

ANALYSIS
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Hitting Ground Floor: The Global Ramifications of a China Debt Crisis

INTRODUCTION

A more protracted property market downturn in China poses a meaningful threat to the country's financial and economic stability, with implications for the global economy and especially for the rest of Asia. Chinese authorities have plenty of tools to break the fall, but an extended slump in property sales and developers' growing financial difficulties bring darker scenarios into view. This paper considers the consequences of a property market collapse in China for the Chinese and global economies, with a special focus on Southeast Asia and emerging markets. In this downside scenario, Chinese officials cannot contain the wave of defaults among property developers, resulting in a prolonged economic crisis in China that punctures the rest of the global economy.

Hitting Ground Floor: The Global Ramifications of a China Debt Crisis

BY CHRISTINA ZHU, JESSE ROGERS, XIAO CHUN XU, LUIS ENRIQUE SILVA YANEZ, AND STEVEN G. COCHRANE

A more protracted property market downturn in China poses a meaningful threat to the country's financial and economic stability, with implications for the global economy and especially for the rest of Asia. Chinese authorities have plenty of tools to break the fall, but an extended slump in property sales and developers' growing financial difficulties bring darker scenarios into view. This paper considers the consequences of a property market collapse in China for the Chinese and global economies, with a special focus on Southeast Asia and emerging markets. In this downside scenario, Chinese officials cannot contain the wave of defaults among property developers, resulting in a prolonged economic crisis in China that punctures the rest of the global economy.

More specifically, we assume that the Chinese government's efforts to curb credit and house price growth culminate in a policy misstep, with defaults by property developers outpacing officials' efforts to keep healthy firms alive and force debt-wracked developers to restructure. The spillover effects on financial markets and land values exceed officials' expectations, creating a vicious feedback loop to the real economy.

In this deep downside scenario, debt-laden Chinese developers struggle to repay suppliers and contractors, causing waves of defaults across the supply chain. As authorities struggle to contain the damage, credit markets freeze over, firms and households slash spending and investment, and the Chinese economy plunges into recession.

The property market collapse reverberates beyond China's borders via reduced Chinese imports and the spread of financial tremors in China to financial markets worldwide. The hit to global trade, coupled with Chinese developers' defaults in offshore debt markets and the accompanying capital flight, sends shock waves through global financial markets, causing global sentiment to darken and risk premiums to rise. Emerging markets with weak economic recoveries from the pandem-

ic and volatile currencies experience capital flight and large swings in exchange rates. As global financial conditions tighten and spending contracts, the global economy falls into recession.

Shaky foundations

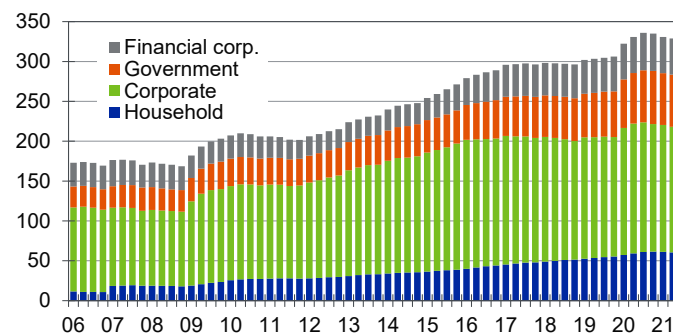
China's rapidly cooling housing market and slowing economy have brought financial system risks to the fore. Financial imbalances in the property market are a long-standing issue in China and have intensified during the pandemic and subsequent recovery. Borrowing by Chinese firms and households surged after the global financial crisis as global trade slowed and Beijing turned to credit-fueled stimulus to prop up growth. Debt levels jumped again in the last two years as the government stepped up credit support to help market entities survive the pandemic-induced slump (see Chart 1).

While accommodative credit conditions fueled a strong rebound in the residential market soon after the initial COVID-19 outbreak was brought under control, the property market began to slide last summer as Chinese officials shifted their focus toward taming house price and overall credit growth.

The correction in house prices and residential construction raises concerns over efforts to engineer a soft landing. Chinese regulators have stepped up crackdowns on housing speculation and introduced a series of policies to curb risks. They issued new fi-

Chart 1: China's Rising Debt Burden

China debt-to-GDP ratio across sectors, %



Sources: Institute of International Finance, Moody's Analytics

financing rules known as “the three red lines” in August 2020, restricting real estate firms with excessive leverage ratios from taking on more debt. They strengthened restrictions on bank lending to the real estate sector, prompting some banks to raise mortgage rates. Some local governments also tightened the eligibility for home purchases and set price caps for sales.

The impacts of the curbs have come in stronger than expected, with measures of house price appreciation, housing starts, and sales moderating significantly in the past few months (see Chart 2). Financing pressure on developers has mounted, leaving many in a liquidity crunch amid dented property sales, restrained borrowing, and elevated financing costs. In the first half of 2021, 12 Chinese real estate companies reported bond defaults amounting to CNY19.2 billion, or nearly one-fifth of total Chinese corporate bond defaults during the same period.

As developers struggle to repay debt, banks are seeing more bad loans. Through June, before house price growth began to slow in earnest, nonperforming loans to the real estate sector had already surged by almost one-third. The knock-on effects of a teetering property sector on homebuyers and contractors pose serious risks. China’s public finances are also highly intertwined with the housing market. Revenue from land sales and real estate-related taxes represent a substantial portion of government income. The property market chill in recent months has dealt a hard blow to real estate investment and land sales, putting pressure on government finances and weighing on fixed-asset investment.

The push to expand property tax trials amid a much-weakened market further signifies the government’s determination to crack down on housing speculation, but it will likely drive housing prices lower and exacerbate developers’ financial stress. Regulators have refrained from bailing out specific developers but have acted to shield homebuyers and stabilize economic growth.

Methodology

To investigate the implications of a property market meltdown in China on the economies of Asia and the rest of the world, we use the Moody’s Analytics Global Macroeconomic Model. It links more than 70 countries through trade, global financial

markets, exchange rates, sentiment, and capital flows.

In this exercise, we assume the impacts of the regulatory clamp-down on China’s real estate sector spiral out of control. As bad loans mount and Chinese banks race to cut exposures, Chinese credit markets freeze over and developers cut real estate investment in response to sharp funding declines. This in turn hits property-related industries, triggering defaults and layoffs in the construction industry and across the supply chain.

To simulate the stress of a severe crisis in Chinese property and financial markets on the Chinese and global economies, we shock Chinese equity and house prices, fixed investment, and household and business sentiment. The shocks begin in the fourth quarter of 2021 and last four to six quarters.

We then measure the fallout from the initial shock in China on the economies of the U.S., Southeast Asia, and the rest of the world in terms of GDP, stock prices, interest rates, exchange rates, and other economic and financial variables of interest. The result is a sharp contraction in real economic activity in China and a plunge in Chinese financial markets that propagates through the rest of the global economy.

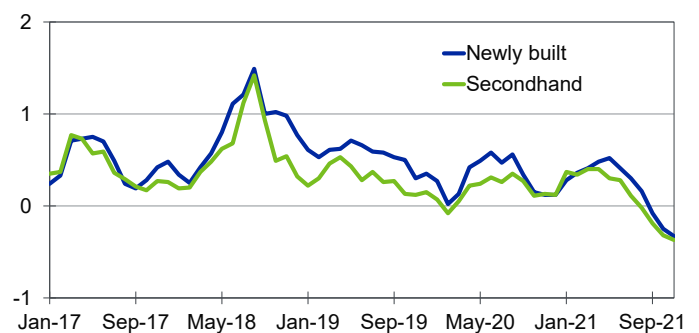
Trade flows, financial markets, exchange rates, consumer and business sentiment, and capital flows are the primary channels in the model that link the Chinese economy to the rest of the world. The severity of the impact on Asian and global economies depends on individual countries’ trade patterns, the volatility of exchange rates, the integration of their financial markets with global and Chinese economies, and their role in cross-border capital flows.

China’s debt crisis

The ramifications of a property market meltdown in China are far-reaching and entail large negative consequences for the world’s second-largest economy. In this scenario, China’s economy sinks into a deep recession

Chart 2: Property Market Woes

Residential building price, 70 med-large cities avg, % chg mo ago



Sources: Bloomberg, National Bureau of Statistics PRC, Moody’s Analytics

because of broad-based retreats in business investment and consumer and government spending caused by sharp declines in house prices, fixed investment, financial asset values, and property-linked government revenue losses.

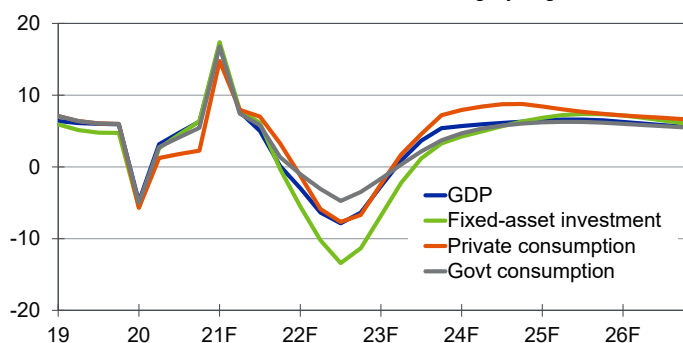
This scenario assumes a policy misstep by the Chinese government; as officials clamp down on the buildup of bad corporate debt, they grossly underestimate the severity of growing financial imbalances in the property sector. The extent of spillover effects on financial markets and land values exceeds policymakers’ expectations, creating a vicious feedback loop to the real economy. The government struggles to contain the problems because of the speed at which the shocks propagate and because of the immense scale of the property development sector and all of its downstream industries.

The crisis starts with a liquidity crunch among property developers after Chinese regulators tighten credit controls in the sector. The property market cools rapidly in early 2022 with house prices and sales plunging. Reduced project sales revenues—coupled with similar declines in other sources of funds, including bank loans and foreign investment—lead to a substantial drop in developer funds available for new real estate investment.

The slump in the housing market generates ripple effects across the supply chain and results in a pullback in manufacturing investment. With local governments relying on land sales and taxes for nearly 40% of their revenue, the pullback in real estate investment forces cuts in government consumption and infrastructure spending. The combined

Chart 3: Investment Collapse at Crisis' Heart

Real GDP, China debt crisis scenario, % change yr ago



Sources: National Bureau of Statistics PRC, Moody's Analytics

decline in real estate, manufacturing and infrastructure investment leads to a steep contraction in fixed-asset investment in the first three quarters of 2022 (see Chart 3).

The meltdown in property prices and investments triggers steep layoffs in construction, real estate services, and related manufacturing industries, causing rising unemployment and falling household incomes. Consumers cut spending and ramp up precautionary saving in response, prompting large declines in private consumption. By the time officials marshal a bailout of troubled firms and banks and ease credit conditions for households and businesses, the economic damage is palpable, with China's GDP contracting by nearly 8% in the first three quarters of 2022.

As capital flees the country, officials intervene in currency markets in a bid to stabilize the yuan. However, they quickly change course as dollar sales run down the bank's large stock of reserves. The People's Bank of China allows the yuan to float, triggering a steep depreciation.

While the economy hits bottom and begins to recover as officials orchestrate a restructuring of large real estate firms, the real estate and construction industry never fully recovers from the collapse. The slow recovery in residential construction and building-related industries and their reduced role as a driver of overall economic growth have a sizable effect on the aggregate economy, creating a permanent loss of incomes and production (see Chart 4). China's trading partners, particularly in the Asia-Pacific region, are also permanently scarred from the fall in Chinese demand.

Channels of transmission

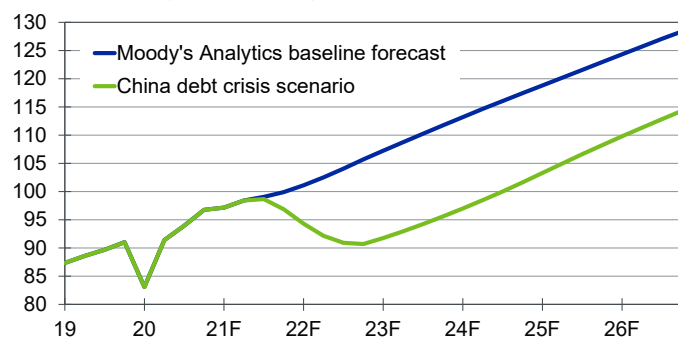
The crisis spreads quickly to the rest of Asia, where plunging Chinese imports and fears of financial contagion throw the region's economies into disarray. Outside of Hong Kong, Asian financial markets have little direct exposure to China's property sector. However, worries about the sharp decline in trade throw financial markets into a tailspin, compounding the hit to exports and acting as a corrosive on sentiment. Financial jitters are amplified by Asian firms' growing presence in China; faced with a decline in both export sales and domestic spending by Chinese firms and consumers, business leaders in the rest of Asia pare payrolls, catapulting the region's economies into recession.

As troubles in China's property sector spill into the rest of the Chinese economy, the blow to trade grows increasingly broad-based, denting demand not only for construction machinery, home appliances and building supplies produced in Asia but also for high-tech goods and intermediate inputs produced in the rest of the world.

The collapse in regional trade ripples through supply chains in Japan, South Korea and Taiwan. Reduced construction activity in China and the rest of Asia hammers prices of building materials and commodities, dealing a blow to

Chart 4: China Suffers Long-Run Blow

China real GDP, 2015CNY tril, SAAR



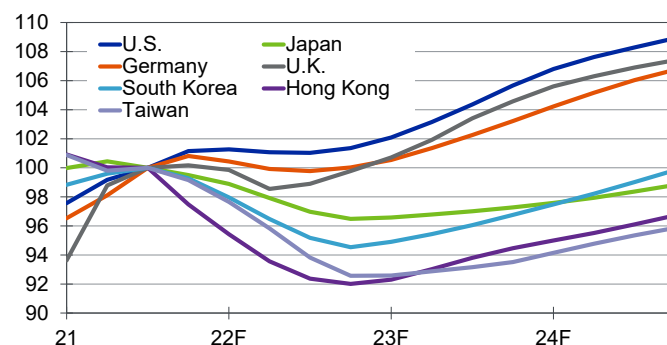
Sources: National Bureau of Statistics PRC, Moody's Analytics

commodity producers Australia, New Zealand and Indonesia. The drop in trade also hits global exporters of machinery, energy and high-tech goods beyond Asia, with the U.S., German and U.K. economies slowing substantially as China's property market woes deepen (see Charts 5 and 6). Though the downturn is less steep than that experienced by Asian economies, the U.S. and German economies contract in the second and third quarters of 2022 before stabilizing by the end of the year.

Despite U.S. and European financial institutions' limited exposure to China's property sector, China is a key export market for U.S. farm and construction machinery as well as autos and aircraft produced in the U.S. and Europe. As the crisis in China deepens, U.S. and European tech firms that export directly to China or have large operations within the country cut investment in both China and the U.S., causing stock prices to tumble and firms to stop hiring. By the middle of 2022, when

Chart 5: Asia Hit Is More Severe

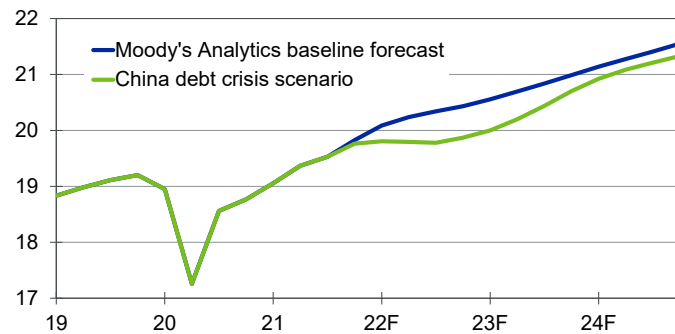
Real GDP, China debt crisis scenario, 2021Q3=100



Source: Moody's Analytics

Chart 6: U.S. Economy Slips Into Recession

U.S. real GDP, 2012\$ tril



Sources: BEA, Moody's Analytics

the recession in Asia reaches a peak, the U.S., U.K. and German economies slide into recession, accompanied by a sharp slowdown in the rest of Europe (see Chart 7).

Southeast Asia

Economic and financial turmoil in China sends shock waves throughout Southeast Asia (see Chart 8). Southeast Asian economies have varied vulnerabilities to the shock depending on the depth of their trade and financial linkages with China. Hong Kong and Taiwan rely the most on Mainland China. Demand shocks and supply disruptions in Mainland China have deep ramifications for Hong Kong's logistics, retail and hospitality industries. Hong Kong's financial services—a critical source of capital for Chinese firms—absorb heavy losses. High-tech manufacturing, Taiwan's main driver of growth, tumbles amid the global uncertainty. Taiwan hosts the corporate headquarters of several of China's largest manufacturers. Shortages

of IT equipment and components spread globally and cascade down to other important industries such as autos and medical equipment manufacturing.

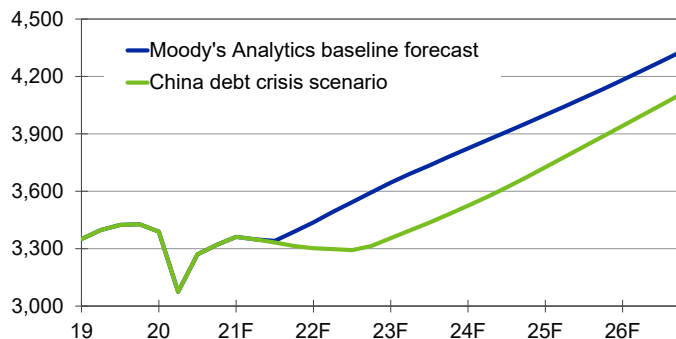
Vietnam, Singapore, Malaysia and Laos experience especially large downturns owing to their increasing share of Chinese exports—textiles, computers and electronics, and high-tech components in Vietnam; integrated circuits and refined petroleum in Singapore; integrated circuits, refined petroleum production, and palm oil in Malaysia; and chemical compounds and timber in Laos. High systemic financial risks in Laos and Myanmar especially stress currencies and consumer confidence. Foreign direct investments to the region shrink as the future of the Asia-Pacific supply chain becomes uncertain.

Thailand, Cambodia, the Philippines and Indonesia are less reliant on direct exports to China. However, the fallout from China's contracting economy stretches beyond direct-trade linkages; supply-chain linkages to

third-party countries magnify individual countries' exposures. For example, Malaysia also exports to Japan, Singapore and other markets. As a result, China's downturn affects Malaysia not only directly by reducing demand for imports but also indirectly by hurting Malaysia's exports to Japan, Singapore and other markets. As

Chart 8: Permanent GDP Gap in ASEAN

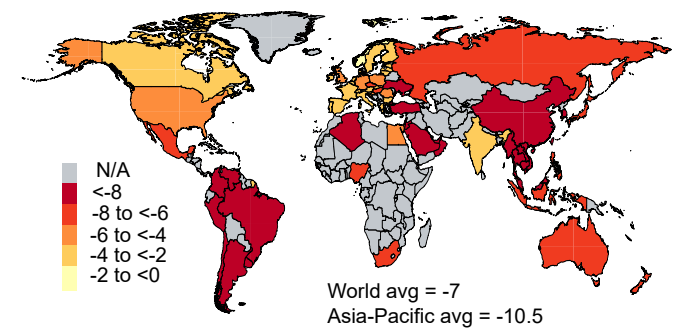
ASEAN real GDP, 2012\$ bil, SAAR



Sources: National statistical offices, Moody's Analytics

Chart 7: Global Shock Waves

Real GDP, peak qtr difference from baseline, %



Source: Moody's Analytics

the negative shock in China spreads to Japan and Singapore, demand for Malaysia's exports contracts further.

Financial linkages further transmit the recession in China to Southeast Asian markets. Movements of Southeast Asian financial markets are highly correlated with China, especially in times of economic duress. Given the tight integration of capital markets across the region, financial markets react immediately to the Chinese stock market turbulence. Capital flows out of these markets to safe harbors such as the U.S. and Germany, causing currencies in Southeast Asia to depreciate sharply. The drop in currency values is not enough to offset the fall in foreign demand.

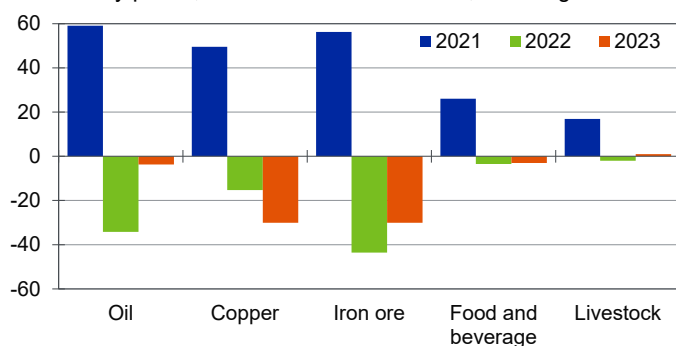
Latin America and beyond

The last time China's property sector slowed, the 2004 to 2014 commodities boom went bust, pushing Brazil into a painful two-year recession and making things difficult for economies regionwide. The present exercise, which entails an even greater blow to commodity prices and regional economies' terms of trade, throws Latin America into a downward spiral, with most economies experiencing a deep contraction in economic activity, rising inflation, and a spike in joblessness.

Latin America's reliance on commodity exports, particularly on trade with China, has only increased within the past two decades, heightening its vulnerability to a China-centric economic shock. Mexico is an exception to this trend, but investments by Chinese firms in industries as diverse as energy, autos and electronics have grown in recent years and create exposure to a downturn in China.

Chart 9: China Tremors Hit Commodities

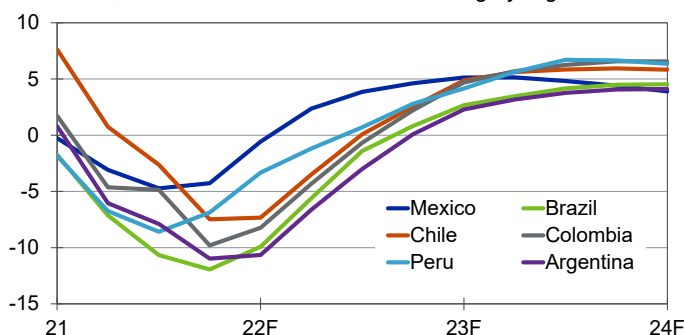
Commodity prices, China debt crisis scenario, % change



Source: Moody's Analytics

Chart 10: Latin America Deeply Wounded

Real GDP, China debt crisis scenario, % change yr ago



Source: Moody's Analytics

In this scenario, China's economic troubles exact an especially severe toll on Latin America given the large negative impacts on oil prices, agricultural commodities, and industrial metal exports and prices (see Chart 9). Latin America's eight largest economies contract severely as falling commodity prices erode the terms of trade, and capital flight drives down currencies and pushes up inflation. The blow is most severe in commodity-reliant Brazil and Argentina, which rely on Chinese demand for an array of agricultural commodities, metals and energy products, while Mexico's economy suffers a smaller decline curbed by the relatively small downturn in the U.S. Chile, Peru and Colombia are slightly better off given more stable currencies and stronger fiscal armor, but the collapse in both metal and oil prices lands heavily (see Chart 10). Venezuela's economy weakens further as oil revenues decline.

The repercussions of China's debt crisis go well beyond Latin America. Emerging

economies large and small are roiled by the meltdown in Chinese financial markets and the subsequent contraction in trade and international capital flows. These include oil and metal producers such as Russia, Nigeria, Saudi Arabia and South Africa as well as emerging economies with persistent current account deficits such as Turkey and India. Emerging European economies also experience sharp contractions in GDP as global credit spreads tighten, pushing up sovereign yields in peripheral Europe.

A delicate dance

Under our baseline forecast, we expect Chinese officials to work through property market troubles and avoid a hard landing. The real estate sector's economic heft and importance to the financial system underline the urgency of doing so; growing headwinds in domestic consumption and mounting supply bottlenecks only emphasize the need to get policy right. But

risks remain. The central bank has pumped liquidity into the banking system to safeguard financial stability, but slumps in residential sales and property investment have yet to show signs of stabilizing.

Even if the Chinese economy manages to navigate property market troubles this time around, the risk of a sharper property market downturn will linger. Chinese homebuyers' expectations are highly sensitive to policy signals. Regulatory clamp-downs could trigger panic selling and push developers into a credit crunch. With the Chinese economy facing multiple growth headwinds in its domestic market and international relations, the government's push to wean the economy off of real estate and investment-driven growth will prove a particularly challenging proposition. Policy missteps on either front could lead to a rapid deterioration in credit conditions, with severe consequences for the Chinese and global economies.

Appendix 1: China Debt Crisis: China and Southeast Asia

		Gross domestic product, % change				
		2022	2023	2024	2025	2026
China	Baseline	4.8	6.0	5.3	4.8	4.5
	Debt crisis scenario	-5.9	1.8	6.0	6.5	5.9
	Difference from baseline, ppt	-10.7	-4.2	0.7	1.7	1.4
Hong Kong	Baseline	1.9	4.7	2.1	1.4	1.5
	Debt crisis scenario	-6.3	0.1	2.6	2.7	2.6
	Difference from baseline, ppt	-8.2	-4.6	0.5	1.2	1.0
Taiwan	Baseline	3.6	1.4	1.6	1.0	0.8
	Debt crisis scenario	-5.0	-2.0	2.2	2.2	1.8
	Difference from baseline, ppt	-8.6	-3.4	0.5	1.2	1.0
Singapore	Baseline	3.9	3.4	2.4	2.0	1.7
	Debt crisis scenario	-2.8	0.8	2.9	3.3	2.8
	Difference from baseline, ppt	-6.7	-2.7	0.5	1.2	1.0
Malaysia	Baseline	5.0	5.3	4.3	4.7	4.8
	Debt crisis scenario	-1.8	2.6	4.8	6.0	5.9
	Difference from baseline, ppt	-6.8	-2.7	0.5	1.3	1.1
Thailand	Baseline	2.8	5.1	3.7	1.9	1.9
	Debt crisis scenario	-2.9	3.0	4.2	3.1	3.0
	Difference from baseline, ppt	-5.7	-2.1	0.5	1.2	1.0
Indonesia	Baseline	5.1	5.7	4.5	4.6	4.6
	Debt crisis scenario	-0.0	4.0	5.1	5.8	5.6
	Difference from baseline, ppt	-5.2	-1.7	0.5	1.3	1.1
Philippines	Baseline	6.1	6.0	8.6	8.6	8.5
	Debt crisis scenario	0.9	4.3	9.2	10.0	9.6
	Difference from baseline, ppt	-5.2	-1.7	0.6	1.3	1.1
Vietnam	Baseline	4.1	7.4	6.0	6.0	5.8
	Debt crisis scenario	-2.6	4.7	6.5	7.3	6.9
	Difference from baseline, ppt	-6.8	-2.7	0.5	1.3	1.1
		Unemployment rate, %				
		2022	2023	2024	2025	2026
China	Baseline	3.9	4.0	4.0	4.0	4.0
	Debt crisis scenario	5.7	5.8	5.4	5.1	4.8
	Difference from baseline, ppt	1.8	1.8	1.4	1.0	0.7
Hong Kong	Baseline	4.4	4.1	3.8	3.7	3.5
	Debt crisis scenario	6.4	6.3	5.7	5.1	4.5
	Difference from baseline, ppt	2.0	2.2	1.9	1.4	0.9
Taiwan	Baseline	3.5	3.5	3.9	4.0	3.9
	Debt crisis scenario	4.6	4.7	4.7	4.6	4.5
	Difference from baseline, ppt	1.1	1.2	0.8	0.6	0.6
Singapore	Baseline	2.3	2.1	2.1	2.1	2.1
	Debt crisis scenario	2.7	2.8	2.5	2.3	2.2
	Difference from baseline, ppt	0.4	0.7	0.4	0.2	0.1
Malaysia	Baseline	3.4	3.2	3.2	3.2	3.2
	Debt crisis scenario	5.0	4.5	4.2	4.0	3.7
	Difference from baseline, ppt	1.6	1.4	1.1	0.8	0.6
Thailand	Baseline	1.6	1.5	1.3	1.1	1.1
	Debt crisis scenario	2.2	1.9	1.5	1.3	1.2
	Difference from baseline, ppt	0.6	0.4	0.2	0.2	0.2
Indonesia	Baseline	5.3	5.3	5.4	5.4	5.4
	Debt crisis scenario	6.9	7.0	6.9	6.8	6.7
	Difference from baseline, ppt	1.6	1.7	1.6	1.4	1.2
Philippines	Baseline	6.9	6.3	5.7	5.4	5.3
	Debt crisis scenario	7.6	7.3	6.5	5.9	5.6
	Difference from baseline, ppt	0.7	1.0	0.8	0.5	0.4
Vietnam	Baseline	2.2	2.1	2.0	2.0	2.0
	Debt crisis scenario	3.0	2.6	2.3	2.2	2.1
	Difference from baseline, ppt	0.7	0.5	0.3	0.2	0.1

Source: Moody's Analytics

Appendix 1: China Debt Crisis: China and Southeast Asia (Cont.)

		Stock price index, % change				
		2022	2023	2024	2025	2026
China	Baseline	3.4	9.8	3.3	2.3	4.4
	Debt crisis scenario	-12.7	0.7	7.3	7.6	6.6
	Difference from baseline, ppt	-16.0	-9.1	4.0	5.3	2.1
Hong Kong	Baseline	-2.4	8.8	2.7	3.5	4.4
	Debt crisis scenario	-22.6	16.1	12.8	5.5	1.9
	Difference from baseline, ppt	-20.3	7.3	10.1	2.1	-2.5
Taiwan	Baseline	3.2	2.3	3.3	3.1	3.8
	Debt crisis scenario	-6.2	-0.9	14.1	-0.8	-2.2
	Difference from baseline, ppt	-9.4	-3.1	10.8	-4.0	-6.0
Indonesia	Baseline	4.9	5.9	2.6	4.3	4.2
	Debt crisis scenario	-19.5	24.7	13.3	7.6	3.7
	Difference from baseline, ppt	-24.3	18.8	10.7	3.3	-0.5
Malaysia	Baseline	2.2	-4.2	3.7	11.9	9.4
	Debt crisis scenario	-22.7	2.6	7.5	13.0	9.8
	Difference from baseline, ppt	-24.9	6.9	3.8	1.2	0.4
Philippines	Baseline	3.8	5.5	8.2	6.0	1.3
	Debt crisis scenario	-9.8	12.2	9.1	5.9	3.0
	Difference from baseline, ppt	-13.7	6.8	0.8	-0.1	1.7
Singapore	Baseline	7.8	13.4	12.3	11.5	11.3
	Debt crisis scenario	-9.9	28.7	20.3	12.6	8.8
	Difference from baseline, ppt	-17.6	15.3	8.1	1.1	-2.5
Thailand	Baseline	17.1	13.8	8.7	6.0	5.4
	Debt crisis scenario	-3.0	19.4	14.6	7.0	6.8
	Difference from baseline, ppt	-20.1	5.6	5.9	1.0	1.4
Vietnam	Baseline	-7.2	3.6	2.3	6.3	6.1
	Debt crisis scenario	-28.8	11.2	9.4	8.8	7.7
	Difference from baseline, ppt	-21.7	7.7	7.0	2.6	1.6
		USD exchange rate				
		2022	2023	2024	2025	2026
China	Baseline	6.7	6.8	6.8	6.8	6.9
	Debt crisis scenario	6.9	7.0	7.0	7.0	7.0
	Difference from baseline, %	2.7	3.4	2.7	2.1	1.5
Hong Kong	Baseline	7.8	7.8	7.8	7.8	7.8
	Debt crisis scenario	7.8	7.8	7.8	7.8	7.8
	Difference from baseline, %	0.0	0.0	0.0	0.0	0.0
Taiwan	Baseline	27.1	26.1	26.2	26.5	27.0
	Debt crisis scenario	27.8	26.6	26.3	26.6	27.3
	Difference from baseline, %	2.8	1.8	0.2	0.2	1.2
Indonesia	Baseline	1.4	1.4	1.4	1.4	1.4
	Debt crisis scenario	1.4	1.5	1.4	1.4	1.4
	Difference from baseline, %	2.3	2.2	0.9	0.3	0.3
Malaysia	Baseline	4.2	4.2	4.2	4.2	4.2
	Debt crisis scenario	4.9	4.8	4.3	4.1	4.1
	Difference from baseline, %	18.2	14.0	1.1	-1.2	-1.0
Philippines	Baseline	31.6	30.7	30.5	30.6	30.8
	Debt crisis scenario	34.7	33.3	31.9	31.2	30.9
	Difference from baseline, %	9.7	8.3	4.6	2.0	0.3
Singapore	Baseline	12820.2	12366.8	12837.6	12983.8	12969.9
	Debt crisis scenario	15546.9	13802.3	13113.9	13125.6	13111.5
	Difference from baseline, %	21.3	11.6	2.2	1.1	1.1
Thailand	Baseline	49.3	48.9	48.6	48.5	48.4
	Debt crisis scenario	52.8	50.6	49.1	48.5	48.4
	Difference from baseline, %	7.0	3.5	0.9	0.0	0.0
Vietnam	Baseline	23008.4	23057.1	23148.3	23273.6	23397.5
	Debt crisis scenario	24599.5	23727.5	23429.7	23362.8	23411.7
	Difference from baseline, %	6.9	2.9	1.2	0.4	0.1

Source: Moody's Analytics

Appendix 2: China Debt Crisis: U.S., U.K., Germany, Japan, South Korea

		Gross domestic product, % change				
		2022	2023	2024	2025	2026
U.S.	Baseline	4.3	2.4	2.8	2.5	2.2
	Debt crisis scenario	2.0	2.6	4.0	2.4	2.2
	Difference from baseline, ppt	-2.3	0.2	1.2	-0.1	-0.0
U.K.	Baseline	5.5	3.5	1.9	1.0	1.2
	Debt crisis scenario	1.1	3.4	3.8	1.8	1.7
	Difference from baseline, ppt	-4.4	-0.1	1.9	0.8	0.5
Germany	Baseline	4.2	2.5	2.3	1.5	1.0
	Debt crisis scenario	1.2	1.8	3.6	2.3	1.5
	Difference from baseline, ppt	-3.0	-0.7	1.3	0.8	0.4
Japan	Baseline	2.5	1.2	1.0	0.8	0.7
	Debt crisis scenario	-2.4	-0.7	1.3	1.9	1.7
	Difference from baseline, ppt	-4.9	-1.8	0.3	1.0	1.0
South Korea	Baseline	3.3	2.4	2.5	1.9	1.6
	Debt crisis scenario	-3.4	-0.3	3.0	3.2	2.6
	Difference from baseline, ppt	-6.7	-2.7	0.5	1.2	1.0
		Unemployment rate, %				
		2022	2023	2024	2025	2026
U.S.	Baseline	3.7	3.5	3.7	4.0	4.2
	Debt crisis scenario	5.0	4.5	3.9	4.3	4.5
	Difference from baseline, ppt	1.3	1.0	0.2	0.3	0.3
U.K.	Baseline	5.7	5.0	4.8	4.6	4.6
	Debt crisis scenario	5.9	5.7	5.3	5.0	4.7
	Difference from baseline, ppt	0.3	0.8	0.6	0.3	0.2
Germany	Baseline	5.4	5.3	5.3	5.3	5.3
	Debt crisis scenario	5.9	6.2	6.0	5.8	5.6
	Difference from baseline, ppt	0.5	0.9	0.7	0.5	0.3
Japan	Baseline	2.8	2.6	2.4	2.3	2.2
	Debt crisis scenario	3.2	3.2	2.9	2.6	2.4
	Difference from baseline, ppt	0.4	0.6	0.5	0.4	0.2
South Korea	Baseline	3.9	3.8	3.7	3.6	3.6
	Debt crisis scenario	4.6	4.8	4.4	4.0	3.8
	Difference from baseline, ppt	0.7	1.0	0.7	0.4	0.2

Source: Moody's Analytics

Appendix 2: China Debt Crisis: U.S., U.K., Germany, Japan, South Korea (Cont.)

		Stock price index, % change				
		2022	2023	2024	2025	2026
U.S.	Baseline	-2.9	-3.1	2.1	6.0	4.8
	Debt crisis scenario	-17.2	8.4	11.6	8.1	5.7
	Difference from baseline, ppt	-14.3	11.5	9.5	2.2	0.9
U.K.	Baseline	-1.6	-0.7	1.9	3.9	3.6
	Debt crisis scenario	-13.0	8.0	5.6	4.6	3.3
	Difference from baseline, ppt	-11.5	8.7	3.7	0.7	-0.3
Germany	Baseline	-1.1	-2.0	0.4	1.8	1.5
	Debt crisis scenario	-20.2	10.7	10.2	2.6	1.5
	Difference from baseline, ppt	-19.1	12.7	9.8	0.8	0.0
Japan	Baseline	-0.0	1.7	2.2	2.3	1.9
	Debt crisis scenario	-14.0	12.8	7.5	2.6	1.9
	Difference from baseline, ppt	-14.0	11.1	5.3	0.3	0.0
South Korea	Baseline	-3.9	-2.1	2.9	5.0	3.9
	Debt crisis scenario	-18.9	-7.9	9.4	13.1	8.1
	Difference from baseline, ppt	-15.0	-5.8	6.5	8.1	4.2
		Exchange rate				
		2022	2023	2024	2025	2026
U.S. broad dollar index, nominal	Baseline	107.9	101.4	99.8	99.2	98.4
	Debt crisis scenario	109.6	100.1	98.7	98.9	99.0
	Difference from baseline, %	1.6	-1.3	-1.1	-0.3	0.5
Euro-dollar exchange rate: USD per EUR	Baseline	1.3	1.3	1.4	1.3	1.4
	Debt crisis scenario	1.2	1.4	1.4	1.4	1.3
	Difference from baseline, %	-0.9	1.7	1.4	0.2	-1.5
Japan USD exchange rate	Baseline	107.9	106.4	105.7	105.5	105.3
	Debt crisis scenario	95.1	88.4	93.3	100.6	102.2
	Difference from baseline, %	-11.8	-16.9	-11.7	-4.7	-3.0
South Korea USD exchange rate	Baseline	1102.2	1041.7	1021.0	1007.9	998.3
	Debt crisis scenario	1282.4	1212.2	1070.2	1027.6	1017.9
	Difference from baseline, %	16.4	16.4	4.8	2.0	2.0

Source: Moody's Analytics

Appendix 3: China Debt Crisis: Latin America

		Gross domestic product, % change				
		2022	2023	2024	2025	2026
Mexico	Baseline	3.5	3.3	2.8	2.3	2.8
	Debt crisis scenario	-3.2	4.0	4.6	3.6	3.6
	Difference from baseline, ppt	-6.7	0.7	1.8	1.3	0.8
Brazil	Baseline	3.0	3.0	2.7	2.8	2.9
	Debt crisis scenario	-9.9	-0.9	4.2	4.8	4.5
	Difference from baseline, ppt	-12.9	-4.0	1.4	2.0	1.6
Argentina	Baseline	2.6	3.0	3.5	3.5	3.7
	Debt crisis scenario	-8.9	-1.9	3.8	4.2	4.6
	Difference from baseline, ppt	-11.5	-4.9	0.3	0.7	1.0
Chile	Baseline	3.7	2.8	3.1	3.0	2.9
	Debt crisis scenario	-4.2	1.0	5.8	5.5	4.7
	Difference from baseline, ppt	-8.0	-1.9	2.8	2.5	1.7
Colombia	Baseline	3.7	3.3	3.7	3.7	3.9
	Debt crisis scenario	-6.9	0.4	6.3	6.3	5.6
	Difference from baseline, ppt	-10.6	-2.9	2.6	2.6	1.8
Peru	Baseline	3.1	3.6	3.6	3.4	3.4
	Debt crisis scenario	-6.4	1.6	6.3	5.5	5.1
	Difference from baseline, ppt	-9.6	-2.0	2.8	2.1	1.7
		Unemployment rate, %				
		2022	2023	2024	2025	2026
Mexico	Baseline	4.8	4.6	4.5	4.5	4.4
	Debt crisis scenario	6.1	5.9	5.1	4.7	4.4
	Difference from baseline, ppt	1.3	1.2	0.6	0.2	0.0
Brazil	Baseline	12.1	11.5	10.8	10.0	9.1
	Debt crisis scenario	14.9	15.4	13.8	11.8	10.4
	Difference from baseline, ppt	2.8	3.9	2.9	1.9	1.3
Argentina	Baseline	9.2	8.9	8.7	8.5	8.3
	Debt crisis scenario	12.1	14.4	13.6	12.5	11.7
	Difference from baseline, ppt	2.9	5.4	4.9	4.0	3.4
Chile	Baseline	7.4	7.2	7.0	6.8	6.8
	Debt crisis scenario	9.8	10.9	9.3	7.7	7.0
	Difference from baseline, ppt	2.4	3.7	2.3	0.9	0.2
Colombia	Baseline	12.0	11.3	10.6	10.1	9.8
	Debt crisis scenario	16.9	17.2	13.9	12.5	11.6
	Difference from baseline, ppt	4.9	5.9	3.3	2.4	1.8
Peru	Baseline	4.7	4.2	3.9	3.8	3.8
	Debt crisis scenario	7.1	7.7	6.2	4.8	4.1
	Difference from baseline, ppt	2.3	3.5	2.3	1.0	0.3

Source: Moody's Analytics

Appendix 3: China Debt Crisis: Latin America (Cont.)

		Stock price index, % change				
		2022	2023	2024	2025	2026
Mexico	Baseline	7.2	4.7	4.8	5.7	5.9
	Debt crisis scenario	-19.6	23.8	11.2	5.1	5.6
	Difference from baseline, ppt	-26.8	19.1	6.4	-0.5	-0.3
Brazil	Baseline	1.1	6.3	5.3	4.8	4.9
	Debt crisis scenario	-30.9	3.5	12.4	12.9	10.9
	Difference from baseline, ppt	-31.9	-2.8	7.1	8.1	6.1
Argentina	Baseline	45.4	50.5	47.7	36.1	25.5
	Debt crisis scenario	-55.0	27.3	152.2	85.1	46.1
	Difference from baseline, ppt	-100.4	-23.2	104.5	49.0	20.5
Chile	Baseline	10.2	8.8	6.4	5.5	4.6
	Debt crisis scenario	-6.7	5.0	11.2	10.3	8.2
	Difference from baseline, ppt	-16.9	-3.8	4.8	4.8	3.5
Colombia	Baseline	10.7	11.9	8.6	10.2	9.4
	Debt crisis scenario	-25.5	24.1	23.4	12.7	9.6
	Difference from baseline, ppt	-36.2	12.2	14.8	2.6	0.1
Peru	Baseline	-5.8	2.2	3.4	8.7	8.7
	Debt crisis scenario	-28.6	3.7	14.3	14.7	12.0
	Difference from baseline, ppt	-22.8	1.5	10.9	6.0	3.4
		USD exchange rate				
		2022	2023	2024	2025	2026
Mexico	Baseline	20.6	20.9	21.1	21.3	21.4
	Debt crisis scenario	22.1	21.0	21.2	21.3	21.4
	Difference from baseline, %	7.6	0.7	0.3	0.0	-0.0
Brazil	Baseline	5.4	5.4	5.5	5.6	5.6
	Debt crisis scenario	7.0	6.3	5.8	5.7	5.7
	Difference from baseline, %	30.5	15.5	6.1	2.9	0.7
Argentina	Baseline	123.5	160.9	192.5	220.5	247.0
	Debt crisis scenario	184.4	227.9	243.0	254.0	270.9
	Difference from baseline, %	49.3	41.6	26.2	15.2	9.7
Chile	Baseline	779.9	776.9	776.1	774.9	774.6
	Debt crisis scenario	950.8	903.9	844.9	808.0	789.6
	Difference from baseline, %	21.9	16.3	8.9	4.3	1.9
Colombia	Baseline	3838.7	3855.8	3893.7	3925.0	3956.1
	Debt crisis scenario	4353.1	4509.4	4473.3	4367.5	4275.6
	Difference from baseline, %	13.4	17.0	14.9	11.3	8.1
Peru	Baseline	3.9	3.8	3.8	3.8	3.8
	Debt crisis scenario	4.6	4.4	4.1	3.9	3.8
	Difference from baseline, %	19.7	14.7	8.0	3.9	1.8

Source: Moody's Analytics

Appendix 4: China Debt Crisis: Select Emerging Markets

		Gross domestic product, % change				
		2022	2023	2024	2025	2026
Russia	Baseline	1.7	1.5	1.6	1.4	1.3
	Debt crisis scenario	-4.0	-0.6	2.1	2.5	2.2
	Difference from baseline, ppt	-5.7	-2.1	0.5	1.0	0.9
Turkey	Baseline	3.1	3.3	3.1	3.2	3.5
	Debt crisis scenario	-4.1	0.9	4.8	5.9	4.4
	Difference from baseline, ppt	-7.2	-2.4	1.8	2.7	0.9
India	Baseline	9.5	6.3	6.5	6.3	6.0
	Debt crisis scenario	7.5	6.3	6.8	6.7	6.4
	Difference from baseline, ppt	-1.9	0.0	0.3	0.4	0.4
Nigeria	Baseline	2.8	2.9	4.8	4.1	4.4
	Debt crisis scenario	-1.3	1.3	5.8	4.4	4.7
	Difference from baseline, ppt	-4.2	-1.6	1.0	0.3	0.2
South Africa	Baseline	3.0	0.3	0.2	1.1	2.2
	Debt crisis scenario	-0.6	-3.4	0.5	2.9	2.7
	Difference from baseline, ppt	-3.5	-3.7	0.2	1.8	0.5
		Unemployment rate, %				
		2022	2023	2024	2025	2026
Russia	Baseline	5.6	5.6	5.7	5.7	5.6
	Debt crisis scenario	6.4	6.9	6.9	6.7	6.6
	Difference from baseline, ppt	0.8	1.3	1.2	1.0	0.9
Turkey	Baseline	10.7	10.2	9.9	9.8	9.6
	Debt crisis scenario	17.1	14.6	11.9	10.5	9.8
	Difference from baseline, ppt	6.4	4.4	1.9	0.7	0.2
India	Baseline	10.5	10.0	9.8	9.8	9.7
	Debt crisis scenario	11.0	10.2	9.9	9.8	9.8
	Difference from baseline, ppt	0.5	0.2	0.1	0.0	0.0
Nigeria	Baseline	18.1	17.3	16.5	15.6	14.9
	Debt crisis scenario	19.6	19.6	18.2	16.8	15.6
	Difference from baseline, ppt	1.5	2.3	1.7	1.1	0.7
South Africa	Baseline	25.0	26.4	27.6	27.3	26.6
	Debt crisis scenario	26.1	30.0	30.6	28.0	26.7
	Difference from baseline, ppt	1.1	3.5	3.1	0.8	0.1

Source: Moody's Analytics

Appendix 4: China Debt Crisis: Select Emerging Markets (Cont.)

		Stock price index, % change				
		2022	2023	2024	2025	2026
Russia	Baseline	15.4	3.6	-1.2	0.9	3.5
	Debt crisis scenario	-24.3	20.7	13.9	3.3	4.5
	Difference from baseline, ppt	-39.6	17.1	15.1	2.4	1.0
Turkey	Baseline	0.6	6.4	4.5	1.7	5.2
	Debt crisis scenario	-24.6	18.3	13.0	9.5	7.4
	Difference from baseline, ppt	-25.3	11.9	8.5	7.8	2.2
India	Baseline	3.1	0.3	1.4	3.5	2.3
	Debt crisis scenario	-7.4	9.2	3.6	4.2	2.4
	Difference from baseline, ppt	-10.4	8.9	2.2	0.7	0.1
Nigeria	Baseline	3.1	2.5	5.2	5.3	4.7
	Debt crisis scenario	-10.1	4.0	10.2	8.8	8.1
	Difference from baseline, ppt	-13.2	1.5	5.0	3.5	3.4
South Africa	Baseline	-2.5	-3.9	4.1	6.4	7.4
	Debt crisis scenario	-27.9	-8.4	17.9	13.8	9.2
	Difference from baseline, ppt	-25.4	-4.5	13.9	7.4	1.8
		USD exchange rate				
		2022	2023	2024	2025	2026
Russia	Baseline	66.2	59.5	53.0	47.3	44.2
	Debt crisis scenario	75.8	65.0	58.2	53.9	51.1
	Difference from baseline, %	14.6	9.3	9.7	14.1	15.5
Turkey	Baseline	9.2	9.0	8.8	8.7	8.7
	Debt crisis scenario	10.4	10.2	9.8	9.5	9.3
	Difference from baseline, %	13.3	13.3	11.2	9.1	7.4
India	Baseline	74.9	75.9	77.1	78.2	79.3
	Debt crisis scenario	79.9	79.4	79.3	79.2	79.4
	Difference from baseline, %	6.7	4.6	2.9	1.4	0.1
Nigeria	Baseline	399.1	450.0	483.6	512.1	538.0
	Debt crisis scenario	556.6	542.9	558.8	577.1	595.9
	Difference from baseline, %	39.5	20.6	15.5	12.7	10.8
South Africa	Baseline	11.7	10.6	10.1	9.8	9.6
	Debt crisis scenario	14.8	12.8	10.9	10.4	10.3
	Difference from baseline, %	26.8	21.3	7.9	6.7	8.0

Source: Moody's Analytics

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