Analytical Note

The RISK from China's Property Sector[1]

September 15, 2023

I. Introduction

1. **Speculation has been rife as to whether China is about to experience a systemic crisis given the stress on one of the country's biggest growth engines—its property sector.** On August 18, one of China's largest property developers, Evergrande, filed for Chapter 15 bankruptcy protection in the US, sparking concerns about a cascading debt crisis that could pull in its financial system and the economy in general. Evergrande has epitomized China's property sector troubles, defaulting on its bond interest payments two years ago and raising concerns about the overall health of the sector (Ong and others 2021). Since then, firms accounting for an estimated 40 percent of China's home sales have defaulted on their debt (Forbes 2023). Two of its other biggest property developers, Sunac and Country Garden, defaulted on debt payments in May 2022 and August 2023, respectively.

2. **So, how fraught is China's property sector and what are the implications of any deepening and protracted stress for the rest of the ASEAN+3 region?** China's property sector accounted for about 30 percent of fixed asset investment or 14 percent of GDP in 2022, while 90 percent of Chinese households are homeowners. As of July 2023, China's real estate investment had contracted over seven of the previous eight quarters, weighing on its fixed asset investment and overall economic activity (Figure 1). Beyond investment, China's property market slowdown would have intensified business and consumer uncertainty, leading to the vicious cycle of lower demand for properties and further declines in prices (Figure 2)—and for both imported intermediate and final consumption goods, which would have impacted producers and exporters in the region.

3. **In this note, we introduce AMRO's *Risk Identification and Signalling Kickoff* (RISK) exercise, aimed at assessing systemic risks to the ASEAN+3 region.** In this case, the aim is to identify potential spillovers from shocks to a systemically important economy to individual ASEAN+3 economies and their respective financial systems. Still in the early stages of development, our RISK exercise employs the AMRO Regional Toolbox for the ERPD Matrix Instruments of Surveillance (ARTEMIS®)—a comprehensive suite of models, methods, and indicators that applies both traditional and cutting-edge techniques

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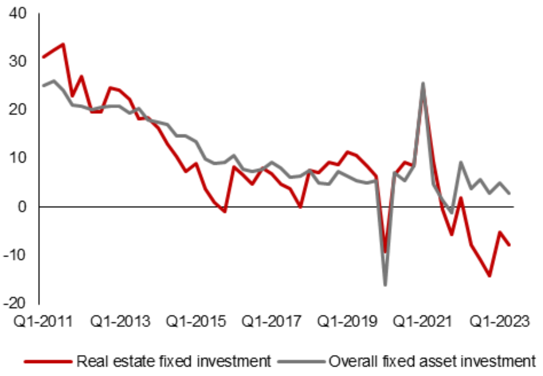
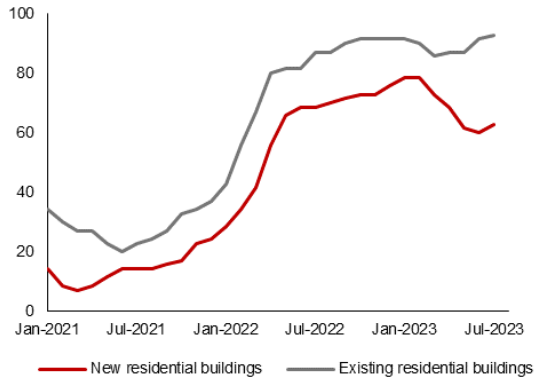
and uses both conventional and alternative data, overlaid with experienced judgment—to provide forward-looking analyses on ASEAN+3 financial stability.[2] RISK is envisaged to become AMRO's ASEAN+3 counterpart to the IMF's and FSB's Early Warning Exercise (EWE), which assesses the potential consequences associated with economic and financial tail risks to the global economy.

Figure 1: China: Real Estate and Fixed Asset Investment Growth
(Percent year-over-year)



Source: National authority via Haver Analytics.

Figure 2: China: Share of Cities Reporting Decreases in House Prices
(Percent of total)



Sources: National authority via Haver Analytics; and AMRO staff calculations.
Note: Refers to the results from the survey of sales prices for residential buildings in 70 medium and large-sized cities across China.

II. China's Domestic Risks

4. **Financial stress in China has alternated between medium and high regimes since the COVID-19 pandemic and is currently in the former.** Our *China Financial Stress Index (FSI)* combines 11 high-frequency financial market indicators to gauge the overall level of systemic risks perceived by markets (Appendix Table 1).[3] The *Markov-switching methodology* is then applied (Goldfeld and Quandt 1973; Hamilton 1989, 1990; Kim and Nelson 1998; Kim, Nelson, and Startz 1998), with the aim of identifying shifts in FSI statistical properties and capturing changes in the behavior of the index over time. This approach enables us to determine financial risk levels at any given point in time (Figure 3):

- In 2018, the US–China trade conflict raised financial stress levels in the Chinese economy from low to medium. The COVID-19 pandemic in 2020 subsequently transitioned the economy to a high-risk regime. The introduction of the market-coined "Three Red Lines" policy later that year (Fitch Ratings 2021), which was aimed at cracking down on China's property sector risks, kept financial stress levels high.

- In 2021, despite missed debt payments by Evergrande, leverage and liquidity metrics of Chinese developers improved, largely attributed to the "Three Red Lines" measures. The last quarter of that year also saw market volatility decline to low

[2] The ASEAN+3 Economic Review and Policy Dialogue (ERPD) promotes a solid economic foundation and sound financial system while providing a safety net against short-term volatility. The ERPD aims to prevent financial crises through the early detection of risks and vulnerabilities in member economies and the swift implementation of remedial policy actions. The ERPD Matrix is integrated into AMRO's macro-financial surveillance framework and supports assessments for the Chiang Mai Initiative Multilateralization (CMIM).

[3] Our FSI is based on Monin (2017).

levels, transitioning financial stress levels from high to medium to low. However, the relief was short-lived.

- In early-2022, against the backdrop of an evolving regulatory landscape affecting the technology and education sectors, and amid apprehensions regarding renewed COVID-19 outbreaks, financial strains in China increased, moving stress levels back up to medium risk, and then to high risk following the breakout of the Russia-Ukraine crisis and the credit downgrade of major property developer, Sunac. Another major property developer, Country Garden, was downgraded later in the year. The announcement of China's 16-point plan in November 2022 to rescue its ailing property sector eased financial stresses back to mid-levels, where it has stayed since.

5. **Markets perceived risks to China's property sector to have reached historical highs in late-2022, and risks to its financial system followed suit even as concerns about its overall corporate sector remained relatively benign.** China's *corporate probability of default (PD) spreads*, which are calculated as the difference between the 75th and 25th percentiles of PD distributions (interquartile spread, hereafter "delta") of publicly listed firms in a particular sector, provide indications of its systemic risk profile. During periods of stress, the delta widens as the default risk of the less creditworthy firms (75th percentile and above) rises by more than the safer firms (25th percentile and below).[4] The wider the delta, the greater systemic corporate risks:

- China's property sector delta, which started rising at the onset of the COVID-19 pandemic in 2020, increased sharply in 2022 following the failures of large property developers (Figure 4). This trend highlights a growing performance gap within the Chinese property sector, in which the vulnerable firms are facing increasingly tough challenges. However, the perceived risks seem to have moderated in recent months.

- While China's financial sector delta has moved in tandem with that of the property sector, possibly reflecting in part the potential losses from the latter, markets are of the view that the country's corporate sector as a whole remains relatively sound.

6. **Despite the recent debt service problems confronting China's major property firms, near-term concerns appear to have eased.** When default looms, the very near-term risk of default (measured by the one-month PD) rises faster and might sometimes exceed that of its slightly longer-term counterpart (measured by the one-year PD). The PD ratio (the ratio of one-year PD to one-month PD) captures this phenomenon, which was evident during the global financial crisis (GFC) in 2008 when it reached all-time lows. In this context, the Chinese government's announcement of support and rescue measures have ostensibly been effective in reducing fears about near-term default (Figure 5).

7. **Correspondingly, the share of property sector firms and total assets under stress have also declined in recent months.** Firms in the property sector whose PDs fall into the top 25th percentile of the sectoral PD distribution are flagged as "stressed" firms and would be expected to face greater difficulty borrowing or rolling over their existing loans. By this definition, the proportion of stressed firms exceeded 40 percent in Q4 2022—reaching GFC levels—while the associated assets represented more than 50 percent of the sector

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[4] Note that "safe" firm PDs are typically very low and bounded below by zero. Hence widening spread episodes do not reflect lower PDs in the 25th percentile.

total, but both have since fallen (Figure 6). Historically, stressed property firms have tended to be smaller, accounting for a relatively small share of the sector's assets, but the larger property firms have come under pressure more recently.

8. **A closer examination of the financial statements of China's firms highlights several salient developments.** China's corporate debt declined as a percentage of GDP following the recovery from the pandemic in 2021, as GDP levels rose, but firm indebtedness ticked up again in 2022. Applying the methods described in Ho and Ong (2022), we estimate the *debt-at-risk (DAR)* across China's industry sectors to assess their vulnerability, and examine their possible linkages to the property sector:

- The business services; manufacturing, industrial, and machinery; and utilities and waste management sectors have the largest DAR, in terms of their ability to cover their interest payments (Figure 7), as measured by the interest coverage ratio (ICR). When the repayment of short-term debt is also considered, the debt service ratios (DSRs) of the manufacturing, industrial, and machinery; property and construction; raw materials; and utilities and waste management sectors show high amounts of DAR as a percentage of GDP, equivalent to about 4–5 percent of China's GDP.

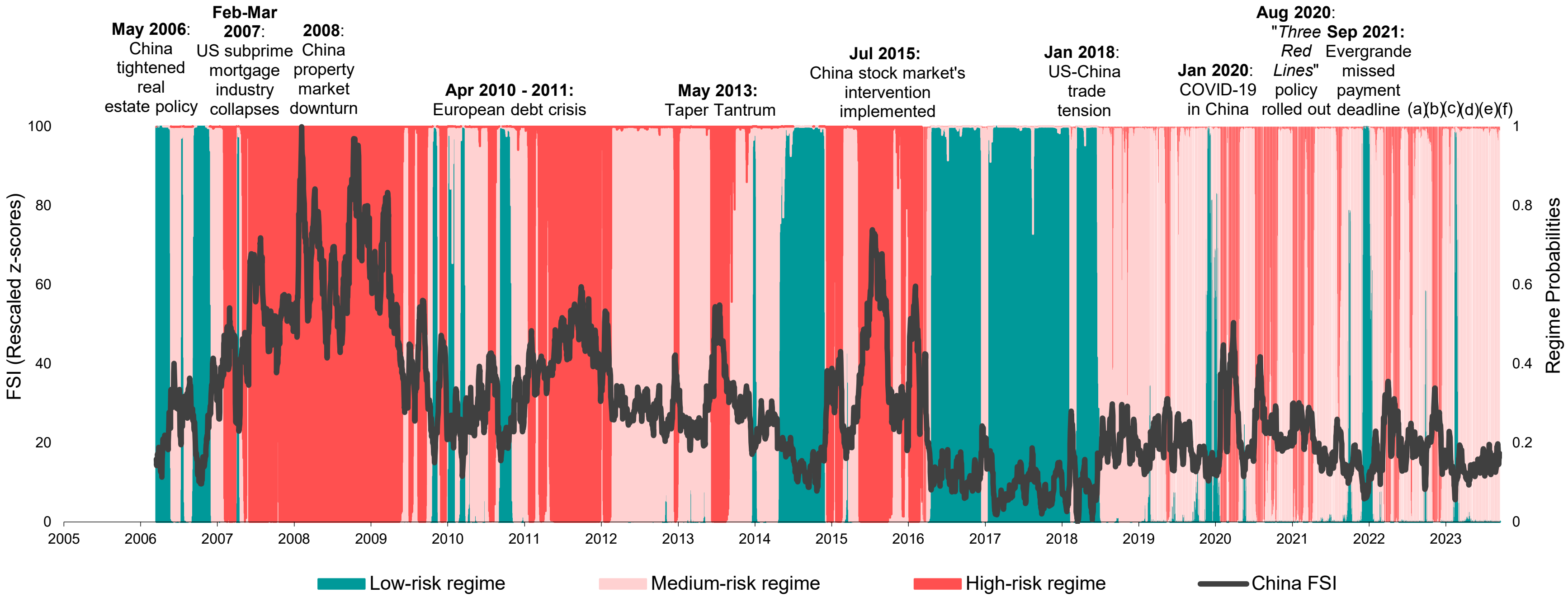
- Some of these sectors are likely dependent on demand from the property sector. Hence, any sharp downturn in the latter is likely to have significant negative ramifications for the ancillary industries that form part of the real estate ecosystem, raising the credit risks of their lenders.

- When property firms' liquidity buffers—defined as cash or cash equivalents—are notionally applied to service or repay their existing debt, they appear to be able to largely cover both their interest and maturing short term debt obligations (Figure 8). This result is consistent with observed developments in the property sector, where firms whose profits are being squeezed have been able to intermittently draw down their liquid assets to service their debt or have had to restructure their debt, neither of which is sustainable over the medium- to longer-term if profitability does not improve.

- Property and construction firms—at least the ones that report financial information—are predominantly the large, listed ones. Hence, the DAR estimates, including when liquidity buffers are taken into account, are very similar to the those of the sectoral results (Figures 9–10).

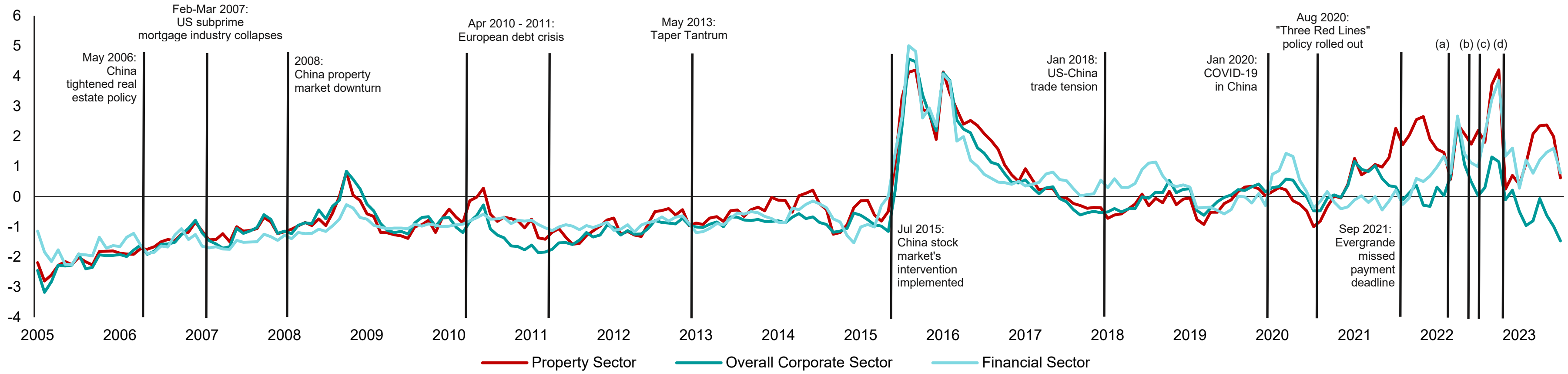
9. **The DAR findings should be considered in the context of data caveats.** Not all firms are captured, notably the unlisted ones that are not required to publish their financial statements or that do not disclose detailed financial information. Hence, the extent of any debt problem among these firms, which also play important roles in China's property sector, may be obscured. Even among reporting firms, any debt restructuring that allows interest and/or principal payments to be pushed back would not be immediately obvious from the published data.

Figure 3. China: Financial Stress Index and Corresponding Risk Regimes



Sources: Haver Analytics; and AMRO staff estimates.
Note: See Appendix I for a complete list of component indicators. The figure illustrates the Financial Stress Index (FSI) and the associated regime probabilities for China, with the primary y-axis (left) representing the rescaled FSI z-scores ranging from 0 to 100, and the secondary y-axis (right) representing the probabilities of each regime, ranging from 0 to 1. Data are in daily frequency and start from March 16, 2006. An increase (or decrease) in the FSI corresponds to an increase (or decrease) in China's overall financial stress level. The probabilities correspond to the likelihood that the FSI resides within specific regimes. These regimes have been classified into three distinct categories: low-risk, medium-risk, and high-risk regimes. More recent events are marked out as follows:
(a) February 2022: Start of Russia-Ukraine crisis (The Washington Post 2022).
(b) March 2022: Sunac's credit rating is downgraded (Fitch Ratings 2022).
(c) June 2022: Country Garden's credit rating is downgraded (Chen 2022).
(d) November 2022: China's announces 16-point plan to rescue its property sector (The Business Times 2022).
(e) August 2023: Evergrande files for bankruptcy protection in the US and Country Garden default risk rises (Jim, Stempel, and Knauth 2023; The Guardian 2023).
(f) September 2023: China announces lower interest rates for first-home purchases and a reduction in reserve requirement ratio for banks (SCIO 2023). Additionally, Country Garden is granted approval to extend payments for a 3.9 billion yuan onshore private bond (Lockett 2023).

Figure 4. China: Corporate Probability of Default Distribution Spread
(z-score of one-month PD spread, rolling 5-year mean)



Sources: National University of Singapore Credit Research Initiative (NUS-CRI), and AMRO staff estimates.
Note: Calculation is based on entire time series starting in 1994. For consistent presentation across all sections, data is displayed from January 2005 only. More recent events are marked out as follows: (a) February 2022: Start of Russia-Ukraine crisis; (b) March 2022: Sunac's credit rating is downgraded; (c) June 2022: Country Garden's credit rating is downgraded; (d) November 2022: China's announces 16-point plan to rescue its property sector.

Figure 5. China: Ratio of Property Sector One-Year to One-Month Probability of Default

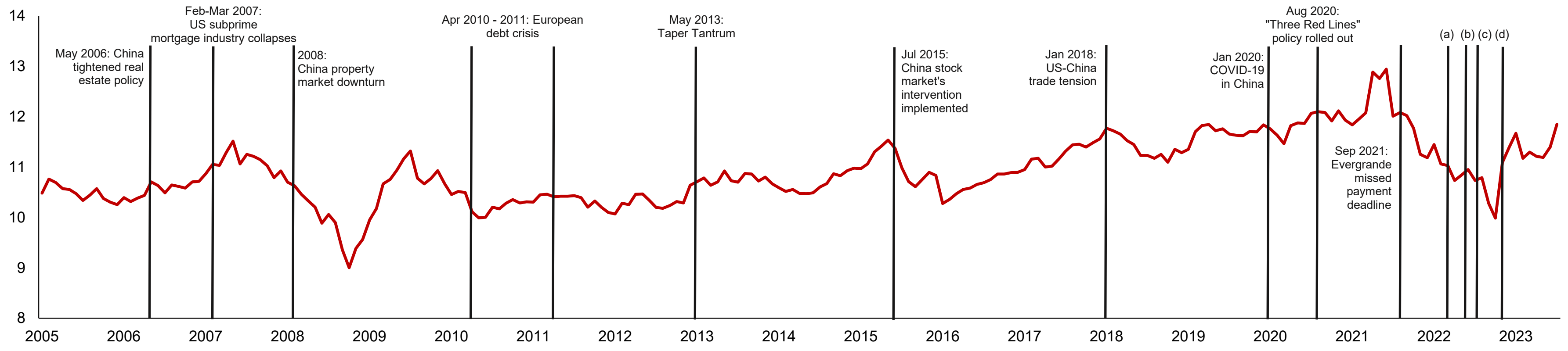
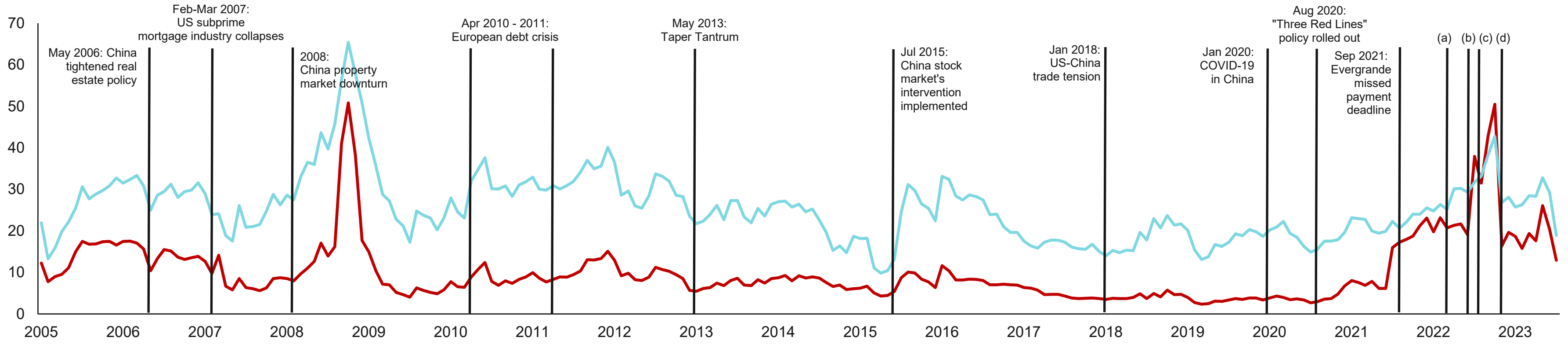


Figure 6. China: Share of Property Firms and Corresponding Total Assets under Stress

(Percent)

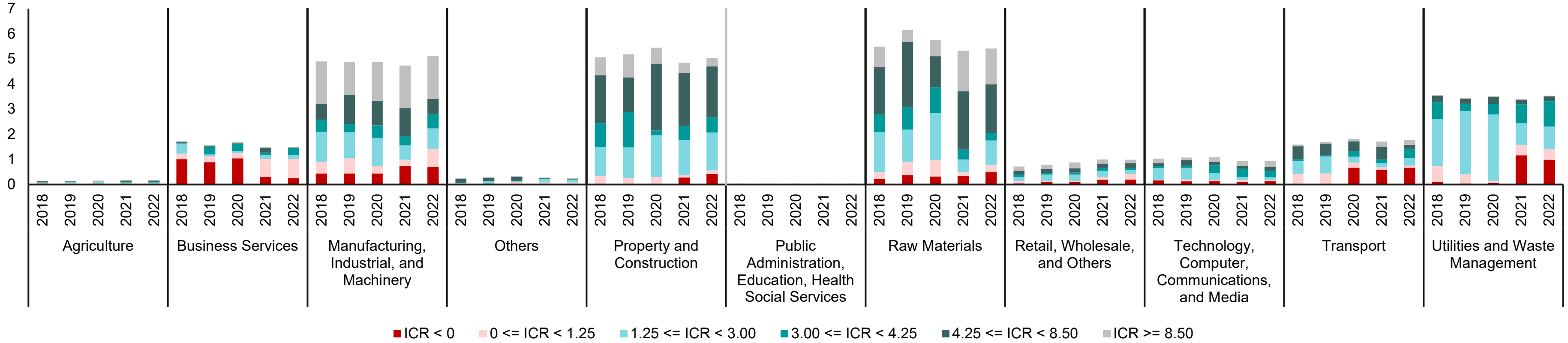


Sources: NUS-CRI, and AMRO staff estimates.

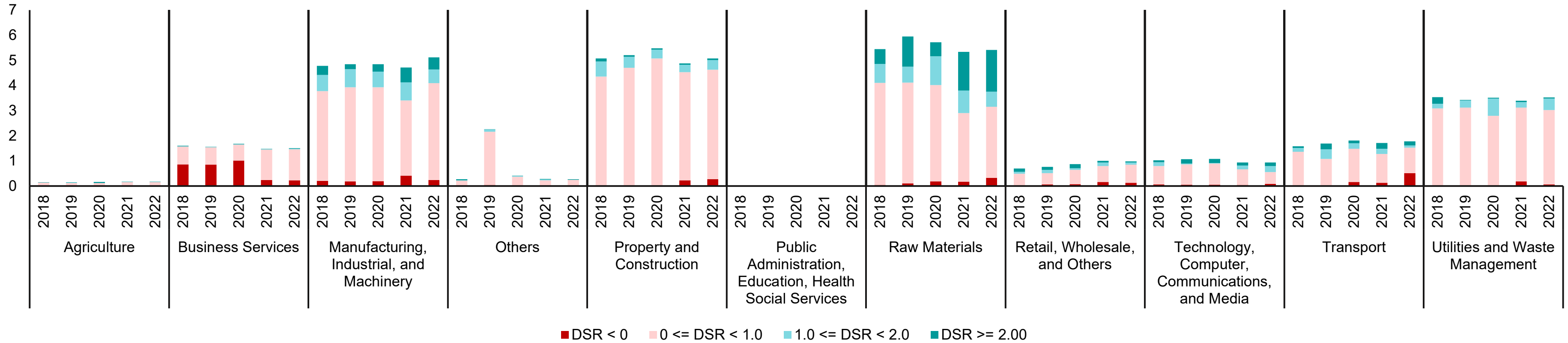
Note: Calculations are based on entire time series starting in 1994. For consistent presentation across all sections, data are displayed from January 2005 only. PD ratios are calculated as the ratio between median of one-month PD and one-year PD of all real estate firms at any given time period. More recent events are marked out as follows: (a) February 2022: Start of Russia-Ukraine crisis; (b) March 2022: Sunac's credit rating is downgraded; (c) June 2022: Country Garden's credit rating is downgraded; (d) November 2022: China's announces 16-point plan to rescue its property sector.

Figure 7. China: Firm Debt-at-Risk across Sectors
(Percent of GDP)

Interest Coverage Ratio

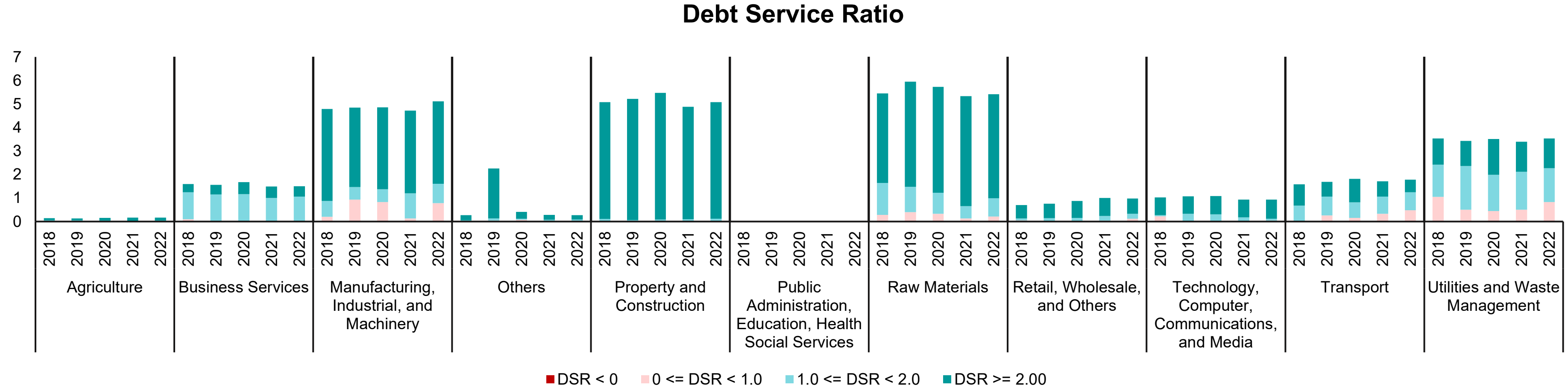


Debt Service Ratio



Sources: Orbis, and AMRO (2023 forthcoming).
Note: Interest coverage ratio (ICR) is the ratio of earnings before interest and taxes (EBIT) to interest expense (IE); debt service ratio (DSR) is the ratio of earnings before interest, taxes, depreciation, and amortization (EBITDA) to interest expense (IE) and principal on short-term loans and debt.

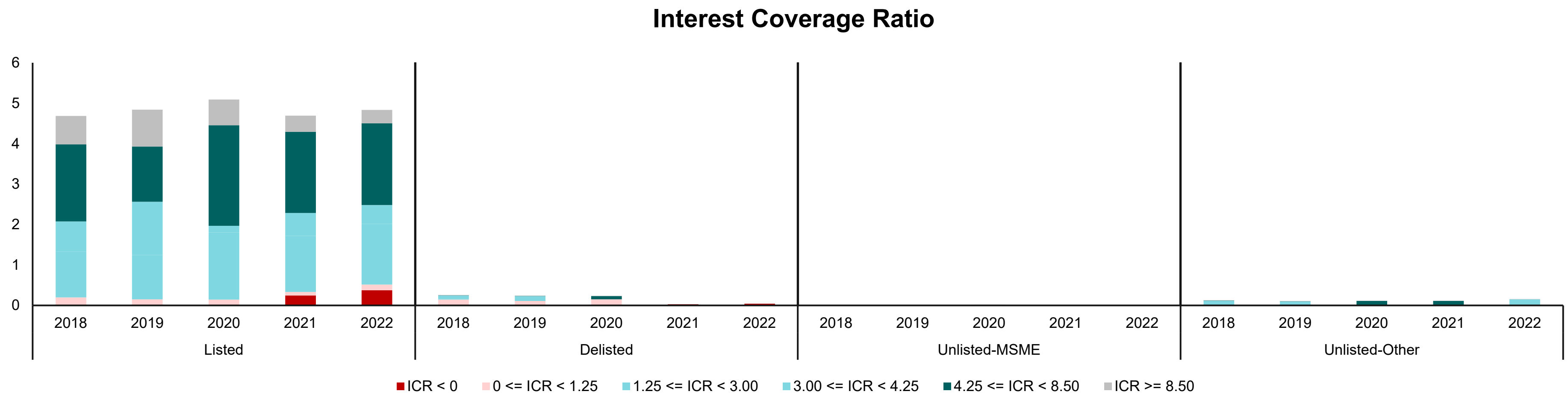
Figure 8. China: Firm Debt-at-Risk across Sectors, Taking into Account Liquidity Buffers
(Percent of GDP)

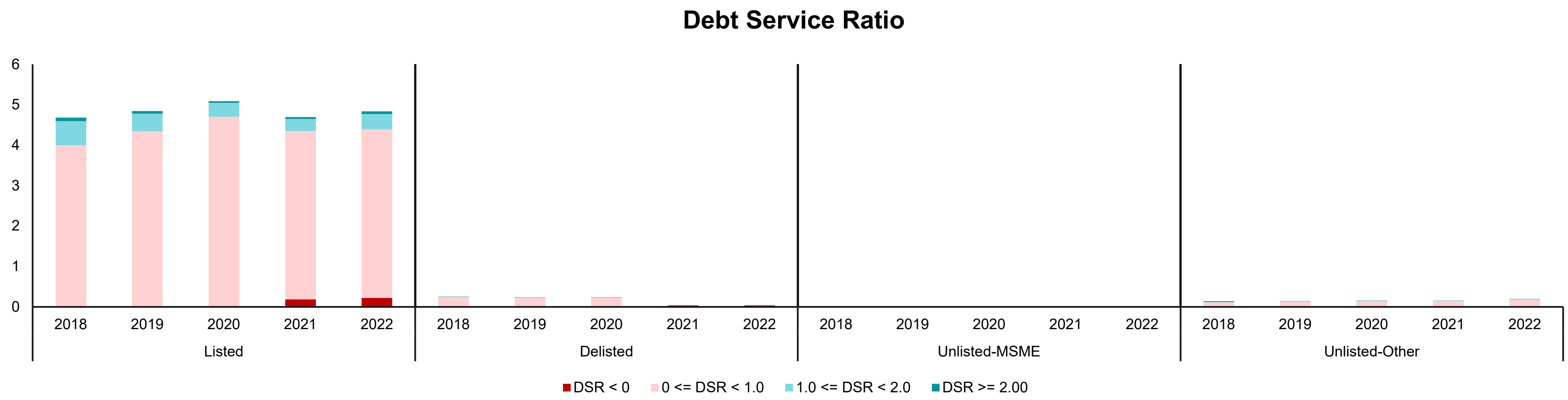


Sources: Orbis, and AMRO (2023 forthcoming).
Note: Debt service ratio (DSR) is the ratio of earnings before interest, taxes, depreciation, and amortization (EBITDA) to interest expense (IE) and principal on short-term loans and debt; liquidity buffers here are defined as cash or cash equivalents.

Figure 9. China: Property and Construction Sector Firm Debt-at-Risk across Firm Types

(Percent of GDP)

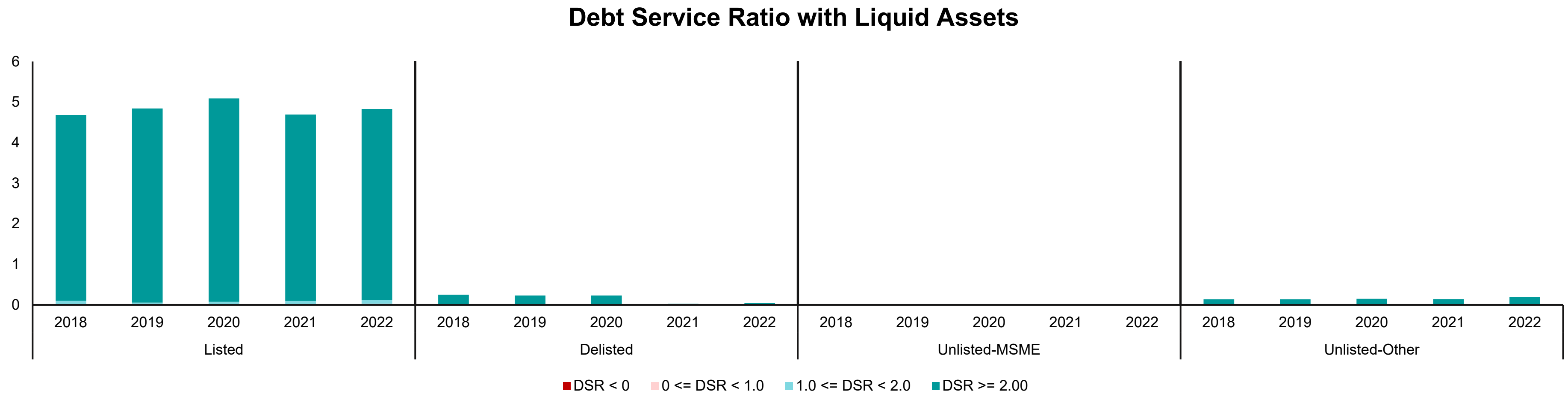




Sources: Orbis; and AMRO (2023 forthcoming).

Note: Interest coverage ratio (ICR) is the ratio of earnings before interest and taxes (EBIT) to interest expense (IE); debt service ratio (DSR) is the ratio of earnings before interest, taxes, depreciation, and amortization (EBITDA) to interest expense (IE) and principal on short-term loans and debt.

Figure 10. China: Property and Construction Sector Firm Debt-at-Risk across Firm Types, Taking into Account Liquidity Buffers
(Percent of GDP)



Sources: Orbis; and AMRO (2023 forthcoming).
Note: Debt service ratio (DSR) is the ratio of earnings before interest, taxes, depreciation, and amortization (EBITDA) to interest expense (IE) and principal on short-term loans and debt; liquidity buffers here are defined as cash or cash equivalents.

III. Regional Spillovers

10. **Despite rising concerns of a wider fallout from China's property sector stress, present market perceptions are that any spillover to the rest of the region would be largely contained.** Given the typical lack of detailed reported information by financial institutions on their credit exposures, we infer such relationships from market prices, which are supposed to efficiently capture all publicly available information (Appendix Table 1). We use the *time-varying parameter vector autoregression (TVP-VAR)* model proposed by Antonakakis and others (2020)—an enhanced approach to Diebold and Yilmaz (2012, 2014)—to estimate perceived connectedness and assess potential spillovers between China's property sector and the region's financial systems.

11. **Financial systems in the ASEAN+3 region could be exposed to risks arising from China's property sector through three main channels:** (1) directly, through any lending to the sector (first order interconnectedness); (2) indirectly, from their exposures to other financial systems that are involved with that sector (second order interconnectedness); and/or (3) indirectly, from lending to their own domestic economy that may be hard hit by developments in China (see below). Our TVP-VAR estimates for the first two channels—which illustrate the average share of time-varying risks in each ASEAN+3 financial system that are explained by the risks in China's property sector (Figure 11)—suggest that:

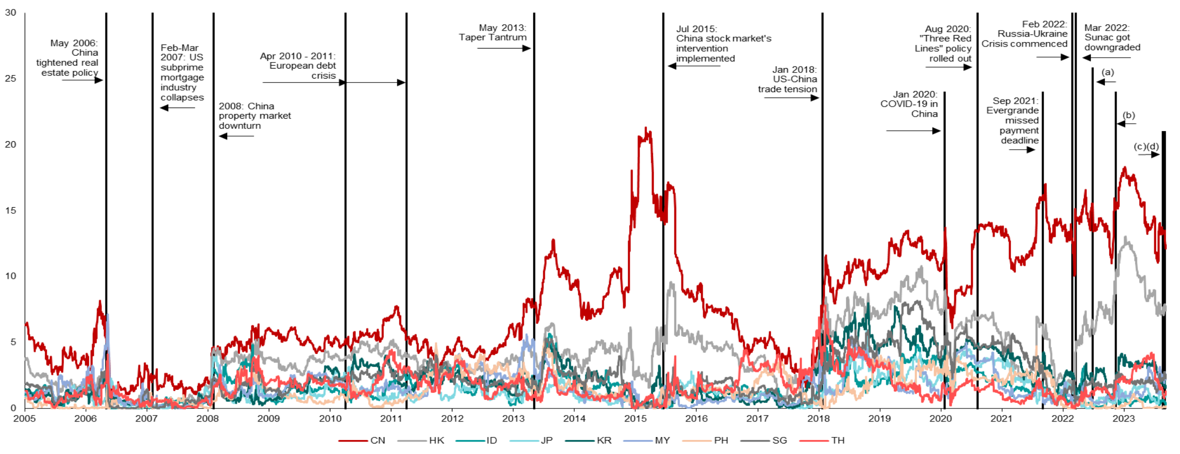
- Direct spillovers from developments in China's property sector would be substantially larger to its own domestic financial system. The former accounted for almost 20 percent of risks to the latter in recent quarters (Appendix Figure 1). These findings are consistent with those of the corporate PD spreads above. Although markets are obviously not anticipating large scale defaults within China's financial system, risks have been trending upward for several years on the back of its property sector stress. Outside the mainland, Hong Kong's financial system would be most vulnerable, given its larger exposures to the mainland economy compared to those of the rest of the region, which appear relatively benign.

- In terms of second order spillovers, any shock to China's financial system would also have the biggest impact on Hong Kong's, given their strong interlinkages—the risks to the former were responsible for up to 25 percent of risks to the latter in late-2022 and early-2023 (Appendix Figure 2). Outside of Hong Kong, spillovers to Korea and Singapore have historically been larger, but have declined significantly to the latter since the COVID-19 pandemic, suggesting that Singapore's financial institutions might have reduced their related exposures. Presently, financial spillovers from China to the other financial systems in the region would account for *up to* 7 percent of respective financial system risks (Malaysia) and would be smallest for Indonesia and the Philippines.

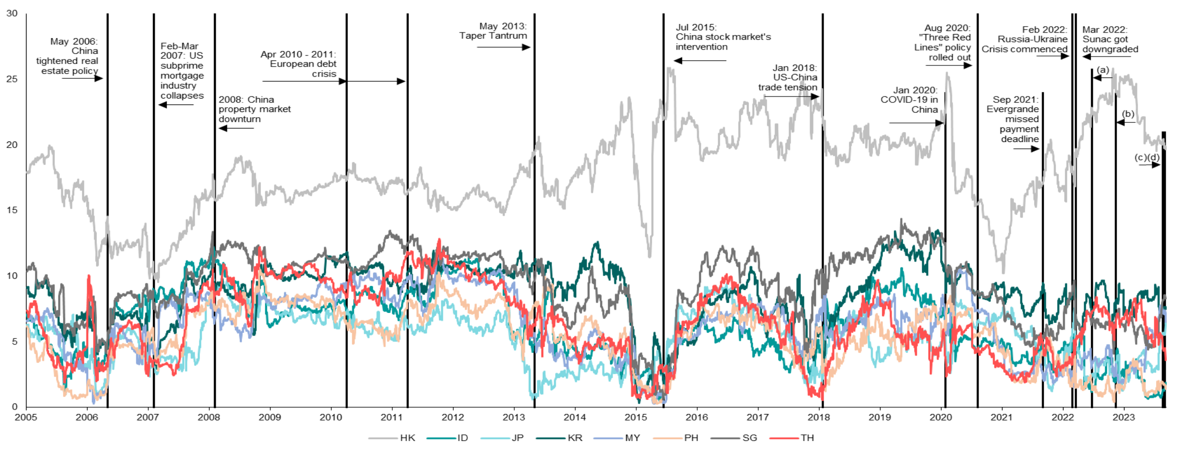
- Any spillback from Hong Kong's financial system to China's would be equally substantial, but spillovers from Hong Kong's financial system to the rest of the region is seen to be limited despite its position as an international financial center (Appendix Figure 3). Singapore's financial system continues to be the biggest recipient of any spillover from Hong Kong—unsurprising, given its role as the region's other financial hub—but that vulnerability appears to have lessened in recent years.

Figure 11. ASEAN+3: China Property Sector Spillovers
(Percent of variance)

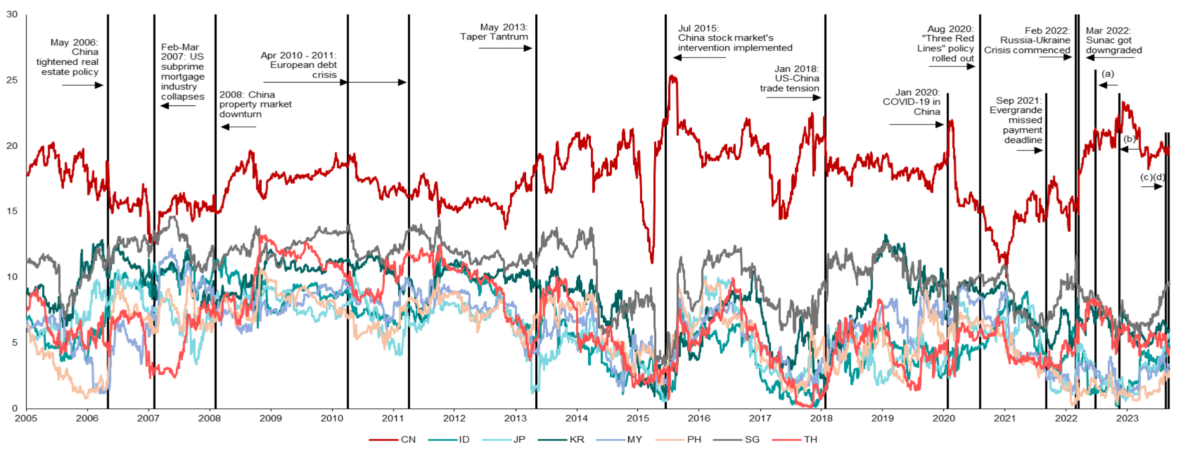
From China's Property Sector to ASEAN+3 Financial Systems



From China's Financial System to ASEAN+3 Financial Systems



From Hong Kong's Financial System to ASEAN+3 Financial Systems



Sources: Bloomberg Finance L.P.; and AMRO staff estimates.
Note: The time series comprises the daily log returns of 13 indices, representing the financial sectors of the ASEAN-5, Plus-3, China's property sector, and the stock markets of the US and EU, from 2005 to latest. For each of the selected indices, the model constructs pairwise directional connectedness measures that capture the influence of said index on the changes of each of the target indices, in terms of their forecast error variance share. The connectedness measure takes values in the range 0 to 100—the higher the value, the stronger the effect of the index has on the target. CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand. The simulation also includes the S&P500 and MSCI Europe Index. (a) June 2022: Country Garden's credit rating is downgraded; (b) November 2022: China's announces 16-point plan to rescue its property sector; (c) August 2023: Evergrande files for US bankruptcy protection and Country Garden's default risk rises; (d) September 2023: China announces lower interest rates for first-home purchases and a reduction in reserve requirement ratio for banks. Additionally, Country Garden is granted approval to extend payments for a 3.9 billion yuan onshore private bond.

12. **Any sharp deceleration in China's economic growth would have significant impact on the real economy of its ASEAN+3 neighbors.** China is currently the largest export market for nine out of its 13 regional counterparts. Contrary to expectations, the removal of China's zero-Covid policy in December last year has not been accompanied by a strong surge in pent-up demand, partially reflecting lingering uncertainties over income prospects. Further stress in the property sector would compound this already weak near-term outlook. Given the region's apparent limited direct exposure to distressed property developers in China, as discussed above, any spillover would likely be via the indirect channel of the latter's slower economic growth and its demand for the former's exports.

13. **Our scenario analysis considers a further deterioration in China's property market.** If investment in real estate is assumed to contract by 20 percent this year, it could potentially shave 0.9 percentage points off China's GDP (Figure 12). In addition to the direct effects from lower overall investment, private consumption would be affected by lower earnings in property-related sectors, weakened consumer sentiment, and reduced housing wealth. Weaker domestic spending would subsequently lower demand for imports from the rest of the region, with attendant fallout for growth (Figure 13):

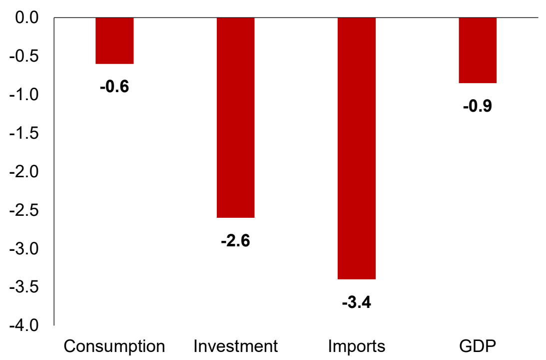
- Hong Kong is expected to be the most affected as a result of its close ties with Mainland China, both in terms of (some) direct exposure to the property sector, export reliance on the latter, and its role as an entrepôt for the latter's trade. Vietnam and Korea would also be significantly impacted given their high export reliance on China, particularly in intermediate goods trade.

- As an international financial center and logistics hub that supports a wide range of industries, Singapore would have more indirect exposure to China's property sector through any broad-based decline in demand from the latter. Separately, Thailand and Malaysia would likely see lower goods exports and tourism from China.

- Meanwhile, Japan, Indonesia, and the Philippines are expected to be less affected, given that any drop in exports would be partially mitigated by sustained demand from their large domestic markets.

Figure 12: China: Impact of Property Sector Slowdown on Domestic GDP and GDP Components

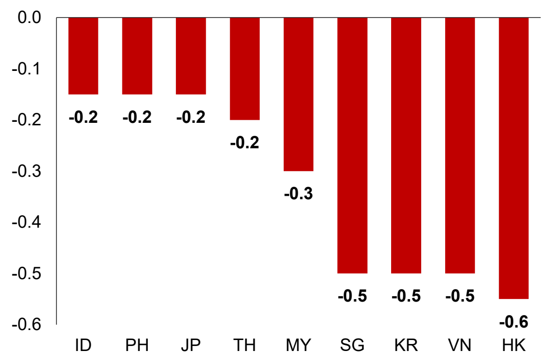
(Percentage points)



Sources: Oxford Economics Global Economics Model; and AMRO staff estimates.

Figure 13: Selected ASEAN+3: Impact of China's Property Sector Slowdown on GDP

(Percentage points)



Sources: Oxford Economics Global Economics Model; and AMRO staff estimates.
Note: Brunei Darussalam, Cambodia, Lao PDR and Myanmar are omitted because of data unavailability.

IV. Conclusion

14. **China is the second largest economy in the world and the largest by far among the ASEAN+3, and it is also the main trade partner for the majority of its neighbors.** It is unsurprising then that any shock to China's economic growth would have important ramifications for the rest of the region. In particular, the slowdown in China's all-important property sector— which accounts for almost a quarter of domestic economic activity and is closely tied to household wealth—is hurting business and consumer confidence domestically. Within the region, the stress on China's property sector has heightened concerns about spillover risks to GDP growth and financial stability, and the potential magnitude of such shocks if they were to manifest.

15. **Markets perceive China's current overall financial stress to be at "mid-risk" levels, following measures to rein in undesirable practices by property firms and subsequent policies to support the sector and homebuyers.** China's corporate sector in general is considered to be relatively sound, but risks are seen to have risen in the property sector and by association, the domestic financial system, which is expected to bear the brunt of any distress. Consequently, the low debt service ratios of property sector firms and those in their ancillary industries are worrying—these firms would need to rely on creditors continuing to roll over their short-term debt at a time when confidence in the property sector may be waning. And although many property sector firms have sufficient liquidity on their balance sheets to repay their obligations—excluding those that might have already restructured their debt—having to draw down their assets at a time when buffers may be crucial for survival would put further stress on the sector. AMRO staff's recommendations on addressing the risks to China's property sector are discussed in AMRO (2023 forthcoming).

16. **Our RISK analysis suggests that regional spillovers from any large shock to China's property sector are likely to be via the real rather than the financial channel.** With the exception of Hong Kong, markets do not anticipate significant direct or second order spillovers to regional financial systems via China's property sector nor China's or Hong Kong's financial systems. However, any sharp slowdown in China's domestic demand could significantly reduce its imports from the region, with attendant implications for the economic growth of its neighbors and, consequently, the credit risks to their respective financial systems.

17. **Although there is little that can be done to prevent spillovers in the short-term, some measures could be taken to mitigate this risk.** In particular, authorities should ensure sufficient buffers in their foreign reserves and that their banking systems are well-capitalized, and have strategies in place to guide their respective economies to a soft landing, if necessary and policy space permitting. Over the medium term, the aim should be to continue diversifying exports and export markets, and correspondingly for the financial system to eschew concentration risks and risky practices when lending domestically or overseas.

Appendix I. RISK Exercise

Appendix Table 1. ARTEMIS Tools and Underlying Data Series

ARTEMIS Tool	Financial Series	Source
Financial Risk Index	Savings deposit rate Interbank repo 1-day fixing rate Required reserve ratio Exchange rate Government bond index Corporate bond index Shanghai Stock Exchange Composite Index Shenzhen Stock Exchange Composite Index Shanghai Shenzhen China Securities Index 300 Agricultural Product Wholesale Price Index Sovereign bond spreads	Shanghai Stock Exchange Shenzhen Stock Exchange China Securities Index Co. Ltd. People's Bank of China China Foreign Exchange Trade System Ministry of Agriculture of China JPMorgan *all via Haver Analytics*
Corporate Probability of Default Spread	Probabilities of default for China corporate sector, property sector, financial sector firms	National University of Singapore Credit Research Initiative (NUS CRI)
Corporate Debt-at-Risk	**Profit and loss** Earnings before interest and taxes Earnings before interest, tax, depreciation, and amortization Interest expense **Balance sheet** Cash and cash equivalents Long-term loans and debt Short-term loans and debt **Economy** GDP	Orbis
Financial spillovers	MSCI Financial Indices for China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, and Thailand CSI China Mainland Real Estate Index S&P500 Index MSCI Europe Index	Bloomberg Finance L.P.

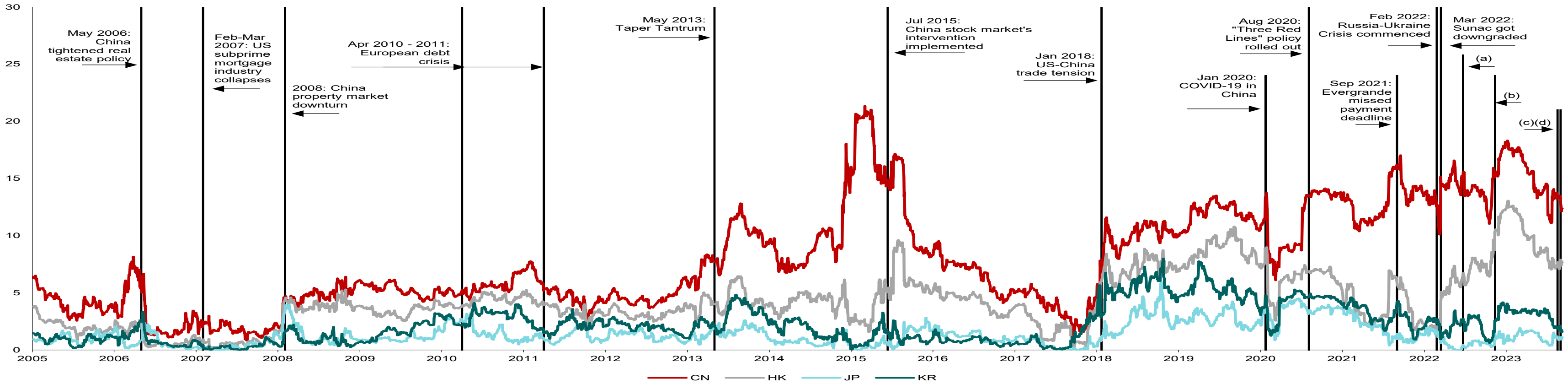
Source: AMRO staff compilations.

Appendix II. China Spillovers to the ASEAN+3 Region

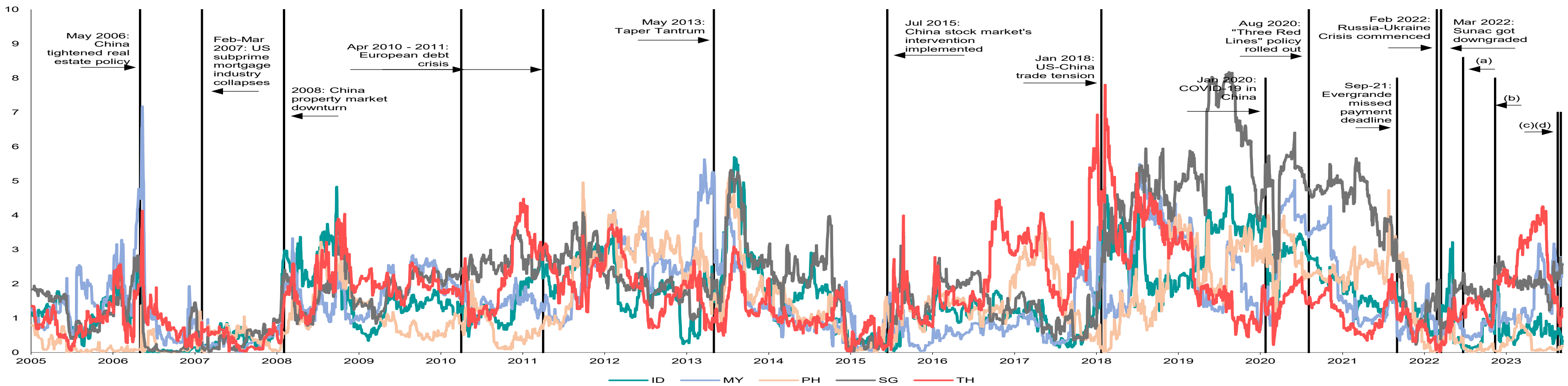
Appendix Figure 1. China: Property Sector Spillovers to ASEAN+3 Financial Systems

(Percent of variance)

Plus-3



ASEAN

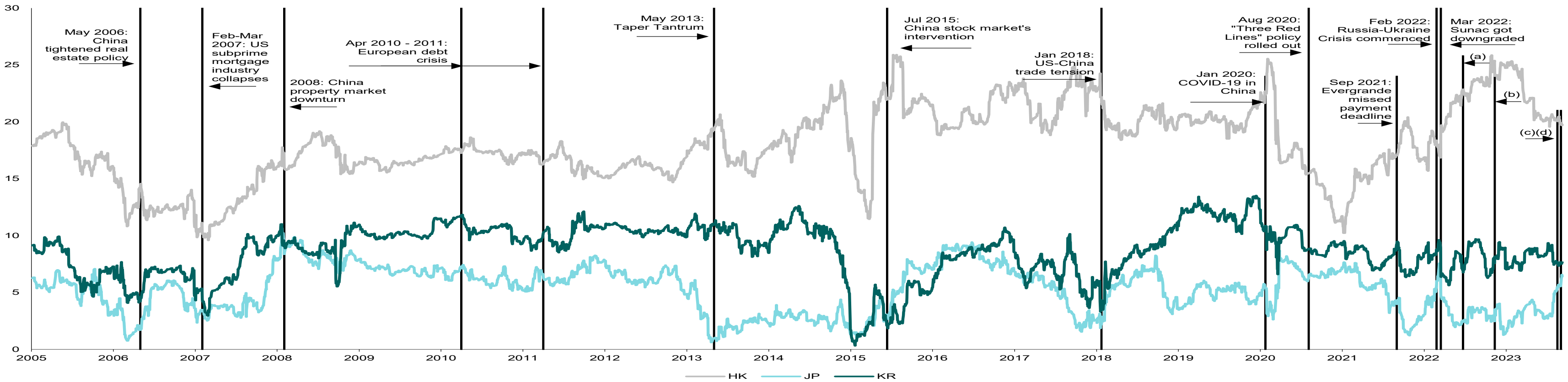


Sources: Bloomberg Finance L.P.; and AMRO staff estimates.
Note: CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand. (a) June 2022: Country Garden's credit rating is downgraded; (b) November 2022: China's announces 16-point plan to rescue its property sector; (c) August 2023: Evergrande files for US bankruptcy protection and Country Garden's default risk rises; (d) September 2023: China announces lower interest rates for first-home purchases and a reduction in reserve requirement ratio for banks. Additionally, Country Garden is granted approval to extend payments for a 3.9 billion yuan onshore private bond.

Appendix Figure 2. China: Financial System Spillovers to ASEAN+3 Financial Systems

(Percent of variance)

Plus-3



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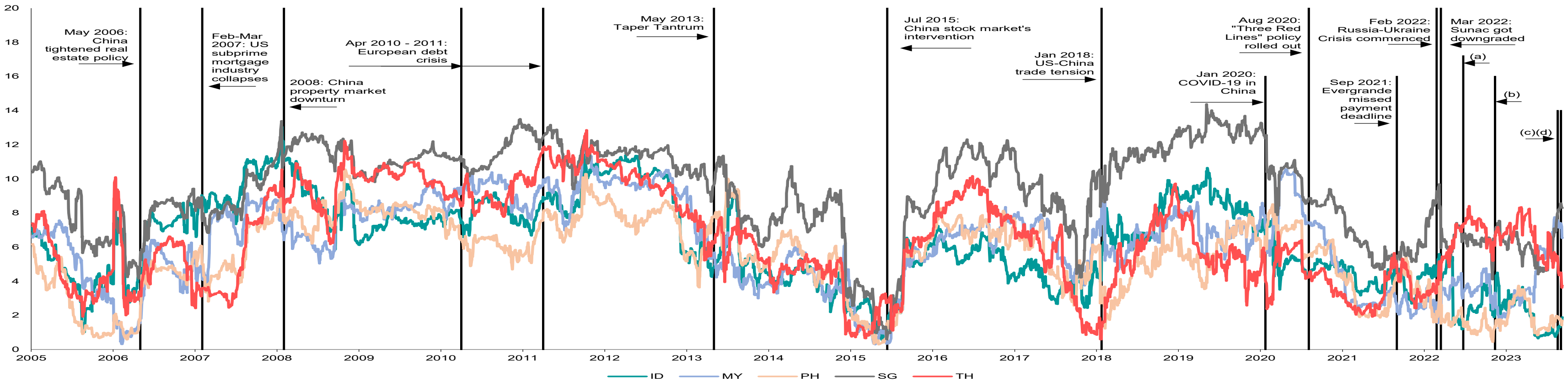


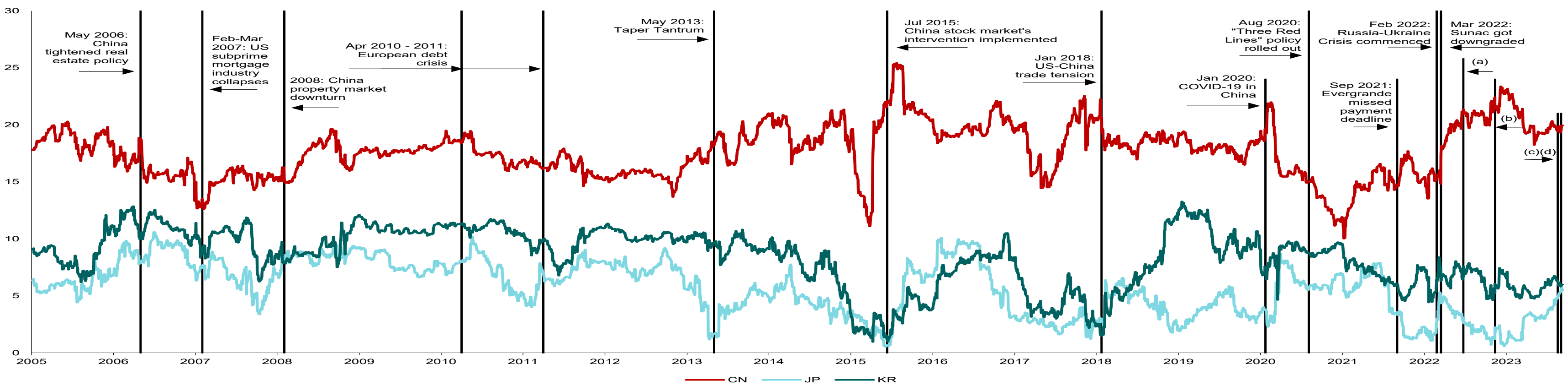
Sources: Bloomberg Finance L.P.; and AMRO staff estimates.

Note: CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand. (a) June 2022: Country Garden's credit rating is downgraded; (b) November 2022: China's announces 16-point plan to rescue its property sector; (c) August 2023: Evergrande files for US bankruptcy protection and Country Garden's default risk rises; (d) September 2023: China announces lower interest rates for first-home purchases and a reduction in reserve requirement ratio for banks. Additionally, Country Garden is granted approval to extend payments for a 3.9 billion yuan onshore private bond.

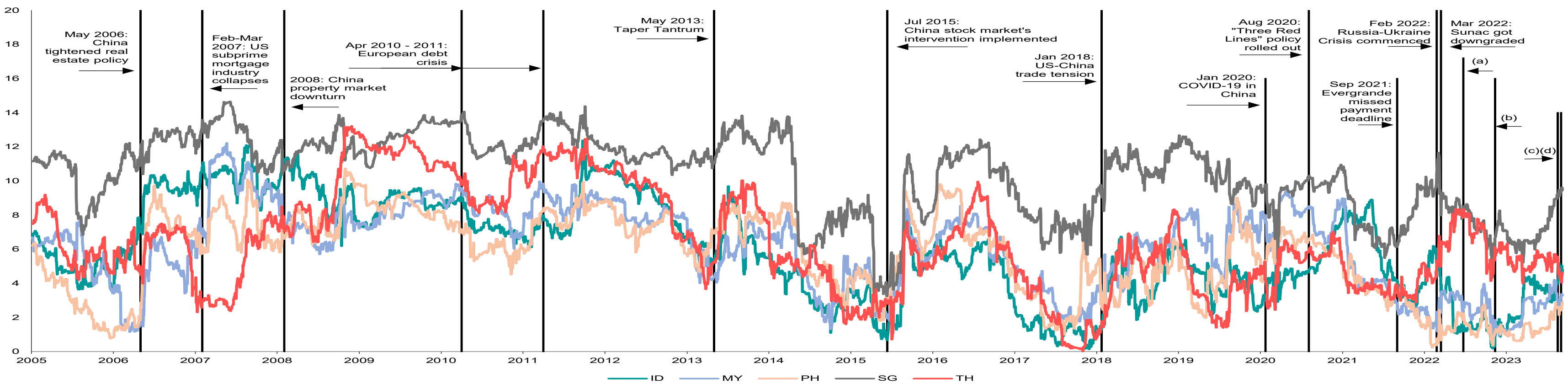
Appendix Figure 3. Hong Kong: Financial System Spillovers to ASEAN+3 Financial Systems

(Percent of variance)

Plus-3



ASEAN



Sources: Bloomberg Finance L.P.; and AMRO staff estimates.
Note: CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand. (a) June 2022: Country Garden's credit rating is downgraded; (b) November 2022: China's announces 16-point plan to rescue its property sector; (c) August 2023: Evergrande files for US bankruptcy protection and Country Garden's default risk rises; (d) September 2023: China announces lower interest rates for first-home purchases and a reduction in reserve requirement ratio for banks. Additionally, Country Garden is granted approval to extend payments for a 3.9 billion yuan onshore private bond.

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