN= Vietnam.

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[19]   As a robustness check, Annex 1.1 simulates the impact of the 2023 US banking turmoil on the financial services industries of ASEAN+3 economies using another approach.

Figure F1.22. Selected ASEAN+3: Impact of US Foreign Exchange Depreciation
(Percent)

ASEAN+3 financial systems are highly susceptible to U.S. dollar movements, with Hong Kong particularly affected.
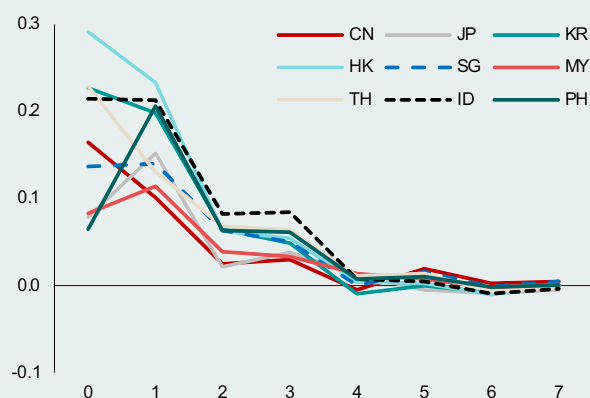
Source: AMRO staff calculations.
Note: The figure depicts generalized impulse responses to a 1 standard deviation US nominal effective exchange rate (NEER) depreciation, using daily data. CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; VN= Vietnam.

Figure F1.23. Selected ASEAN+3 and Regions: Impact of Industrial Metals
(Percent)

Among ASEAN+3 markets, the stock markets of Hong Kong, China, and Korea are the most affected by developments in industrial metals.

Source: AMRO staff calculations.
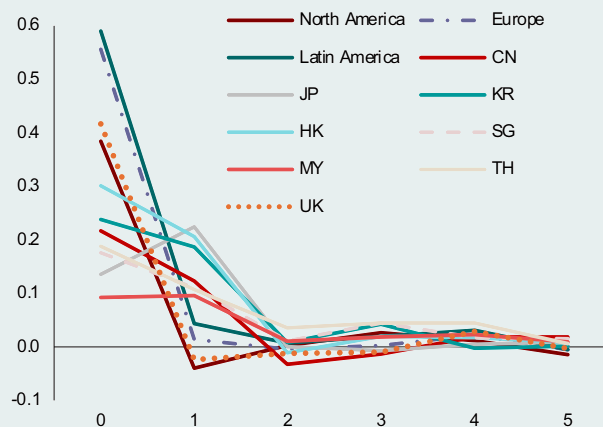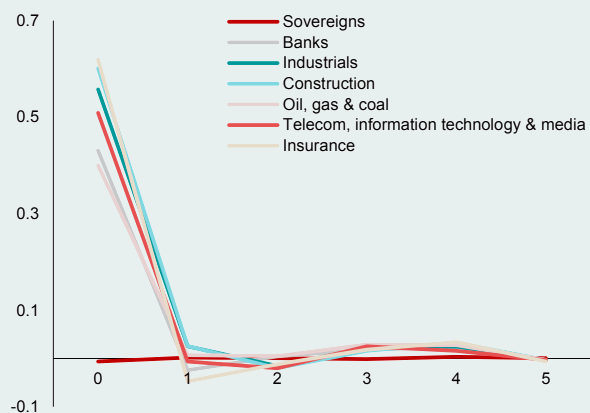Note: The figure depicts generalized impulse responses to a 1 standard deviation shock to industrial metals, using daily data. CN = China; HK = Hong Kong; JP = Japan; KR = Korea; MY = Malaysia; SG = Singapore; TH = Thailand; VN= Vietnam.

Figure F1.24 China: Domestic Sectoral Impact of China Real Estate
(Percent)

Shocks to China's real estate sector significantly impact various other sectors within China...

Source: AMRO staff calculations.
Note: The figure depicts generalized impulse responses to a 1 percent shock to CN real estate stock return, using daily data.

Figure F1.25 Selected ASEAN+3: Impact of China Real Estate
(Percent)

... but the shocks do not greatly affect other ASEAN+3 real estate markets, except for Hong Kong.
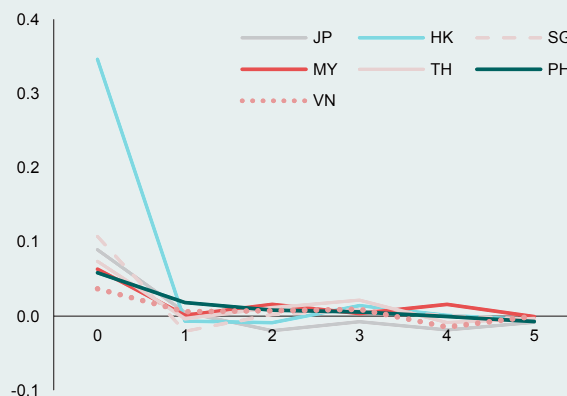

Source: AMRO staff calculations.
Note: The figure depicts generalized impulse responses to a 1 percent shock to CN real estate stock return, using daily data. HK = Hong Kong; JP = Japan; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; VN = Vietnam.

V.   Findings And Policy Implications

ASEAN+3 financial systems remain vulnerable to shocks from global factors and external economies. Despite growing interdependence among ASEAN+3 economies and the role of Singapore and Hong Kong as key financial hubs, macro-financial shocks from major advanced economies and global factors are still significant sources of inward spillover risks. The region is susceptible to global shocks such as energy prices, metal prices, and US dollar foreign exchange rates, as well as contagion effects from systemic financial events in the US, the UK, and advanced Europe.

Singapore's and Hong Kong's extensive external connections and cross-border spillovers expose their financial systems to significant risks and make them potential sources of contagion for the region. The two financial hubs are particularly susceptible to global and regional macro-financial shocks. Given the size and connectivity of their financial networks, especially with other ASEAN+3 financial sectors, the impact of such shocks would be transmitted not only to Singapore and Hong Kong but also to financial systems across the region.

ASEAN+3 financial systems have become increasingly interconnected, making robust ASEAN+3-centric surveillance and cooperation essential. By taking a holistic macroeconomic and financial view of the region, authorities can better protect their economies from systemic risks and enhance overall financial resilience. Specifically, ASEAN+3 economies should strengthen:

• Cross-border surveillance and data sharing: Enables authorities to detect emerging risks that may originate in one economy but spread across the region.

Sharing information and best practices helps identify vulnerabilities early and facilitate coordinated responses.

• Regional stress testing: Provides insight into how financial shocks in one part of the region might impact other areas. This helps prepare for potential crises by understanding transmission channels and the resilience of financial institutions.

• Home-host supervision: Cooperation between home and host jurisdictions is vital for supervising internationally active banks. Harmonized regulatory frameworks can reduce regulatory arbitrage and enhance financial stability.[20]

• Liquidity support: The interconnected nature of ASEAN+3 financial systems means that a crisis in one ASEAN+3 economy can spread quickly to others. In times of financial distress, access to liquidity can be crucial, and regional financing arrangements for liquidity support help stabilize financial markets.[21]

At the same time, the source and transmission channels of risks from international spillovers must be continuously monitored. Spillovers from advanced economies such as the US, UK, and Europe, as well as from financial institutions in these jurisdictions, pose ongoing risks to ASEAN+3 financial systems. Therefore, monitoring global financial market volatility and strengthening the supervision of global systemically important financial institutions are essential. This dual approach can mitigate the potential adverse effects of external shocks and enhance financial stability in the ASEAN+3 region.

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[20]   While the existing frameworks under the BIS and IOSCO provide a robust foundation for home-host supervision and cooperation, continuous improvement and adaptation are essential to meet the evolving challenges of global finance. Enhancing regulatory cooperation beyond current standards is crucial to prevent regulatory arbitrage, ensure consistent enforcement, address new challenges from fintech and digital currencies, and effectively manage systemic risks.

[21]   In this context, the Chiang Mai Initiative Multilateralisation (CMIM) regional financial arrangement (RFA), together with the network of bilateral swap agreements and the IMF's international financing framework, forms a robust architecture of defense against potential financial contagion and spillovers. The regional surveillance arm, AMRO, along with flagship reports like the AFSR, plays a crucial role in cross-border monitoring. Ongoing efforts to refine CMIM facilities, in collaboration with financial architecture partners, will further strengthen defenses against spillover risks.

Annex 1.1. Robustness Check: Analyzing the Spillover of the 2023 US Banking Turmoil on ASEAN+3 Financial Services Industries[22]

The US financial system plays a pivotal role in global markets, and shocks originating from it can quickly spread across borders through various channels (Tran and Vo 2023). Analyzing these spillover dynamics helps authorities and market institutions understand potential vulnerabilities and develop appropriate policy responses (Fukuda and Tanaka 2020; ASEAN Main Portal 2023).

The literature suggests that a significant decline in the output of the US financial services industry can have far-reaching effects on other countries' financial services industries. These spillovers are transmitted through both direct financial-industry-to-financial-industry channels and indirect channels that first impact nonfinancial industries and then feedback into the financial industry. Transmission occurs through both the supply and demand. For example, most the past US financial crises affected different parts of the world through trade, financial, and other channels, highlighting the need to consider all economic and financial cross-market influences. A contraction in the US financial services industry can reduce access to capital for financial institutions in other countries, hindering their ability to finance operations, expand services, and support economic activities. Additionally, nonfinancial industries, which rely on financial services for working capital, investment financing, and risk management, can be affected. This ripple effect can spread to financial institutions in other countries that provide services to these nonfinancial firms, leading to a decline in their business activities. Nonfinancial industries, particularly those exporting to the US or part of global supply chains, may experience a drop in demand for their products and services, leading to lower revenues and reduced financial service needs, thereby impacting financial institutions in other countries (Mefford 2009; Jovanovikj and Georgievska 2015; Sun and others 20202; Tomczak 2023).

This Annex uses the international input-output table to capture all the aforementioned effects. This cross-economy and cross-industry micro-simulation method systematically incorporates various transmissions. It relies on two key formulas: (a) one reflecting production relationships from the supply side, and (b) the other representing the distribution of output for various purposes from the demand side. These formulas link industries across different economies in the OECD Inter-Country Input-Output (ICIO) tables into an integrated global economic and financial system, enabling the analysis of spillover effects from any specific industry in one economy to any industry in other economies:

(a) Output value of industry j in economy i

$$= \sum_{\text{Economy } k1} \sum_{\text{Industry } l1} \text{Value of intermediate inputs from industry } l1 \text{ in economy } k1$$

$+$ Value of other production inputs including capital and labor for industry j in economy i

(b) Output value of industry j in economy i

$$= \sum_{\text{Economy } k2} \sum_{\text{Industry } l2} \text{Value of output distributed as intermediate inputs for industry } l2 \text{ in economy } k2$$

$$+ \sum_{\text{Economy } k3} (\text{Value of output distributed as final products for private consumption in economy } k3$$

$+$ Value of output distributed as final products for public consumption in economy $k3$
$+$ Value of output distributed as final products for private and public investment in economy $k3$)

The dataset includes the latest OECD ICIO table (updated to 2020) and the daily closing indices for the financial services or banking industry from S&P, Dow Jones, and Nasdaq. The ICIO table sets all parameters in the micro-simulation model across all economies and industries, following methodologies by Aroche Reyes and Marquez Mendoza (2021), Pichler and others (2021), Pichler and Farmer (2022), and Marquez Mendoza (2023). The financial indices determine the range of the maximum percentage decline in the output value of the US financial services industry in 2023, based on lower and upper bound scenarios of the US banking turmoil that began in early 2023.

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[22]   The author of this annex is Liyang (Alex) Tang.

Figure A1.1.1. Selected ASEAN+3: Spillover Effects on the Output Value of Domestic Financial Services Industries from the US Financial Services Industry
(Percent)
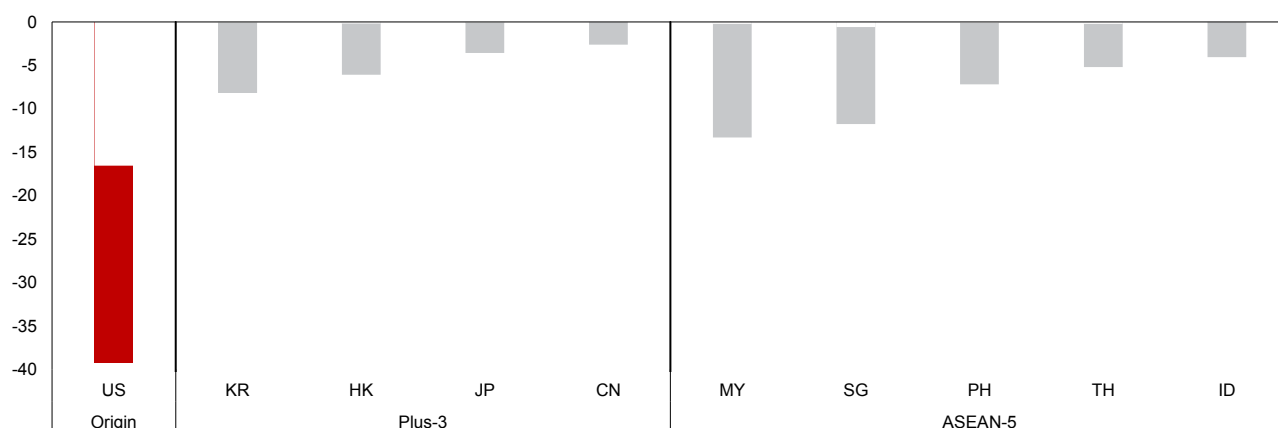
Source: AMRO staff estimates.
Note: The analysis can be divided into the following three steps. First, establish the upper and lower bound scenarios of the severe downturn in the US financial services industry's output value since early 2023, based on industry indices such as S&P, Dow Jones, and Nasdaq. Second, refer to relevant literature to employ a cross-economy and cross-industry micro-simulation model. Third, apply the micro-simulation model to the scenarios from the first step to obtain the upper and lower bound estimates of the spillover effects of the US financial services industry on the same industries in ASEAN+3 economies, further considering the uncertainties in the speed of transmission and the persistence and accumulation of spillover effects. CN = China, HK = Hong Kong, ID = Indonesia, JP = Japan, KR = Korea, MY = Malaysia, PH = Philippines, SG = Singapore, TH = Thailand, US = United States.

The results presented in Figure A1.1.1 reveal important insights:

- Among the Plus-3 economies, Korea and Hong Kong's financial services industries are expected to experience significant upper bound spillover effects of -8.2 percent and -6.1 percent in output value, respectively. China faces more moderate potential spillover effects of -2.6 percent. This indicates that Korea and Hong Kong are more at risk, while China is less impacted. Among ASEAN economies, Malaysia and Singapore are more vulnerable, with upper bound spillover effects of -19.5 percent and -11.8 percent in output value, respectively.

- Lower bound estimates for spillover effects from a significant downturn of the US financial services industry provide a more optimistic outlook. For example, Korea and Hong Kong might experience lower bound spillover effects as small as -0.1 percent and -0.2 percent in output value, compared to upper bound estimates of -8.2 percent and -6.1 percent. The substantial divergence between upper and lower bound estimates arises from different assumptions about the speed of cross-economy and cross-industry transmission and the persistence of spillover effects. This underscores the importance of policies to reduce transmission speed and the persistence of spillover effects.

Annex 1.2. Technical Details: Market–Data Based Spillover Analysis[23]

Methodology

The methodology for measuring spillovers is based on Diebold and Yilmaz (2012, 2014) for market data analysis. It begins with estimating a Vector Autoregression (VAR) model on equity returns. This VAR model is then used to construct a generalized forecast-error variance decomposition to identify uncorrelated structural shocks to returns, following Pesaran and Shin (1998). Spillover measures are calculated as the percent contribution of entity A to the h-step ahead forecast error variance of entity B, where the entities can be banks, sectors, or economies. This approach has an advantage over the standard Cholesky ordering or structural approaches as it does not require explicitly choosing the ordering of the variables.

Data

Equity return data, sourced from Eikon, covers the period from 1 January 2005 to 31 May 2024, at a daily frequency. Forecast error variance was calculated on a 10-day ahead basis. The market data used to measure implicit financial linkages are primarily country- and sector-level equity price indices from Thomson-Reuters Datastream (DS). Data on global factors were computed and sourced similarly to the equity returns, with the exception that VIX and macroeconomic risk indices (both short-term and long-term) were standardized as z-scores.

Below are more details about the data sources used in various VAR specifications.

Cross-border financial connections, various economies

- Global factors: VIX index from CBOE; commodity indices for energy, industrial and precious metals, and agriculture from GSCI; trade-weighted US dollar NEER index from JPMorgan; and macroeconomic risk indices (short-term and long-term) from Citi.

- Equity indices: North America DS Market; United Kingdom DS Market; Europe DS Market; Developed Latin America DS Market; Gulf Cooperation Countries (GCC) DS Market; China DS Market; Japan DS Market; Korea DS Market;

Hong Kong DS Market; Singapore DS Market; Malaysia DS Market; Thailand DS Market; Indonesia DS Market; and Philippines DS Market.

Cross-border banking and insurance linkages

- Non-ASEAN+3: North America DS banks and insurance; UK DS banks and insurance; Europe DS banks and insurance; Latin America DS banks and insurance; and GCC DS banks and insurance.

- ASEAN+3: China DS banks and insurance; Japan DS banks and insurance; Korea DS banks and insurance; Hong Kong DS banks and insurance; Singapore DS banks and insurance; Malaysia DS banks and insurance; Thailand DS banks; Indonesia DS banks; Philippines DS banks; and Vietnam DS banks and insurance.

Cross-border real estate linkages

- Non-ASEAN+3: North America DS real estate; UK DS real estate; Europe DS real estate; Latin America DS real estate; and GCC real estate.

- ASEAN+3: China DS real estate; Japan DS real estate; Hong Kong DS real estate; Singapore DS real estate; Malaysia DS real estate; Thailand DS real estate; Philippines DS real estate; and Vietnam DS real estate.

Cross-border sovereign linkages

- Non-ASEAN+3: US benchmark 10-year DS government index; and UK benchmark 10-year DS government index.

- ASEAN+3: China benchmark 10-year DS government index; Japan benchmark 10-year DS government index; Korea benchmark 10-year DS government index; Hong Kong treasury 10+ year bond index; Singapore 10-year DS government index; Malaysia IBOXX ABF 10-15 index; Thailand 10-year DS government index; Indonesia 10-year DS government index; Philippines FTSE treasury 10+ year index; and Vietnam RF government 10-year.

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[23]   The author of this annex is Ruperto Pagaura Majuca.

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