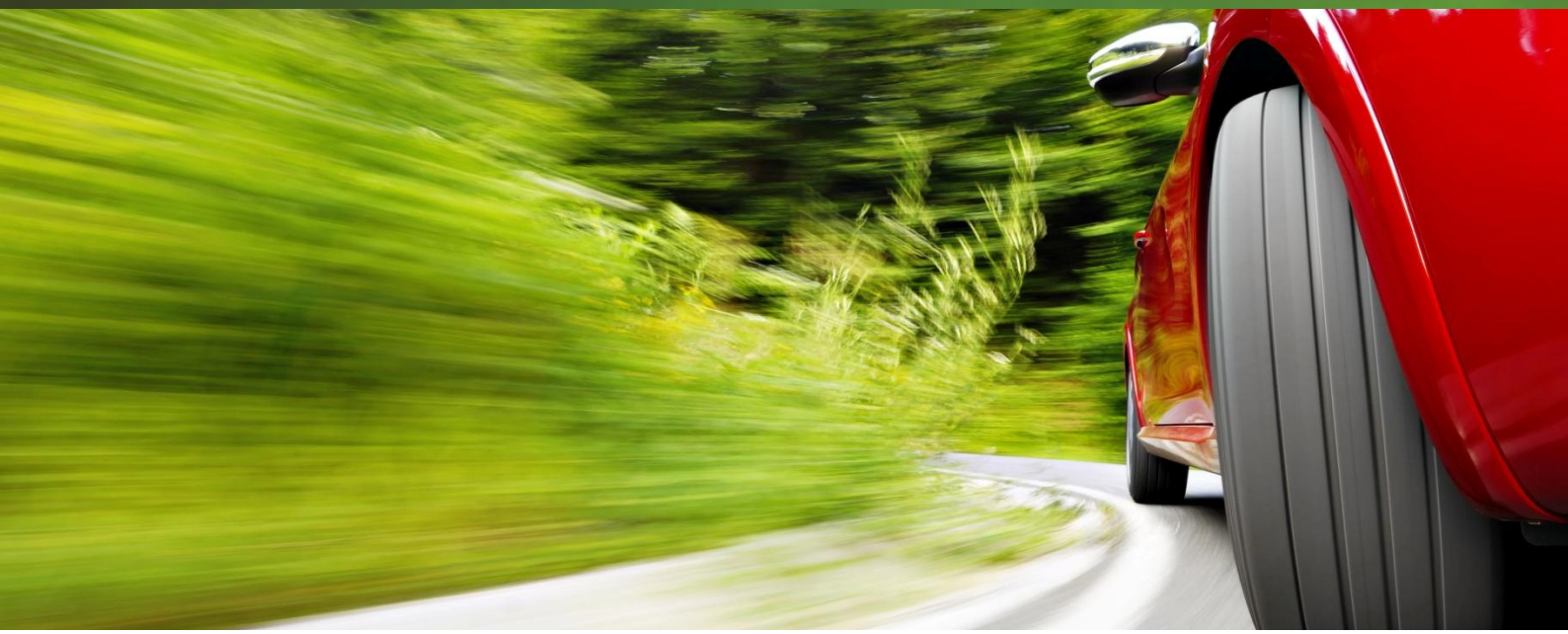
Special Report

Asia leverage – After the boom



Highlights

- We present an analysis of leverage in 10 key Asian economies, identifying stress points and areas of potential strength. This builds on our report on Asian leverage published in 2013, when some economies were still experiencing credit booms. Our focus now turns to pockets of stress amid subdued credit and GDP growth.

- Our preferred measure of leverage risk, the gap between credit and GDP growth, is still flashing red warning signals for China and Hong Kong. We expand our study to include key leverage metrics for other emerging and advanced markets, providing a broader perspective for financial stability risks in Asia.

- China's leverage remains the biggest source of concern, in our view. We examine existing and potential future policies that China may adopt to deal with its rising bad loan problem. The debt landscape is more complicated today than it was following the 1990s credit boom.

- Our analysis of external debt vulnerabilities shows that most Asian economies are in a sound position, though less so than a decade ago. Government debt metrics also appear manageable, creating room to use pro-cyclical fiscal policy if needed.

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Overview – China still tops our worry list

Excessive credit growth lasted for too long

Post-crisis stimulus through credit growth lasted for longer than necessary

This study builds on our original in-depth analysis of leverage in Asia (*SCout, 1 July 2013, 'Asia leverage uncovered'*). We explore how leverage risks in key Asian economies have evolved since then from three perspectives: (1) our preferred measure of leverage risk, credit growth minus nominal GDP growth; (2) an international comparison versus other emerging and developed markets; and (3) external debt vulnerabilities. Given China's central importance to the Asian economy, we also feature a study on China's experience with resolving the NPLs created during the credit excesses of the 1990s, and discuss the similarities and differences in policy responses between then and now (see *China risks – Navigating treacherous waters*). This is particularly relevant now as policy makers increase their efforts to deal with the consequences of the six years of excessive credit growth.

We believe that Asia's credit boom is over; we are in a consolidation phase as credit growth slows. Governments and companies are dealing with the consequences of past booms. China remains the biggest concern in Asia in terms of leverage, in our view. We believe that while the rate of credit growth has peaked, credit growth may continue to exceed GDP growth. This means that China's ratio of total debt to GDP may keep rising, albeit at a slower pace.

China's credit-GDP growth gap is now only slightly above our 'safe' threshold of 5ppt

China's rate of credit growth over GDP growth, which we think is the best gauge of leverage risk, has declined for eight consecutive quarters – it stands at 5.4ppt, slightly above our 'safe' threshold of 5ppt and down from a peak of 8.8ppt at end-2013. This is exceeded in Asia only by Hong Kong, at 7.5ppt; Hong Kong's high number reflects increased financing of activity on the mainland, which we expect to slow in the coming quarters. While the narrowing of China's credit-to-GDP growth gap is good news, it was too wide for too long. The consequences of this inefficiently created credit are now being felt.

Our leverage heatmaps provide a visual overview of leverage risks and opportunities. Red fields indicate high risk, yellow indicates medium risk, and green indicates low risk. The Asia heatmap (Figure 1) shows that the region is living in a post-credit-boom world. While the level of credit in Asia and the world is still high (signified by the number of red fields), the heatmap was predominantly red in 2013 and is now more balanced. The number of 'up' arrows, indicating a rapid rise in leverage metrics, has also declined significantly.

Asia's generally low household debt levels present opportunities for further credit extension. While policy makers in many countries have expressed concerns over corporate debt, they see room to increase household debt. India and Indonesia are good examples of this. China is introducing policy measures to accelerate household debt growth; we expect a continuation of such policies to support the property-market recovery and boost growth in the medium term.

Outside Asia, leverage risks in the six emerging markets that we have added to our heatmap – Argentina, Brazil, Mexico Russia, South Africa and Turkey – are relatively benign (Figure 4). While debt in some cases has grown rapidly in recent years, it has come from a low base. External debt is a bigger challenge in general for the non-Asian EM countries in our sample.

Figure 1: Leverage and credit growth – Summary across countries, sectors and individual metrics (Asia only)

Colours indicate leverage and potential stress: red = high, yellow = moderate/sustainable, green = low; (%, unless otherwise indicated, non-financial debt unless otherwise stated)

		CN#	IN	ID	KR	MY	PH	TW	TH	HK	SG	AU	JP
Economy	Total credit/GDP	232%↑	130%	66%	228%	193%	88%	137%↓	165%	293%↑↑	259%↑	239%↑↑	409%
	Credit-GDP growth gap (5-yr avg, bps)*	537↓	68	436↑↑	-6↓	200↓	98↑	-112↓	339	748↑↑	283↓	307↑	142↓
Private non-financial	Total borrowings/GDP	166%↑	79%	40%	191%	137%	51%	100%↓	122%↑	293%↑↑	160%↑	204%↑	166%↓
	Credit-GDP growth gap (5-yr avg, bps)*	462↑↑	-36↑↑	884↑↑	-48↑	229↑↑	544↓	-136↓	460↑↑	755↑↑	535↑↑	172↑↑	-61↓
	DSR	19%↑	12%	6%	21%↑	15%↑			15%↑	27%↑↑	15%↑	0%↑	0%↑
Corporates	Business borrowings/GDP	126%↑	68%	23%	105%	50%	44%	57%↓	52%	226%↑↑	84%↑	81%	101%↓
	Debt/equity	83%	81%	71%↑	61%↑	53%↓			74%↓	37%	52%		
	Debt/EBITDA	3.2x↑	3.4x	1.4x↓	2.8x↓	0.7x↓			1.6x↓	5.4x↑	0.0x↓		
	EBITDA/interest expense	5.2x↑	3.7x↑	5.9x↑	7.1x↑	6.6x↑			7.2x↑	3.0x↑	7.3x↑		
	DSR	55%	63%	37%	40%↓	44%			41%	51%	55%		
Household	Household borrowing/GDP	40%	12%	17%	86%	87%	7%	42%↓	71%	67%	75%	123%↑	65%↓
	Credit-HH income growth gap (ppt)	9.1↓	5.5↑	3.7↓	3.4	5.1↓	18.5↑	0.7	2.7↓	5.7	0.4↓	6.0↑	1.2
	Borrowing/household income	62%↑	23%	29%	147%	198%↑	16%	63%↓	104%	94%	152%	173%	113%
	Debt service ratio	6%↑	3%↑	5%↑	15%↑	22%↑	3%	6%	13%↑	8%↑	15%↑	18%↑	10%↓
Government	Government debt/GDP	66%	51%	26%	37%	56%	36%↓	37%↓	43%	0%↓	100%↓	35%	244%
	Interest payments/govt. revenue	3%	12%↑↑	8%↑	6%	2%	18%↑↑	5%↑	6%		5%↑	4%	9%
	Debt service ratio	2%↓	14%↓	4%↓	7%↓	1%↓	8%↓	5%↓	12%			6%↓	107%↓
External debt	External debt/GDP	6%↓	17%↓	33%↓	16%↓	44%↓	19%↓	33%↑↑	22%↓	77%↑↑	84%	45%↓	39%↓
	Total external debt (incl. fin. sector)/GDP	16%↑	24%↓	37%↓	31%↓	70%↓	26%↓	33%↑↑	35%↓	447%↑↑	447%↓	113%↓	67%↓
	FCY share of total external debt	63%↑	75%↑↑	85%↑↑	71%↑↑	47%↑	97%↑↑		72%↑↑	93%↑↑		28%	35%↑
	External debt/FX reserves	0.2x↑	1.0x↓	2.5x↑↑	0.6x↓	1.3x↑↑	0.7x	0.4x↑↑	0.6x↑	0.7x↑↑	1.0x↑	13.1x↓	1.3x↓
	M2/FX reserves	5.8x↑↑	5.2x	3.0x↑	5.2x	4.1x↑↑	2.0x↑↑	3.0x	3.3x↑	4.3x↑	1.5x	32.1x↓	6.3x↑
	Short-term (< 1Y) share of external debt	58%↑	24%↓	9%↓	18%↓	20%↓	5%↓	92%↑	29%↓	32%↓	69%↓	2%↓	67%
	Private-sector share of external debt	77%↑	73%	51%	51%↓	55%↑	42%↑↑	99%↑	73%↑	99%↓	100%	62%	41%↑↑
	Moody's' External Vulnerability Indicator	18.9↑↑	74.3↑↑	56.6↑↑	45.1↓	119.9↑↑	30.2↑↑	39.9↑↑	45.2↑↑				

Arrows indicate change from Q3-2012: ↑ Moderate increase ↑↑ Fast increase ↓ Decrease

* Difference between 5-year CAGR of credit growth and 5-year CAGR of nominal GDP growth; a gap of more than 5ppt is our threshold for a red flag; # China data is as of December 2015, all other numbers as of June 2015; Source: Bloomberg, BIS, IMF, World Bank, Standard Chartered Research

Slower credit growth and GDP growth

China, Hong Kong, Malaysia and Japan top our worry list for leverage in the region

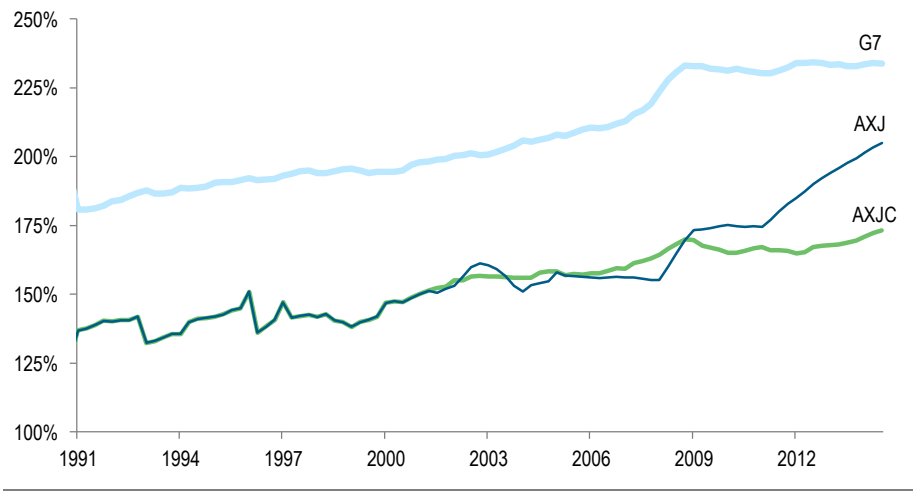
The key change in Asia's leverage situation since our 2013 report is that economies that previously showed signs of overheating have come 'off the boil'. Leverage cycles typically last much longer than regular business cycles; in 2013, China, Thailand, Singapore and Malaysia all flashed red (high risk) or yellow (medium risk) warning signs due to their wide credit-to-GDP growth gaps. Since then, most economies in the region have seen a slowdown in the pace of credit growth, as indicated in the lower number of 'up' arrows and more yellow and green fields in Figure 4. Even so, Asia is now in a post-credit-boom environment where the consequences of prior excesses are still being felt.

We have enhanced our leverage heatmaps to include more metrics on external vulnerabilities and more countries – both emerging and developed – to enable a better basis for comparing and assessing leverage in Asia. This report highlights both the risks arising from leverage in Asia (and the world) and areas of strength or potential. The household sectors in China, India and Indonesia – Asia's three largest emerging economies – all have room to increase leverage, helping them to cope better with shocks and boost their consumption power.

We use the metric of credit growth minus GDP growth to assess the extent of leverage and risks emanating from over-extension; we believe this provides more insight than the widely used total debt-to-GDP ratio. While the widening of this gap may initially be a source of growth, this increases the risks during the slowdown phase Asia is now in.

The gap between credit and GDP growth not only shows how much faster credit is growing than nominal GDP; it also provides a sense of how effective credit growth has been. An economy with a wider credit-to-GDP growth gap is getting less 'bang for its buck' from credit growth in terms of boosting overall growth. Credit growth more than 5ppt in excess of GDP growth for a sustained period is a 'red flag' signalling problems to come, according to a 2011 study by the World Economic Forum; we use this level as our 'safe' threshold. As mentioned above, the five-year average of China's excess debt growth over nominal GDP growth peaked at 8.8ppt at end-2013 and has since declined to 5.4ppt.

Figure 2: China's leverage growth is the primary driver of Asia's debt rise
Weighted average debt/GDP ratio, %

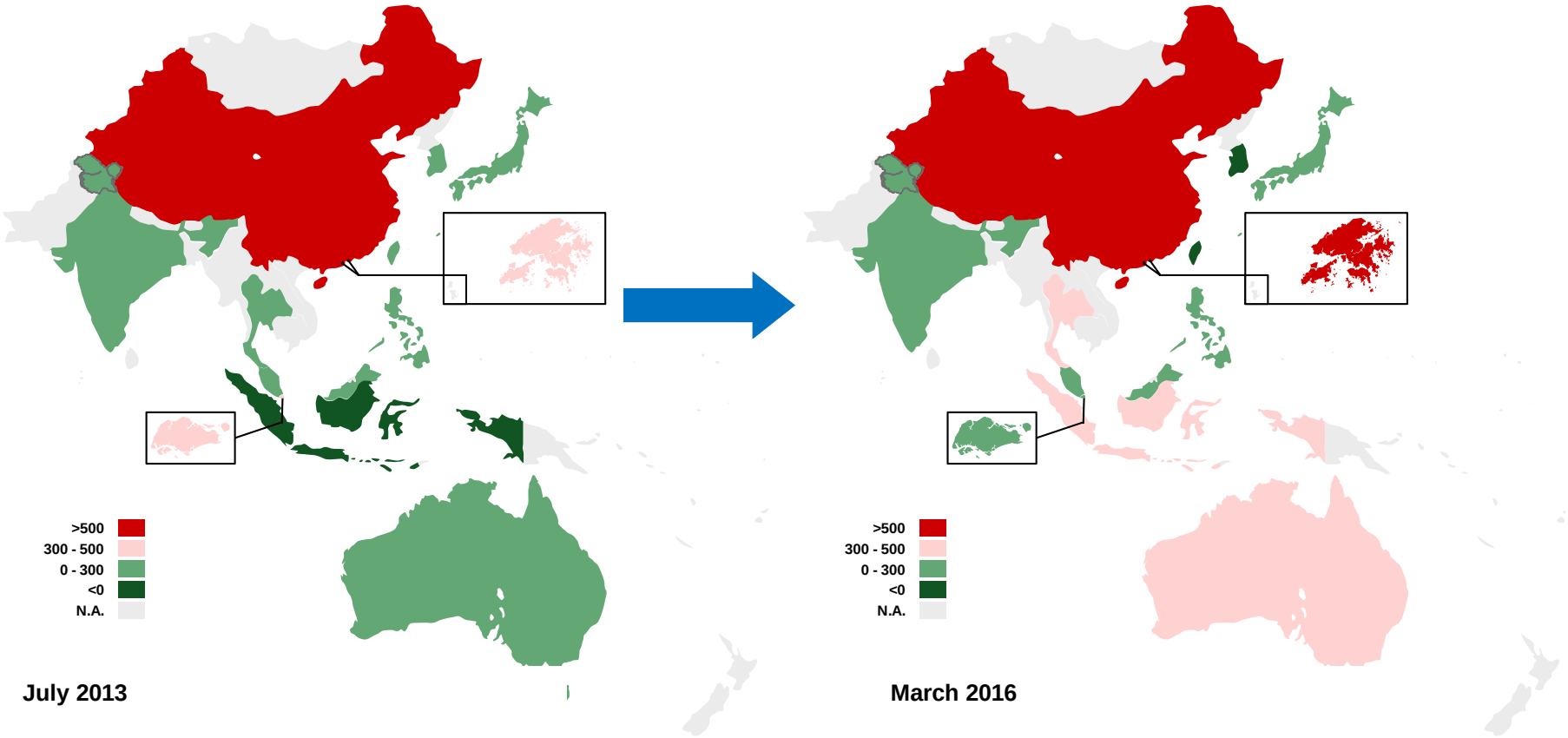


Source: BIS, IMF, Standard Chartered Research

Figure 3: Credit-GDP growth gap shows where risks have risen the most – China, Hong Kong, Thailand and Indonesia

Comparison of nominal credit growth minus nominal GDP growth (5-year average, bps), July 2013 versus March 2016

Excess credit growth over GDP growth has risen in Australia, Hong Kong, Indonesia and Malaysia in the past three years, and has declined in Korea, Japan and India



Source: BIS, IMF, Standard Chartered Research

Figure 4: Leverage and credit growth – Summary across countries, sectors and individual metrics (including non-Asia)

Colours indicate leverage and potential stress: red = high, yellow = moderate/sustainable, green = low; (%, unless otherwise indicated, non-financial debt unless otherwise stated)

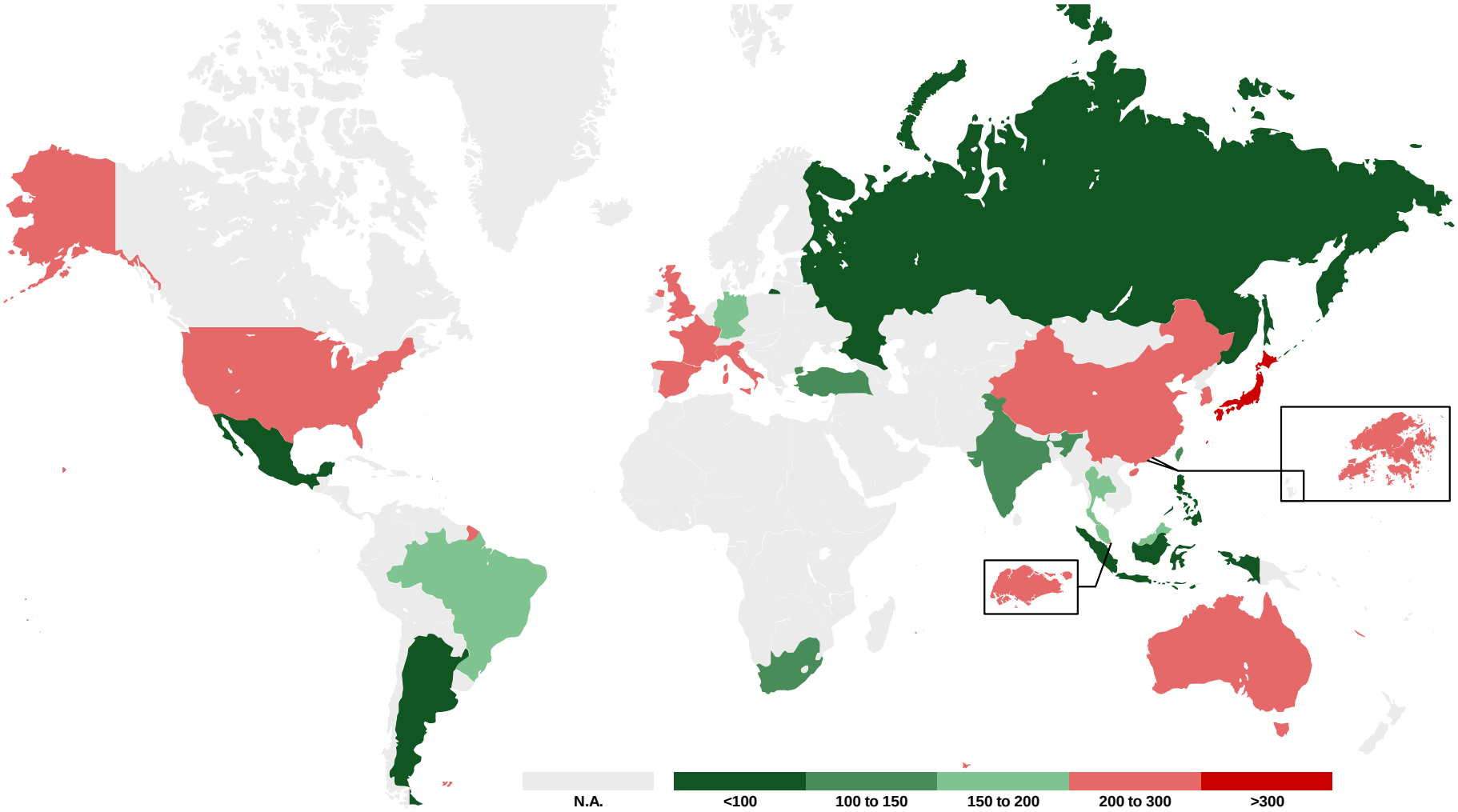
		CN#	IN	ID	KR	MY	PH	TW	TH	AR	BR	MX	RU	ZA	TR	HK	SG	AU	JP	FR	DE	ES	UK	US
Economy	Total credit/GDP	232%↑	130%	66%	228%	193%	88%	137%↓	165%	90%↑	158%	87%	94%↑	119%	112%↑	293%↑↑	259%↑	239%↑↑	409%	278%	182%↓	279%↓	245%↓	251%
	Credit-GDP growth gap (5-yr avg, bps)*	537↓	68	436↑↑	-6↓	200↓	98↑	-112↓	339	397↑↑	190↑	465↑	713↑↑	290	481↓	748↑↑	283↓	307↑	142↓	258↓	-220↓	30↓	-127	29↓
Private non-financial	Total borrowings/GDP	166%↑	79%	40%	191%	137%	51%	100%↓	122%↑	47%	92%	37%	75%↑	72%	79%↑	293%↑↑	160%↑	204%↑	166%↓	182%	109%↓	179%↓	157%↓	148%
	Credit-GDP growth gap (5-yr avg, bps)	462↑↑	-36↑↑	884↑↑	-48↑	229↑↑	544↓	-136↓	460↑↑	503↑↑	280↑	546↑	588↑↑	-5	1,231↑	755↑↑	535↑↑	172↑↑	-61↓	200↑	-243↓	-388↓	-385↓	-143
	DSR	19%↑	12%	6%	21%↑	15%↑			15%↑							27%↑↑	15%↑	0%↑	0%↑					
Corporates	Business borrowings/GDP	126%↑	68%	23%	105%	50%	44%	57%↓	52%	41%	67%	23%	57%↑	35%	58%↑	226%↑↑	84%↑	81%	101%↓	125%	55%	108%↓	71%↓	70%
	Debt/equity	83%	81%	71%↑	61%↑	53%↓			74%↓							37%	52%							
	Debt/EBITDA	3.2x↑	3.4x	1.4x↓	2.8x↓	0.7x↓			1.6x↓							5.4x↑	0.0x↓							
	EBITDA/interest expense	5.2x↑	3.7x↑	5.9x↑	7.1x↑	6.6x↑			7.2x↑							3.0x↑	7.3x↑							
	DSR	55%	63%	37%	40%↓	44%			41%							51%	55%							
Household	Household borrowing/GDP	40%	12%	17%	86%	87%	7%	42%↓	71%	6%	25%	15%	19%	37%↓	21%	67%	75%	123%↑	65%↓	56%	54%↓	71%↓	86%↓	78%↓
	Credit-HH income growth gap (ppt)	9.1↓	5.5↑	3.7↓	3.4	5.1↓	18.5↑	0.7	2.7↓							5.7	0.4↓	6.0↑	1.2					
	Borrowing/household income	62%↑	23%	29%	147%	198%↑	16%	63%↓	104%							94%	152%	173%	113%	107%↑↑	100%↑↑	89%↑↑	134%↑↑	103%↑↑
	Debt service ratio	6%↑	3%↑	5%↑	15%↑	22%↑	3%	6%	13%↑							8%↑	15%↑	18%↑	10%↓	8%↑	7%↑	7%	12%↑	8%↑
Government	Government debt/GDP	66%	51%	26%	37%	56%	36%↓	37%↓	43%	43%	66%	50%	19%	47%	33%↓	0%↓	100%↓	35%	244%	96%	73%↓	100%↑	88%	103%
	Int. payments/Govt. revenue	3%	12%↑↑	8%↑	6%	2%	18%↑↑	5%↑	6%								5%↑	4%	9%					
	Debt service ratio	2%↓	14%↓	4%↓	7%↓	1%↓	8%↓	5%↓	12%									6%↓	107%↓					
External debt	External debt/GDP	6%↓	17%↓	33%↓	16%↓	44%↓	19%↓	33%↑↑	22%↓	20%↓	19%	35%	21%↓	27%↓	32%↓	77%↑↑	84%	45%↓	39%↓	115%	78%↓	106%↓	111%↓	74%
	Total ext. debt (incl fin. sector)/GDP	16%↑	24%↓	37%↓	31%↓	70%↓	26%↓	33%↑↑	35%↓	25%↓	38%	37%	43%↓	44%↓	59%↓	447%↑↑	447%↓	113%↓	67%↓	201%↓	130%↓	149%↓	272%↓	90%↓
	FCY share of total external debt	63%↑	75%↑↑	85%↑↑	71%↑↑	47%↑	97%↑↑		72%↑↑							93%↑↑		28%	35%↑					
	External debt/FX reserves	0.2x↑	1.0x↓	2.5x↑↑	0.6x↓	1.3x↑↑	0.7x	0.4x↑↑	0.6x↑	4.2x↑↑	0.9x↑↑	2.1x↑	0.9x↑↑	2.1x	2.2x↓	0.7x↑↑	1.0x↑	13.1x↓	1.3x↓	90.5x↓	68.6x↓	32.6x↓	34.6x↓	
	M2/FX reserves	5.8x↑↑	5.2x	3.0x↑	5.2x	4.1x↑↑	2.0x↑↑	3.0x	3.3x↑	3.3x↑↑	1.9x	3.6x↓	1.9x↑	4.8x↑↑	4.2x	4.3x↑	1.5x	32.1x↓	6.3x↑				35.4x↑	
	Short-term (< 1Y) share of external debt	58%↑	24%↓	9%↓	18%↓	20%↓	5%↓	92%↑	29%↓	28%↓	2%	16%↓	8%	11%	16%	32%↓	69%↓	2%↓	67%	33%	29%↓	33%↓	48%↓	23%↓
	Private-sector share of external debt	77%↑	73%	51%	51%↓	55%↑	42%↑↑	99%↑	73%↑	31%↓	36%↓	46%	83%	39%	60%	99%↓	100%	62%	41%↑↑	34%↓	24%↓	28%↓	75%↓	48%↓
	Moody's' External Vulnerability Indicator	18.9	74.3	56.6	45.1	119.9	30.2	39.9	45.2	107.7	26.9	68.5	28.2	93.0	178.2									

Arrows indicate change from Q3-2012: ↑ Moderate increase ↑↑ Fast increase ↓ Decrease

* Difference between 5-year CAGR of credit growth and 5-year CAGR of nominal GDP growth; a gap of more than 5ppt is our threshold for a red flag; # China data is as of December 2015, all other numbers as of June 2015; Source: Bloomberg, BIS, IMF, World Bank, Standard Chartered Research

Figure 5: Total debt/GDP ratio – China is now similar to the US, Australia and parts of Western Europe; still below Japan

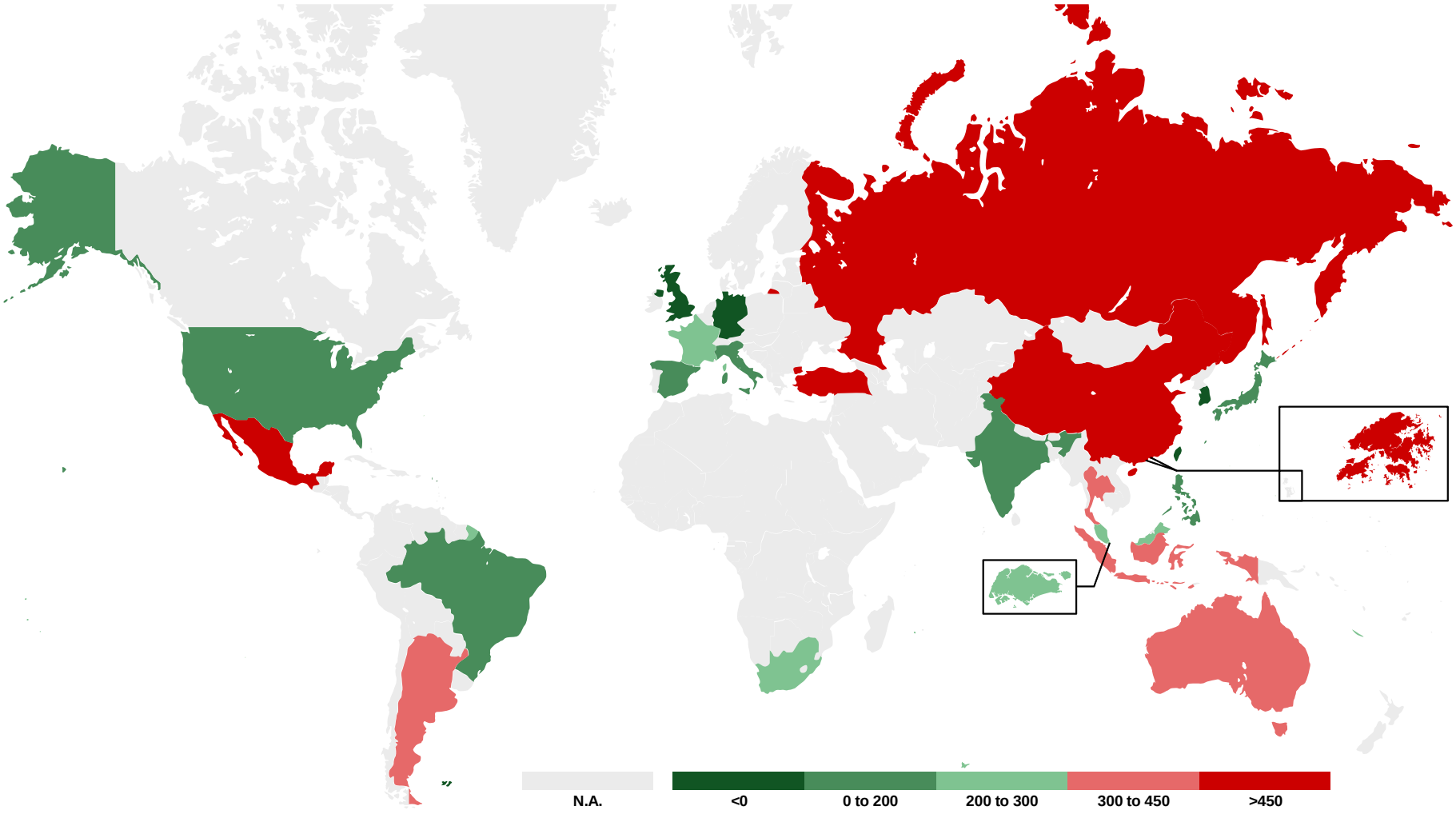
Total debt/GDP ratio (%)



Source: BIS, IMF, Standard Chartered Research

Figure 6: Credit-to-GDP growth gap – China's challenge arises from the excessive pace of debt build-up since 2009

Credit growth minus nominal GDP growth (5-year average, bps)

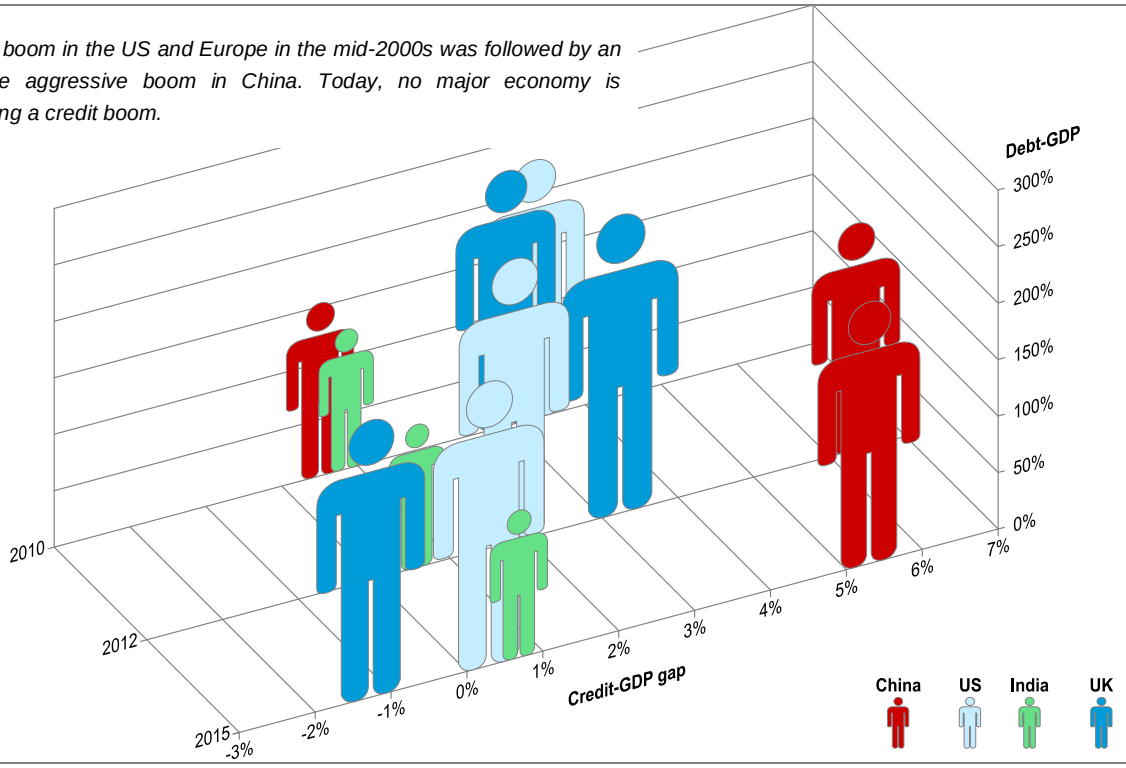


Source: BIS, IMF, Standard Chartered Research

Figure 7: China's credit growth excesses have been flashing warning signs since 2012

Nominal credit growth minus GDP growth (5-year average) vs debt-to-GDP ratio (%)

The credit boom in the US and Europe in the mid-2000s was followed by an even more aggressive boom in China. Today, no major economy is experiencing a credit boom.

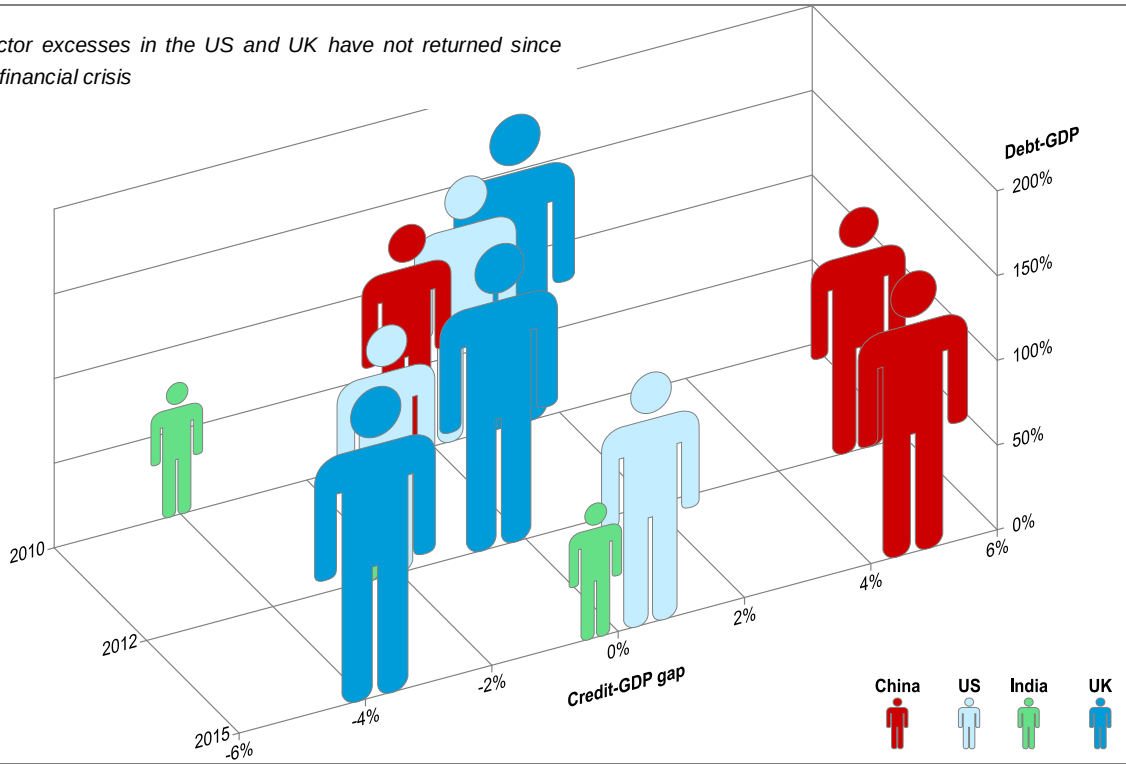


Note: 2015 is through H1-2015; Source: CEIC, Standard Chartered Research

Figure 8: Private-sector credit-GDP gap

Nominal credit growth minus GDP growth (5-year average) vs debt-to-GDP ratio (%)

Private-sector excesses in the US and UK have not returned since the global financial crisis



Note: 2015 is through H1-2015; Source: CEIC, Standard Chartered Research

Leverage risk – Three categories

We place Asian economies into three categories in terms of leverage-related risks: high, medium and low. Figure 9 depicts how these categories have changed since 2013, and Figures 10-12 show countries classified by risk category in terms of their credit-to-GDP growth gaps.

High risk

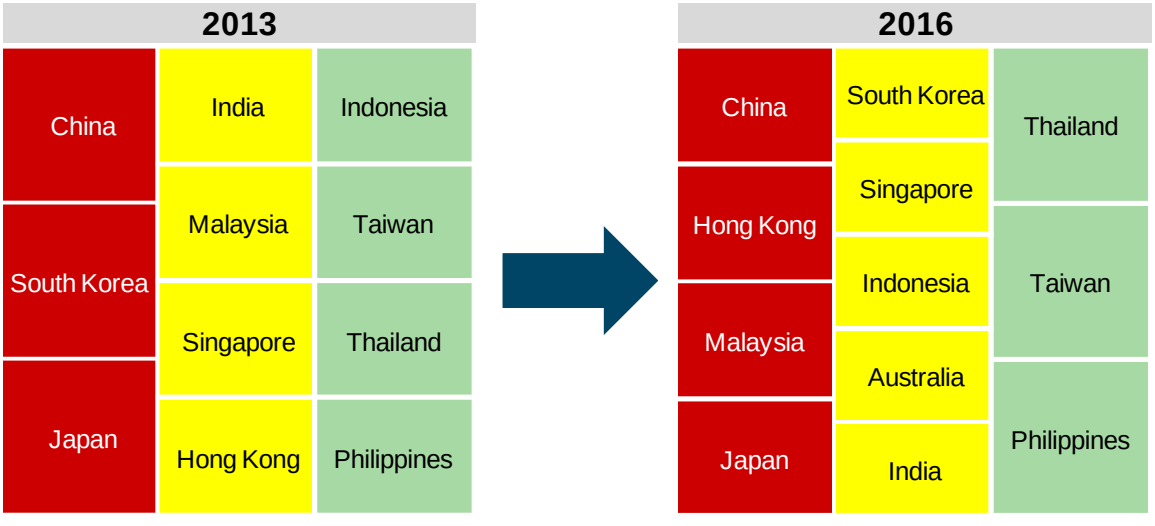
Hong Kong joins China at the top of our list of leverage risks

China and Japan remain in the high-risk category, joined by Hong Kong and Malaysia. China remains at the top of our list in terms of leverage risk, as in 2013. Its debt-to-GDP ratio has increased by 85ppt to 232% (from 147% at end-2008) in the wake of the government's massive stimulus programme to counter the effects of the global financial crisis. China's excess credit growth over nominal GDP growth reached a peak five-year average of 8.8ppt at end-2013 before starting to decline. Leverage cycles can run through multiple business cycles, building far more slowly than they unravel. The good news is that China's authorities are aware of the accumulated risks and have adopted a healthier focus on the quality of new credit growth. At the end of a credit boom, China's 'high-risk' status suggests slower growth to come (at best), or the risk of a crisis in the worst-case scenario (in case of a policy error).

Hong Kong joins the high-risk category after its credit-to-GDP growth gap hit a five-year average of 9.0ppt in December 2013, before starting to decline more recently. Mainland China-based entities have been big drivers of this change as onshore leverage growth has been brought under control. While the domestic debt-to-GDP ratio may not be the best gauge of repayment ability for a financial centre such as Hong Kong, the fact that a large portion of this debt is linked to China is a source of concern.

Figure 9: Leverage risks – Who lies where?

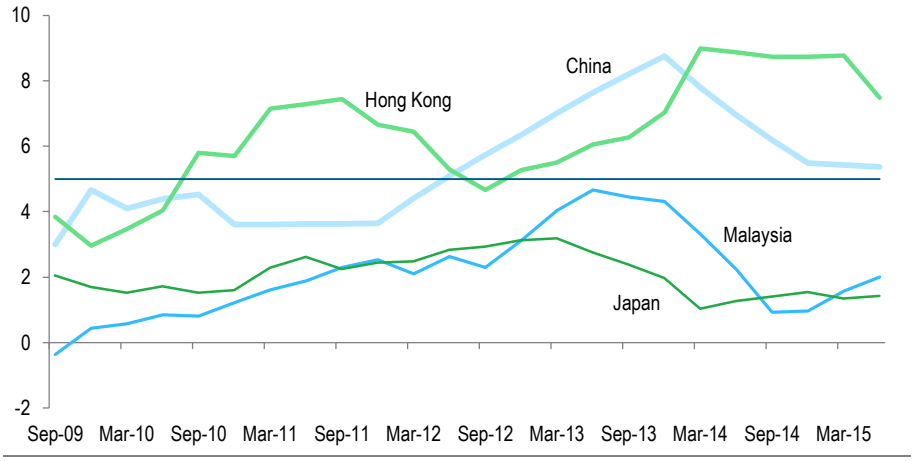
China and Japan remain in the high-risk category, newly joined by Malaysia and Hong Kong



Source: BIS, IMF, Standard Chartered Research

Figure 10: High risk – China and Hong Kong remain in the 'red flag' zone

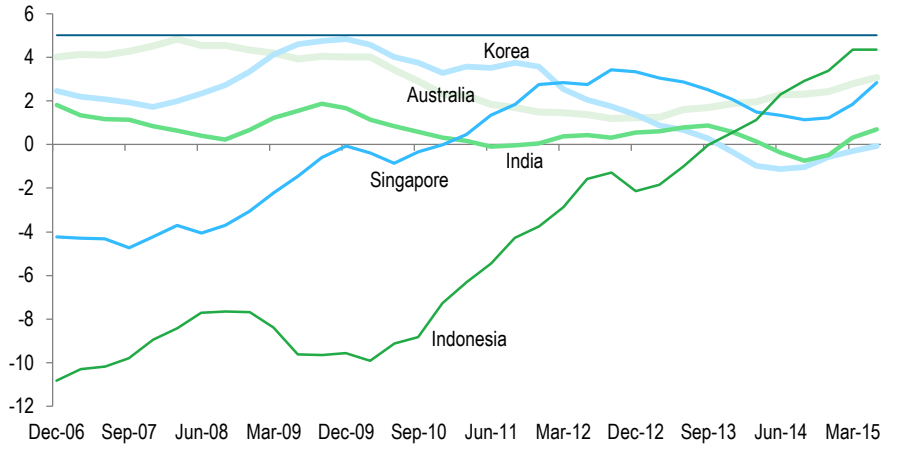
Credit growth minus GDP growth (ppt), 5-year average



Source: BIS, IMF, Standard Chartered Research

Figure 11: Medium risk – Indonesia is coming from a low base

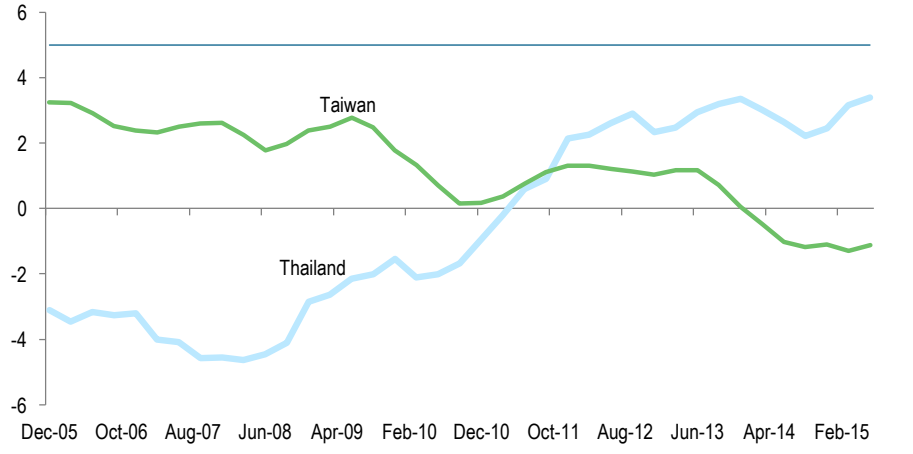
Credit growth minus GDP growth (ppt), 5-year average



Source: BIS, IMF, Standard Chartered Research

Figure 12: Low risk – Thailand's recent 'excess' is more due to weak GDP

Credit growth minus GDP growth (ppt), 5-year average



Source: BIS, IMF, Standard Chartered Research

Malaysia joins our list of countries of most concern, driven by the high household debt-service ratio and external debt exposure

Malaysia's move into the high-risk category may seem more surprising. The rationale for this is that Malaysia has one of the highest external vulnerability metrics in the region and its household debt-service ratio is now as high as that of the US in 2006, by our estimates. The gap between growth in household debt and household income, a measure of the sustainability of new household debt, is also fairly high – household debt is rising 5.1ppt faster than disposable income, based on the latest five-year average. There are mitigating factors for Malaysia, including the household sector's relatively healthy asset position and the large share of external debt denominated in local currency.

Japan remains in the high-risk category due to its elevated total debt-to-GDP ratio – which, at 400%, far surpasses every other country in our study. The second-highest is France's, at 278%. While government debt accounts for the largest share of Japan's debt, business borrowings are also high, at 101% of GDP. The gap between credit growth and GDP growth has narrowed lately, providing some comfort on the sustainability of this debt.

Medium risk

India's rapid accumulation of debt has led to a weak corporate-sector debt profile

India and Singapore remain in the medium-risk category, joined by South Korea (previously in the high-risk category) and Indonesia (previously low-risk). While India's overall debt remains fairly low, at only 130% of GDP, the risk profile of existing debt has deteriorated, particularly in the past two years. We flagged India's corporate debt as a concern back in 2013 due to is rapid accumulation; weak profitability, combined with debt concentration in the commodity sector, has increased risks in the corporate sector further.

We move Indonesia from the low-risk to the medium-risk category to reflect (1) the deterioration in corporate debt, particularly in the commodity space after the slide in commodity prices over the past two years; and (2) the increase in external debt, a large portion of which is foreign-currency-denominated. Demand for external financing may increase in the short term, particularly from the corporate sector, as infrastructure investment picks up speed. Corporate external liabilities denominated in foreign currency are a potential source of risk; macro-prudential measures by the government, including the introduction of mandatory hedging requirements, should mitigate these risks.

Low risk

Taiwan, Thailand and the Philippines still have significant scope to increase domestic private-sector debt

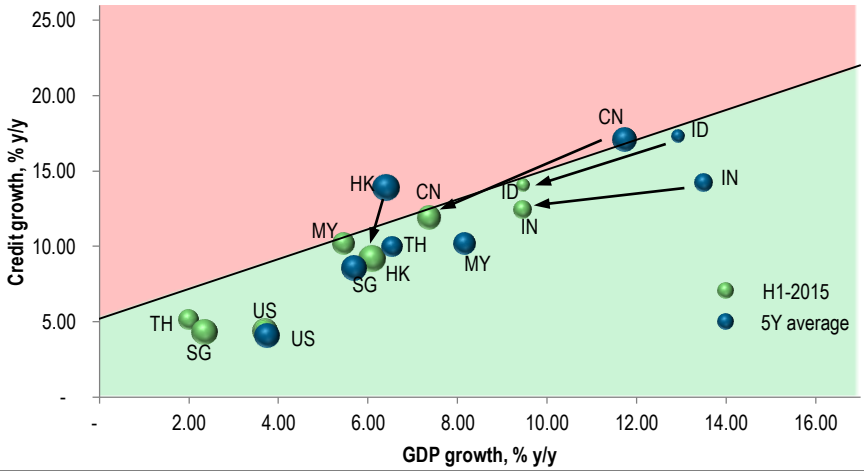
Taiwan, Thailand and the Philippines remain in the low-risk category. All three have plenty of room to expand leverage, particularly in the private sector. While the Philippines' household credit growth has far exceeded income growth in recent years, credit growth is coming from a very low base – the country's total household debt is by far the lowest in Asia. A continued, but contained, increase in household leverage would help to sustain the recent strength in consumer demand, a significant contributor to GDP growth.

Thailand's government and corporate debt remain very low, with scope for further leverage to boost growth. Household leverage remains a concern, however, given the high debt-to-income ratio and the relatively high household debt-service ratio. Bank credit to households needs to be monitored closely, particularly in case of a weak economic recovery.

Taiwan's leverage still appears reasonable, both in terms of its absolute level and its growth rate. A legally mandated ceiling of 40% for the total government debt-to-GDP ratio forces fiscal discipline. Total corporate debt remains contained, despite the corporate debt-to-GDP ratio having risen since 2013. While household debt is a concern, we believe that its pace of increase and absolute level are still manageable.

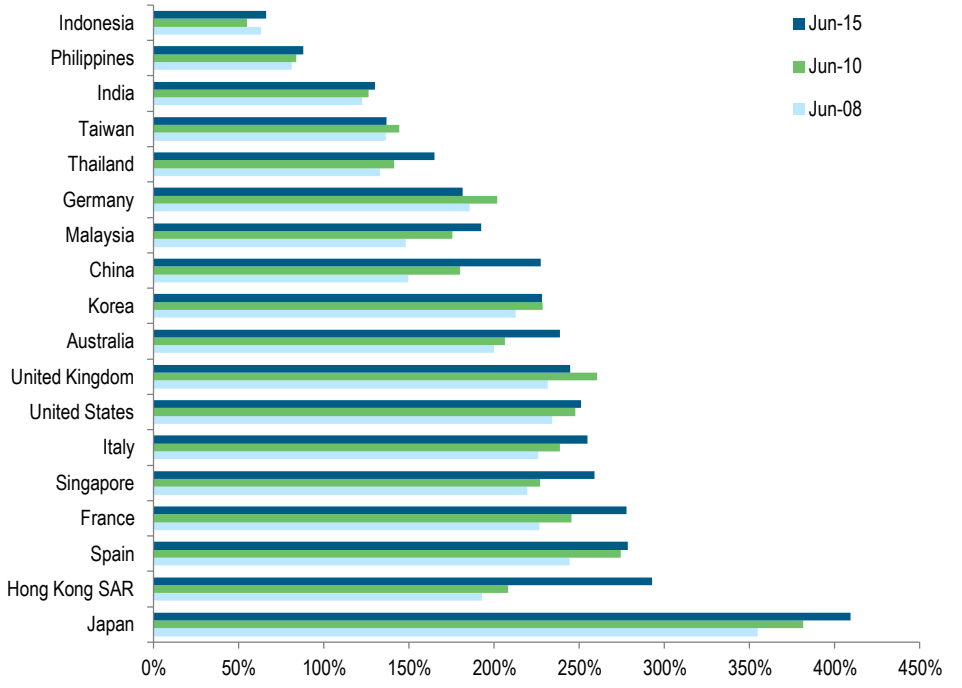
Figure 13: All Asian economies have slowed their leverage build-up since 2013

Total debt growth minus GDP growth (latest vs 5-year average)



Source: BIS, Standard Chartered Research

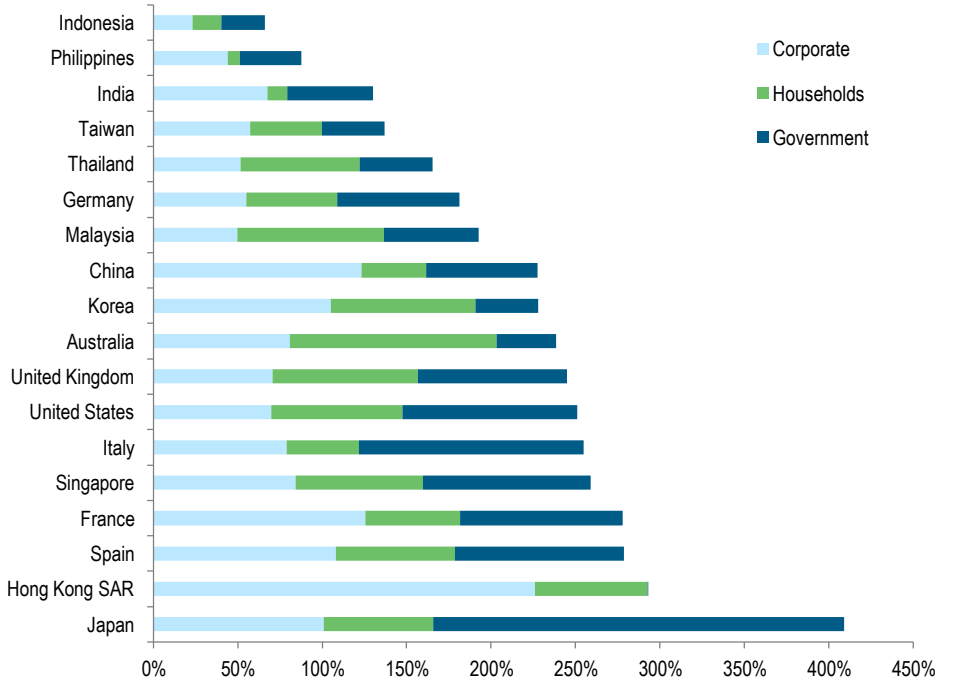
Figure 14: Total leverage – Philippines and Indonesia still have the most room for more *(debt/GDP, %)*



Source: BIS, IMF, Standard Chartered Research

Figure 15: Corporate sector is more of a concern than households

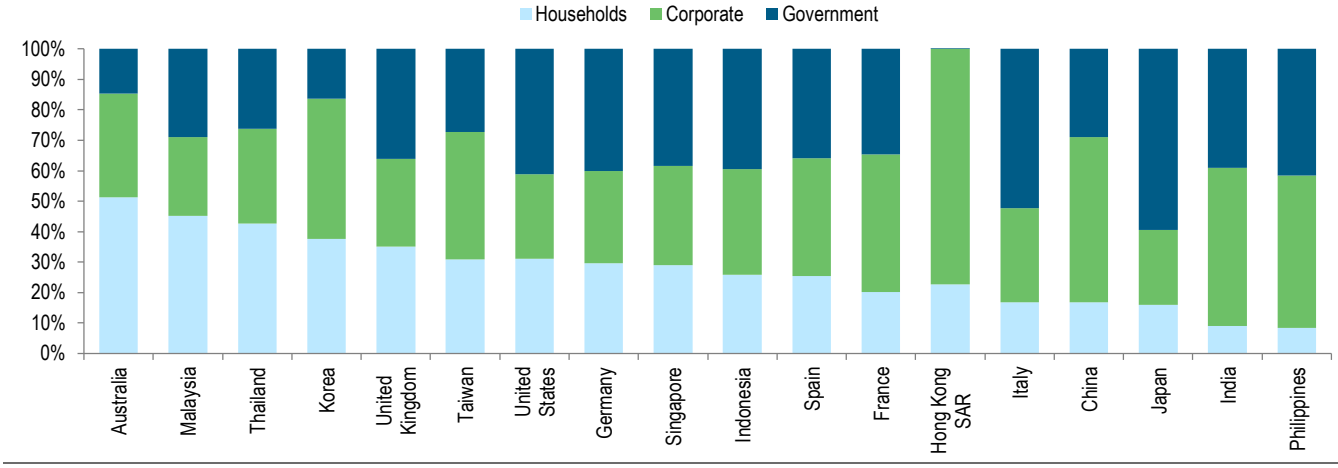
How leverage stacks up – debt/GDP, %



Source: BIS, IMF, Standard Chartered Research

Figure 16: Where does the debt lie?

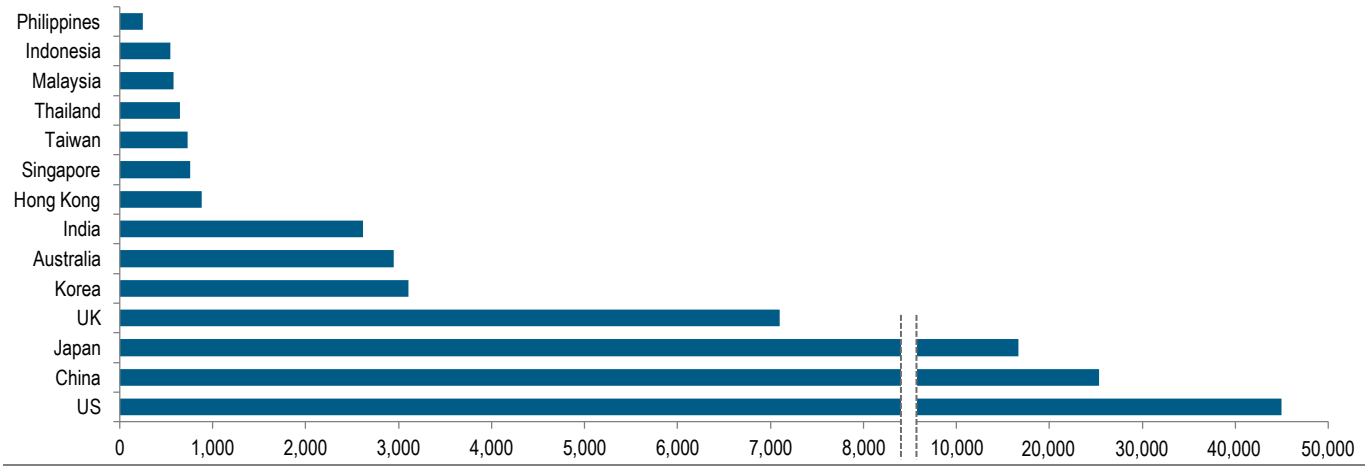
Breakdown of total debt by sector – Households, corporates, government



Source: BIS, IMF, Standard Chartered Research

Figure 17: China and Japan dwarf the Asian EMs

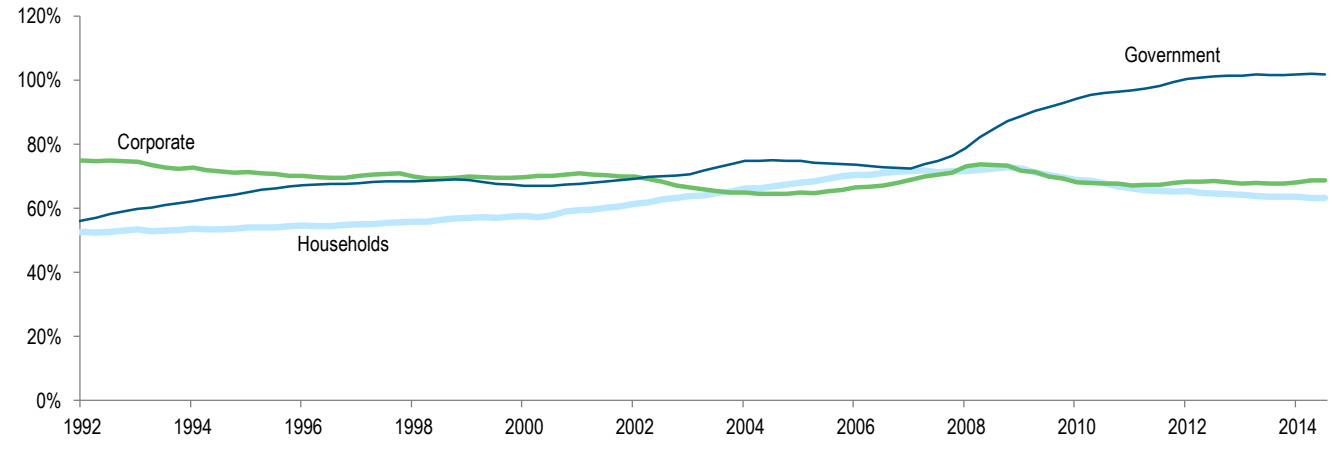
Total debt, USD bn



Source: BIS, IMF, Standard Chartered Research

Figure 18: Evolution of leverage in G7

Weighted average debt/GDP, (%)



Source: BIS, IMF, Standard Chartered Research

Corporate leverage – The biggest concern

Corporate sector in Asia remains our biggest concern

Corporate leverage remains our biggest concern in Asia. Risks are highest in China, India and South Korea – similar to our findings in 2013. However, we believe that corporate credit growth has peaked; we expect the pace to continue to slow, reducing the gap between credit and GDP growth. The corporate debt section in our Asian heatmap (Figure 1) has very few 'up' arrows signifying moderate or fast credit growth (with the exception of China). This indicates that corporate debt has stabilised since 2013. China's corporate debt-to-GDP ratio might still edge higher, as nominal GDP growth slows to less than 7%; however, we believe the pace of growth in the ratio has peaked.

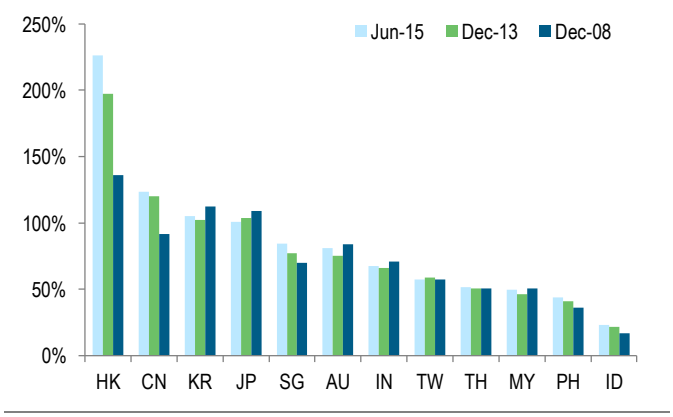
Slowing global growth and low commodity prices have hurt Indian corporates' debt repayment capacity

In India, corporate debt stresses are concentrated with listed companies. While India's ratio of overall corporate debt to GDP does not stand out as a concern, the debt/equity ratio for listed corporates is among the region's highest (see Figures 19-21). One reason for this might be relatively poor access to credit for unlisted companies. Weak profitability in some sectors (particularly in the commodity space) due to slowing global growth and lower commodity prices has further reduced debt repayment capacity, exacerbating risks to the banking system. The central bank governor has targeted cleaning up the banking sector's balance sheet, particularly NPLs. The first step, recognising the problem, appears to have been taken; however, we expect the process to be slow.

In Korea, high leverage among 'zombie' corporates continues to pose risks. The government's plan to restructure zombie corporates whose profits have failed to cover interest payments for the past three years has faced delays. Reaching political consensus on restructuring has been difficult; meanwhile, local corporates continue to face downside pressure on profitability in an environment of slower growth.

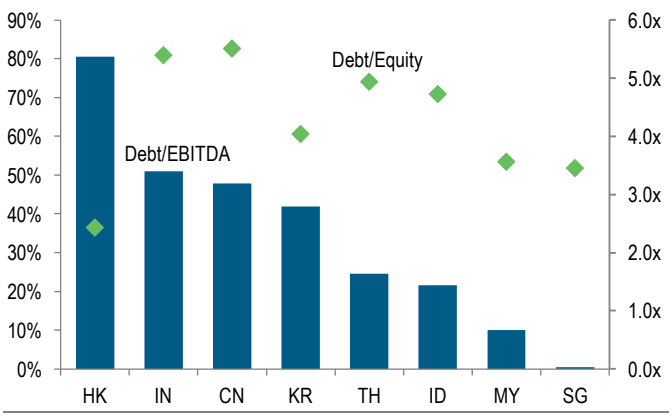
Looking at concentration risk, Indonesia and Thailand stand out as having the most over-extended corporate sectors. Their highest (most over-extended) quintiles in terms of debt/EBITDA ratio are worse than those of even China or Hong Kong (see Figure 22).

Figure 19: China and Hong Kong corporates are the most extended *(corporate debt/GDP, %)*



Source: World Bank, Standard Chartered Research

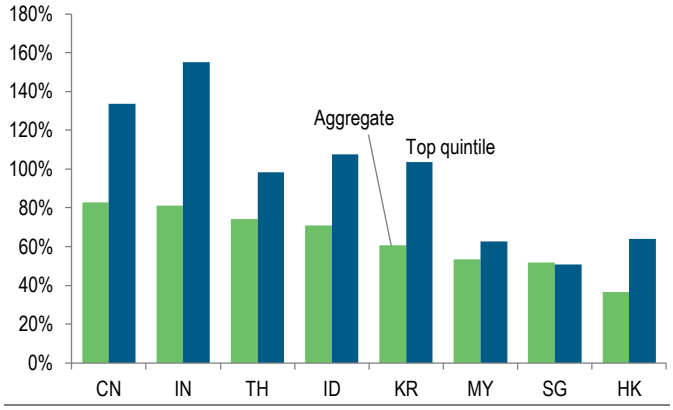
Figure 20: Listed corporates are highly leveraged in India and Hong Kong



Source: BIS, Bloomberg, CEIC, National sources, Standard Chartered Research

Figure 21: Listed corporates – China and India are the most extended

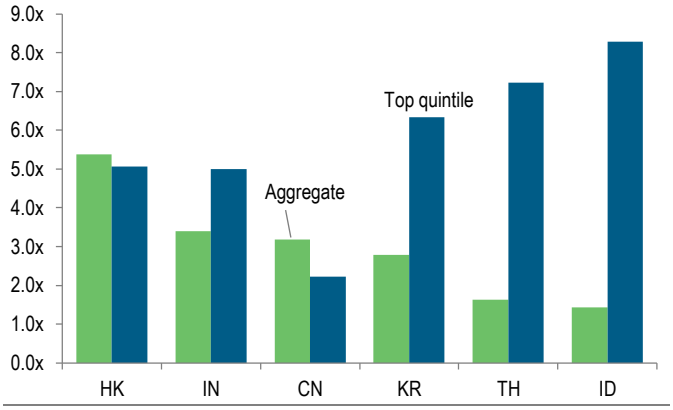
Debt/equity



Source: World Bank, Standard Chartered Research

Figure 22: The highest quintiles in Indonesia and Thailand are worse off than those in China and Hong Kong

Debt/EBITDA



Source: BIS, Bloomberg, CEIC, National sources, Standard Chartered Research

Household leverage – A story of two halves

Household debt is generally low in Asia, with some exceptions

Asia is divided in terms of household leverage risk. While households in Malaysia, South Korea, Australia and Singapore are highly leveraged, those in other parts of the region – particularly China, India and Indonesia – have significant room for more borrowing.

Malaysia's households are the most extended in the region

Household leverage in Malaysia, South Korea and Singapore is the highest in Asia. It has increased further from already-high levels in 2013, partly because liquidity remains flush in the banking system. These countries' ratios of household borrowing to GDP and household income, as well as their household debt-service ratios (DSRs), have climbed higher since 2013. Malaysia's household leverage is our biggest source of concern. Households have continued to build up debt rapidly and now have the highest DSR in the region – at 22% of disposable income, up from 18% in 2013. By our estimates, this is even higher than the US in 2006 (Figure 23).

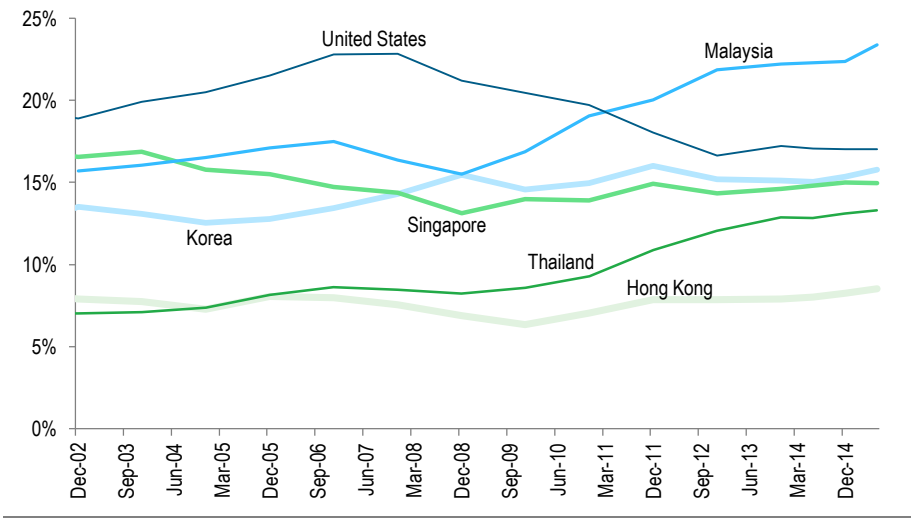
South Korea's household sector has been among the most leveraged in emerging Asia since 2005, and was only recently overtaken by Malaysia. Bank of Korea (BoK) policy makers have pointed to rising household debt as a major risk to financial stability. Australia's household debt is also relatively high, having risen strongly since 2000.

China, India and Indonesia have low household leverage, creating room for borrowing and consumption to support growth

Elsewhere in Asia, household debt is not a concern; this is similar to our 2013 findings. Importantly, household leverage remains low in the region's three largest emerging economies – China, India and Indonesia – which also have high household savings. This suggests significant capacity for borrowing and consumption to support GDP growth further if necessary. Countries in Latin America also have relatively healthy household leverage levels. Scope to use additional household debt to fuel growth is a key to long-term growth sustainability in these countries.

Household credit remains low in most other parts of Asia. In Thailand, faster credit growth since 2011 has led to a rise in solvency stress indicators. However, debt levels and debt-service indicators remain at comfortable and do not raise immediate concerns. The Philippines, an outperformer in Asia, has plenty of room to expand

Figure 23: Malaysian households are stretched on debt servicing, even beyond the US and Korea



Source: BIS, IMF, Standard Chartered Research

private-sector leverage to boost domestic consumption and sustain growth. There is also ample scope for the private sector to partner with the government in financing large-scale infrastructure projects.

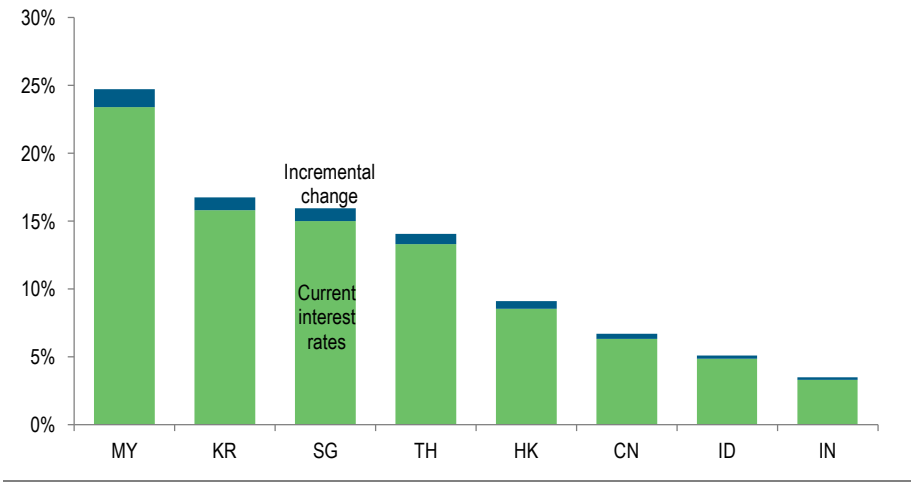
Mortgage debt makes up the bulk of household debt in Asia. Growing indebtedness driven by rising assets prices is a concern, however. Financial stability risks remain high, particularly in Singapore and Malaysia; we see a risk that a downturn in their property markets may lead to a deterioration in credit quality. The same is true for South Korea.

Malaysian households are the most sensitive to interest rate rises

As we noted in 2013, the interest sensitivity of household debt remains a significant risk, particularly given the risk that the US Fed might continue to hike interest rates. Malaysia, Korea and Singapore are the most vulnerable in terms of the sensitivity of their household DSRs to a 100bps rise in interest rates (see Figure 24).

In Korea, we are sceptical about the efficacy of household debt control measures, including new "advanced loan review guidelines" (effective from 1 February 2016) that shift the focus of the loan review process to borrowers' repayment capability from collateral. Household credit growth is likely to remain on an uptrend in the medium to long term. It stood at 11.2% y/y in 2015, and the total size of household credit touched a record-high KRW 1,207tn. Within broad household credit, household debt increased to KRW 1,141tn, while credit-card loans rose to KRW 65tn. With mortgages accounting for 53% of Korea's total household debt, we expect household debt to continue to grow rapidly in the current low-interest-rate environment (with further rate cuts expected).

Figure 24: Malaysia's household debt servicing level and sensitivity are highest
Incremental impact on DSR of a 100bps interest rate hike



Source: BIS, IMF, Standard Chartered Research

Government borrowing – A mixed picture

Government debt appears manageable overall

While most countries' public debt burdens have been on an upward path in recent years, we think they remain manageable and are not a source of concern. In Asia, China and Australia have seen faster growth in public debt, while India, Malaysia, Korea and Thailand have seen moderate increases.

European economies such as Spain, Italy and France have accumulated public debt rapidly in the aftermath of the sovereign debt crisis. The US and the UK have higher public debt levels than Asian countries. Japan continues to have the highest public debt-to-GDP ratio. However, the Bank of Japan has adopted negative interest rates and the majority of the JGB ownership remains in the domestic market, which should mitigate risks.

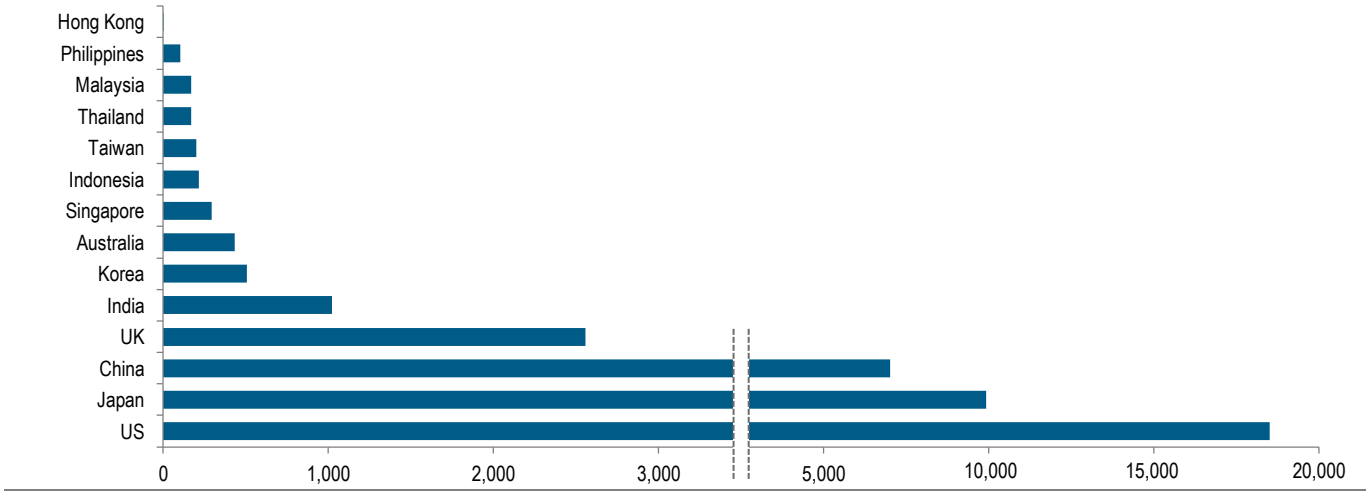
In terms of absolute debt size, the world's three biggest economies – the US, Japan and China – top the list (Figure 25); the US has over USD 18tn in public debt. The debt size remains healthy for most emerging countries in Latin America, similar to Asian countries excluding China and Japan.

Lower global yields have helped to improve government debt serviceability

Asian governments' DSRs have improved significantly since 2013, particularly in the cases of Korea, the Philippines and Taiwan. In Korea and the Philippines, this is partly because of lower yields on their 10Y bonds at the time than their average coupon payments. China, Indonesia and Malaysia have shown moderate improvements on this front. Meanwhile, DSRs in India and Thailand continue to reflect relatively high levels of stress in the public sector.

Figure 25: The three biggest economies are by far the three biggest borrowers

Total govt debt, USD bn



Source: IMF, Standard Chartered Research

External debt – Better than 1997

Malaysia, Indonesia stand out; Asia is otherwise sound

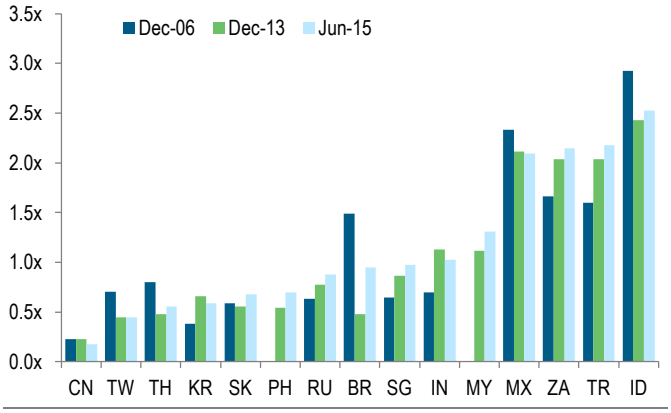
While Asia's external debt situation is not rosy, it is less concerning than in 1997

External debt in Asia, both as a share of GDP and as a share of FX reserves, is a greater source of vulnerability now than it was a decade ago, but is far more benign than before the 1997-98 Asian financial crisis. In general, 30-50% of Asia's external debt is denominated in local rather than foreign currency and is long-term rather than short-term. The 'original sin' of exchange rate and maturity mismatches is no longer a concern in 2016.

China's outflows of the past 18 months have substantially reduced its corporate-sector FX mismatch. The Achilles' heel for China's external vulnerability is its high ratio of M2 money supply to FX reserves. If Chinese yuan (CNY) devaluation expectations were to mount, encouraging depositors to shift their holdings into foreign currencies, then this could become a bigger risk of significant outflows. On the whole, Asia's external debt is lower than that of comparable emerging-market countries in both Latin America and Africa.

Figure 26: Indonesia has high external debt relative to FX reserves

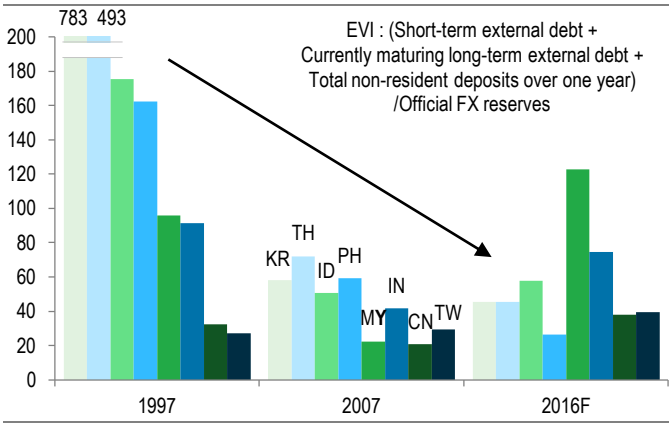
External debt/FX reserves



Source: World Bank, Standard Chartered Research

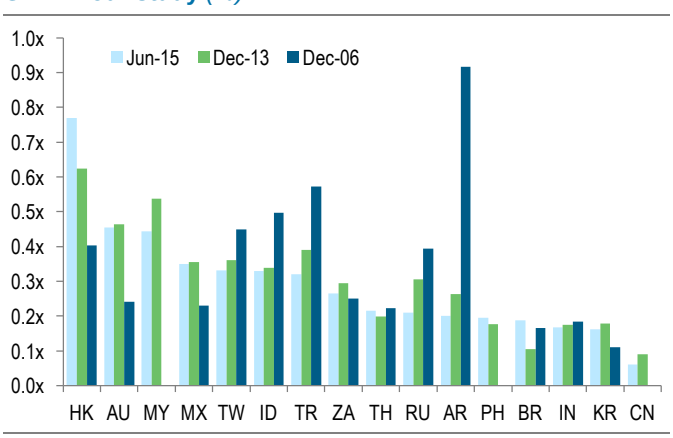
Figure 27: India, Indonesia, Malaysia and Taiwan are more exposed now than in 2007

Moody's External Vulnerability Indicator (EVI)



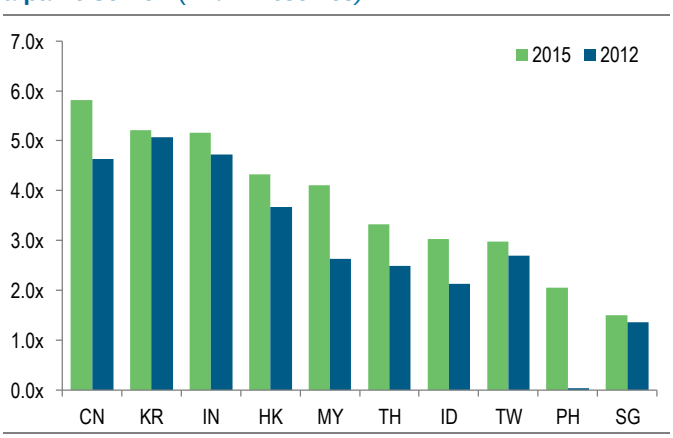
Source: Moody's, Standard Chartered Research

Figure 28: China has the lowest ratio of external debt to GDP in our study *(%)*



Source: BIS, Standard Chartered Research

Figure 29: China's large M2 leaves it vulnerable in case of a panic sell-off (*M2/FX reserves)*



Source: BIS, Bloomberg, CEIC, National sources, Standard Chartered Research

Indonesia is the most sensitive to external shocks

Indonesia and Malaysia stand out within Asia for their high external debt. Indonesia is the most extended, as measured by both its ratio of external debt to FX reserves and the share of its foreign-currency debt denominated in foreign currency. Its ratio of external debt to FX reserves is greater than 2x, leaving it as vulnerable on this metric as Turkey, South Africa and Mexico. Malaysia has the largest external debt (as a % of GDP) among Asian EM countries. Of the two, we believe Indonesia is more sensitive to external shocks given its large foreign-currency-denominated debt and smaller FX reserves.

Malaysia is one of the few Asian economies whose external debt metrics have worsened notably since 2007. However, this largely reflects its emergence as a component of most international bond benchmark indices, which led to a spike in foreign ownership of its local-currency bonds.

Argentina, Turkey and South Africa are the most vulnerable, in our study, to external shocks

Globally, Asian economies largely compare very favourably with their EM counterparts. Argentina, Turkey and South Africa stand out as the most vulnerable, with external debt at more than twice their reserves. And unlike Indonesia, these countries are worse off now than in 2013 – or even in 2006, before the global financial crisis. Political uncertainty further increases the risks of outflows.

FX – Assessing Asia's vulnerability to external shocks

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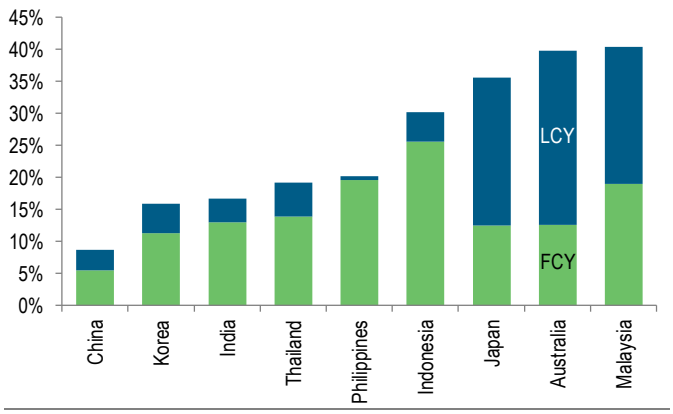
Episodes of external shocks, market stress, and high FX volatility are becoming increasingly frequent, as we have seen over the past year. We believe an analysis of external vulnerability metrics and leverage is particularly pertinent now given the high level of uncertainty around major central banks' policy. We revisit the theme of AXJ FX vulnerability with a focus on external debt in the region.

IDR and MYR are the most vulnerable Asian currencies to external shocks

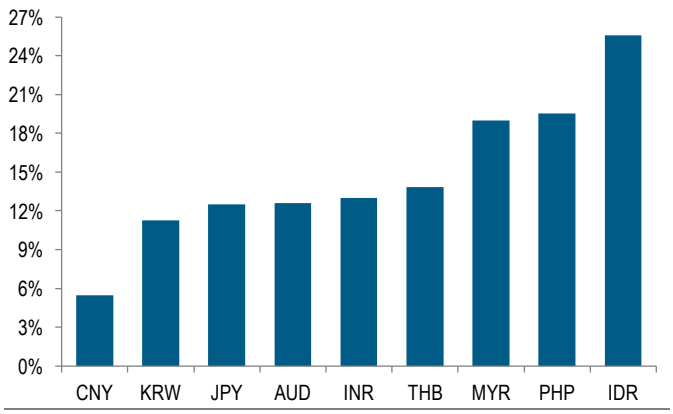
We believe the Indonesian rupiah (IDR) and the Malaysian ringgit (MYR) remain the most vulnerable Asian currencies to external shocks. Both Indonesia and Malaysia have relatively high foreign-currency-denominated external debt, at 26% and 19% of GDP, respectively. During periods of currency weakness, these liabilities swell in local-currency (LCY) terms, making repayment more difficult for local borrowers. The combination of market volatility, debt repayment concerns and potential rating downgrades can weigh on the currency.

Figure 30: Indonesia has the region's largest foreign-currency-debt exposure as % of GDP
External debt/GDP



Source: World Bank, Standard Chartered Research

Figure 31: Indonesia's high FCY-denominated external debt leaves the IDR vulnerable
FCY-denominated external debt/GDP, %



Source: BIS, Bloomberg, CEIC, National sources, Standard Chartered Research

High foreign holdings of LCY debt in Indonesia and Malaysia create the risks of outflows

In addition, both Malaysia and Indonesia have large foreign holdings of their local-currency debt. A pick-up in G3 rates volatility during periods of external shocks could lead to outflows from their bond markets, weighing on their currencies. However, we note that a portion of these foreign holdings are held by sovereign or quasi-sovereign investors, who usually have a long-term mandate and are less affected by short-term volatility.

FX reserves remain adequate for both Malaysia and Indonesia

Two other issues are also important determinants of vulnerability: (1) the adequacy of FX reserves and (2) market liquidity. While both Malaysia's and Indonesia's reserves have declined since 2014, standard reserve adequacy metrics have not deteriorated much. This is a result of the simultaneous decline in external debt and the value of imports. We believe both central banks have adequate reserves at current levels.

Market liquidity is a bigger concern for Indonesia

Liquidity in emerging markets often becomes an issue for foreign portfolio investors during periods of high volatility. To better gauge the availability of the proverbial 'exit door' during periods of market stress, we compare the stock of foreign holdings of LCY bonds with the currency's daily average FX turnover. Based on this measure, the IDR appears the most vulnerable by far to potential bond outflows. The MYR also looks vulnerable, but to a lesser degree.

China risks – Navigating treacherous waters

We've been here before

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Our analysis identifies China as the biggest source of leverage risks in Asia. Leverage metrics for China's overall economy compare unfavourably with other emerging markets and even with advanced economies. At 232% (our estimate), China's ratio of non-financial total credit to GDP is in line with those of advanced economies, while its credit-to-GDP growth gap is behind only those of Hong Kong and Russia.

China's current debt problem may be the most complicated in its modern history

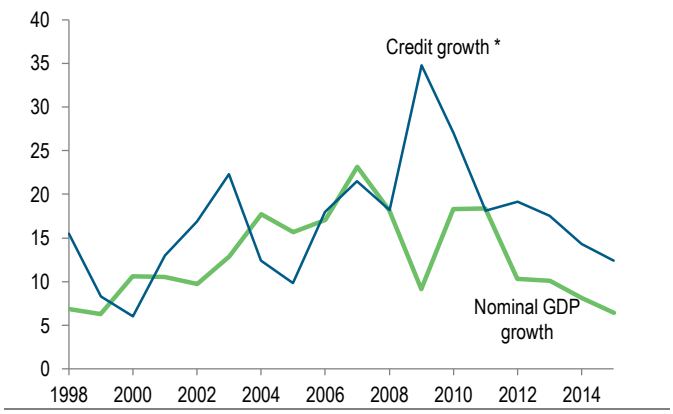
In 2013, when we first flagged China's excessive leverage growth as our biggest concern, we believed the situation would be manageable because we had been here before. This is not the first time China has experienced high leverage and bad debt issues amid slowing economic growth – it faced the challenge of high NPLs in the 1990s. We look at what lessons can be drawn from that experience to provide insights into today's situation. China's debt landscape is more complicated today given new sources of credit, including shadow banking. We believe that official action is already being taken to tackle this issue, and that a full-blown government bailout is likely only in the worst-case scenario.

The state-owned enterprise (SOE) reform of 1994-97 revealed the high level of bad debt in China's banking sector. State-owned commercial banks' (SOCBs) soft-budget constraints for heavy lending to poorly managed SOEs – which prioritised social objectives over economic returns – and a weak credit culture had led to a high NPL ratio in the banking system. The official estimate of the NPL ratio was 25% (c.CNY 1.9tn) at end-1997; unofficial estimates were as high as 40-50%.

Banking-sector reform started in 1998 with the aim of carving out bad debts and rebuilding banks' balance sheets. Through capital injections and NPLs disposals, the NPL ratio of SOCBs was reduced by more than 17ppt (on average) from 2000 to 2004. At the same time, China gradually established a modern supervisory and regulatory system for the banking sector and pushed ahead with financial liberalisation.

Figure 32: China's total credit growth has surpassed GDP growth in the past few years

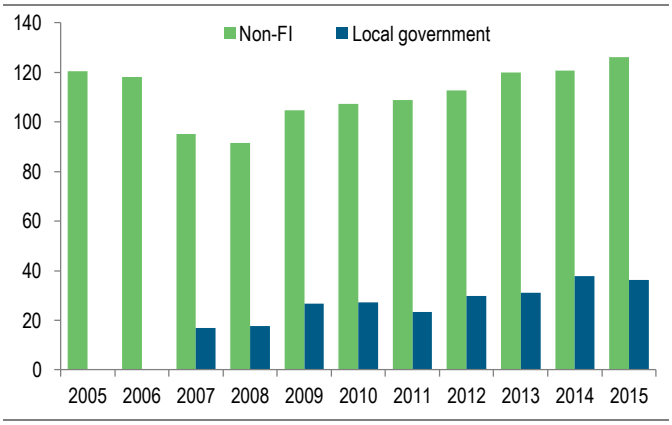
% y/y



* We use TSF as an indicator of credit after 2003, bank lending prior to 2003; Source: CEIC, Standard Chartered Research

Figure 33: Corporate leverage and local government debt have risen rapidly since 2008

Debt, % of GDP



Source: MoF, CEIC, Standard Chartered Research

Capital injections into the four SOCBs started in 1998, when the legal reserve requirement ratio for the banking sector was cut to 8%, allowing the big four SOCBs to use the freed-up liquidity to purchase MoF special bonds (CNY 270bn). The government then injected the bond proceeds as equity into the big four banks, more than doubling their capital base. This was followed by two more rounds of capital injections in 2003 and 2005, using the country's FX reserves of USD 60bn.

At the same time, NPL disposals were conducted between the SOCBs and the four newly established Asset Management Companies (AMCs); the AMCs were funded by the Ministry of Finance, the People's Bank of China, commercial borrowing and bond issuance. The four AMCs bought CNY1.4tn of NPLs at face value in 1999-2000 and then auctioned CNY 275bn NPLs at 50% of face value in 2004. In 2005, another CNY 700bn of NPLs were taken up by the AMCs. The authorities also attracted strategic investors to diversify the banks' ownership and improve their management quality. These reforms eventually improved the SOCBs' asset quality, and three of them went public in 2005-06.

What's different this time?

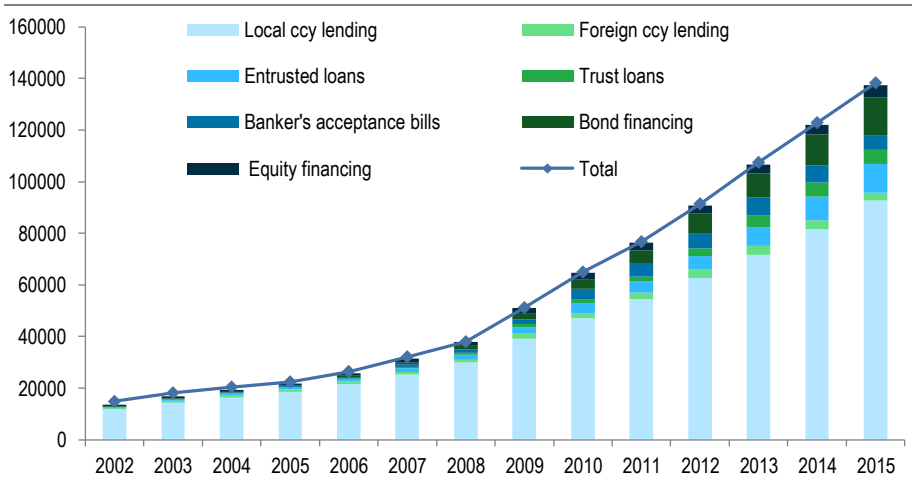
China's highly leveraged corporate balance sheet today is mainly the result of a policy shift in 2012 – when Beijing started loosening monetary policy and announced a 'mini' stimulus, package (following the massive fiscal stimulus rolled out during the 2008-09 financial crisis). We estimate that corporate debt rose to 126% of GDP at end-2015 from 109% at end-2011. Including local government debt, which was borrowed off-budget but played an important role in financing local investment, we estimate that the debt-to-GDP ratio would have risen by 30-37ppt in the past few years.

We combine NPLs and 'special mention' loans to get a better sense of banks' asset quality in a worst-case scenario

Increasing leverage carries risks. There are growing concerns that a deterioration in credit quality on slower economic growth and industrial capacity reduction could damage the banking system and the economy as a whole. Official data suggests that China's NPL ratio was 1.67% as of end-2015, while some private estimates place the number much higher. We combine NPLs and 'special mention' loans to get a better sense of banks' asset quality in a worst-case scenario. These were 5.5% of total loans as of end-2015 and could potentially go higher, although we do not think the official NPL ratio will match this number anytime soon.

Figure 34: Total social financing breakdown

CNY bn



Source: MoF, CEIC, Standard Chartered Research

While the NPL ratio and the ratio of bad debt to GDP appear much lower now than in 1997, the issue is more complex this time. First, bad debts are no longer concentrated with SOEs and SOCBs; they now extend to SMEs and smaller-scale banks. The contingent liabilities of local government financing vehicles (LGFVs) are another potential risk to bank lending.

Second, off-balance-sheet transactions and so-called 'shadow banking' activities (consisting mostly of wealth management products) are seen as raising credit risks and destabilising financial markets. Third, economic growth has slowed substantially in recent years. China maintained double-digit GDP growth from 2000-10 thanks to its WTO entry and market opening. It is now dealing simultaneously with slower growth, structural change and the waning effects of monetary stimulus. This complicates the task of disposing smoothly of NPLs while maintaining bank profits and economic growth.

China's banks now have more robust risk management systems than a decade ago

On a positive note, China's banking sector has been fully opened up for 10 years amid ongoing financial-market liberalisation. During this time, most banks have improved their asset quality, established more robust risk management systems, and adapted to market-driven operations. Chinese banks' capital adequacy ratio increased to 13.45% in 2015 (higher than the regulatory requirement) from 8.4% in 2007. Their bad debt provision ratio was 181% as of 2015.

Policy makers' proactive approach to the leverage issue is also a source of comfort. Top leaders have agreed to refrain from large-scale monetary loosening aimed at boosting the economy in order to avoid another rise in the economy's leverage ratio. They have indicated they will maintain a relatively loose monetary and fiscal stance, which is supportive of banks and corporates. In addition, China has the advantage of learning from peers' and its own historical experience as it faces the problem this time.

The road ahead is well mapped out

Policy makers have already taken several measures to deal with leverage problems

China's policy makers are well aware of rising credit risk to the financial system as a result of the economic slowdown. They have implemented several policies to mitigate such risks. Figure 35 shows current and potential policy options to address the issue. Existing AMCs are being used to take on banks' bad debts, and new local ones are being set up. Another idea recently put forward to reduce corporate leverage is to allow banks to convert their loans into equity. This was reportedly proposed by China Banking Regulatory Commission (CBRC) Chairman Shang Fulin at the recent NPC meetings, and was confirmed by Premier Li Keqiang after the meeting. China took a similar approach during the banking-sector reform of the 1990s, when AMCs (not banks) were the major party conducting the debt-to-equity swap.

We think this proposal indicates policy makers' intent to bring down NPL levels. However, current regulations require that banks assign high risk weightings (400-1,250%) to such equity investments, posing a hurdle to large-scale implementation. Other options under discussion include using AMCs (including new provincial AMCs) and securitising bank assets. We think the government will allow market forces to take the lead in resolving this issue, with a direct government bailout being used only as a last resort to avoid a systemic crisis.

Figure 35: Policy options for dealing with China's excess leverage

Option	Progress	Comments
Relying on AMCs, including setting up local AMCs	Under discussion	CBRC has approved local AMCs in different cities/provinces since 2014. Local AMCs have the advantage of operating efficiently and flexibly, effectively reducing the central government's burden. But this could threaten local fiscal conditions, as most AMCs receive government support.
Securitisation of bank assets	Under discussion	Some media have reported that China will introduce a trial programme with a CNY 50bn quota targeting the non-performing assets of six commercial banks. However, the lack of transparent credit ratings and international investors might reduce the impact of the programme.
Debt-to-equity swap	Implemented/further details under discussion	This option was used for a recent bad debt restructuring between an SOE and a SOCB. Top policy makers seem to favour this option. However, regulations require banks to set 425-1250% risk weights, which may limit room to implement this on a large scale.
Debt-to-bond swap	Implemented	This is specific to local government borrowings. The program was rolled out in 2015 and targets swapping all of local governments' direct liabilities and part of their contingent liabilities with bond issuance in three years' time.
Policy banks' involvement	In progress	Giving policy banks a more active role in supporting policy-related lending will effectively detach commercial banks from government intervention.
Developing capital markets	In progress	Further developing local capital markets (including bond and equity markets) will diversify corporates' financing channels and reduce their reliance on bank lending
Direct government bailout	A last resort	This is likely the government's last resort given stagnant fiscal revenue growth and shrinking FX reserves. We think a bailout is likely only in case of a systemic crisis event.

Source: Standard Chartered Research

Asian economies – Leverage analysis

China

The next few moves are critical

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We place China in the high-risk category to reflect the extremely rapid build-up of debt since 2008.

China's total debt (including financial institutions) increased to 254% of GDP at end-2015 from 238% in 2014 and 174% in 2008. Annual debt growth was 11.4% y/y in 2015; while this was little changed from 2014, it was down sharply from 20.8% in 2013. However, total debt growth in 2015 continued to exceed nominal GDP growth, which slowed to 6.4%; as a result, China's debt-to-GDP ratio climbed further in 2015. We expect the uptrend to continue in 2016, despite the central government's determination to lower the leverage ratio in the economy.

Within the non-financial sector, corporate debt remains the largest piece of the pie – it rose to 121% of GDP in 2015, despite a significant slowdown in its growth since 2013. The government debt ratio was 67% in 2015 (little changed from 2014) as local governments reined in borrowing under the local government debt ceiling imposed in 2015. Household debt rose to 40% of GDP from 36% in 2014, still low by regional and global standards.

Corporate leverage – China's main challenge

China's corporate leverage ratio remains high and will take years to digest

We estimate that China's non-FI corporate debt stood at 121% of GDP at end-2015, among the highest in the Asia. This number excludes borrowing by LGFVs and the Ministry of Railways, which we treat as government debt. The ratio of corporate leverage to GDP surged in 2008-09 and in 2012-13, when policy makers rolled out fiscal stimulus and loosened monetary policy to shore up the economy – it jumped to 105% in 2009 from 92% in 2008, and to 120% in 2013 from 113% in 2012.

Even as the economy faced strong downside pressure in 2015, corporate lending growth was relatively stable at c.11% thanks to monetary easing. Corporate bond issuance grew more than 25% (while off-balance-sheet financing slowed significantly). As a result, the corporate debt-to-GDP ratio continued to rise, as debt growth far outpaced nominal GDP growth. Assuming total corporate credit growth of c.13% in 2016 (the government's target for total social financing growth this year), it is likely to exceed 125% of GDP.

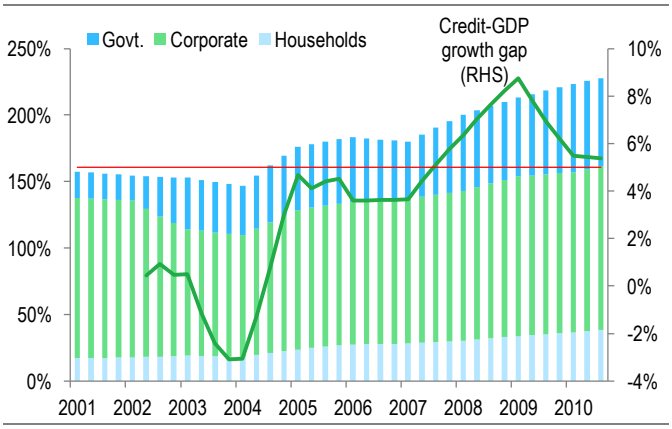
Figure 1: China – Summary of leverage

China	Total credit/GDP	Debt service ratio
Economy	232%	
Private corporate sector	126%	55%
Household sector	40%	6%
Government	66%	2%

Source: Bloomberg, BIS, IMF, Standard Chartered Research

Figure 2: China – Debt distribution

Total debt/GDP (LHS) vs credit-GDP growth gap (RHS)



Source: BIS, IMF, Standard Chartered Research

Deleveraging in the business sector is one of China's top policy priorities for 2016. While credit growth tends to surge during economic boom or fiscal expansion periods, the deleveraging process takes years, especially during an economic downturn. With China currently facing both external and domestic headwinds, striking a balance between deleveraging and maintaining the required level of economic growth is a challenging trade-off. Overcapacity, especially in the manufacturing sector, makes deleveraging even harder.

Bad debt is a further concern amid declining property prices and deteriorating operating conditions in the manufacturing sector as China shifts towards a services- and consumption-based growth model. While official figures show China's non-performing loans (NPLs) at just 1.67% of total bank loans at end-2015, the market assumes a higher level given that China's method for recognising NPLs differs from the global standard.

The authorities face rising NPLs and the resulting deterioration in banks' asset quality

The end-2015 NPL ratio would have been as high as 5.5% if 'special mention' loans (one of five categories of China's bank loans) were included. The manufacturing sector reported a higher NPL ratio in 2015 than in 2014 as overcapacity eroded business revenue and corporate solvency. While recognising and writing off bad loans would reduce the bad debt level, it could cause a deterioration in bank assets, which appears to be a concern for the authorities. The government is currently considering debt-to-equity swaps and securitisation of bank assets to resolve bad debt issues. Continuing efforts to develop China's capital markets to diversify corporates' funding sources are a necessary long-term solution.

SOEs – No quick fix in sight

The SOE sector reported a significant increase in debt levels after the global financial crisis in 2008-09, raising concerns about debt sustainability. While SOEs have the advantage of easier access to financing, most suffer from low efficiency. SOEs' fixed asset investment (FAI) in 2015 accounted for c.30% of China's total FAI, and bank lending to SOEs has likely been around 35% of total lending in the past few years (we use bank lending to large companies as a proxy due to a lack of data availability). However, SOE profits declined 7.0% in 2015. Meanwhile, SOEs' liabilities increased 18% in 2015, much higher than the 2.6% rise for industrial enterprises as a whole. SOEs' debt-to-assets ratio was 66%, compared with an average of 56% for all industrial enterprises.

An IMF working paper issued in March 2015 found that while China's private firms steadily deleveraged from 2007-13, SOEs increased their leverage during the same period. The increase in SOE leverage was driven by companies in the real-estate and construction sector and by local SOEs in mining and utilities, the paper found. China's government has identified SOE reform as a policy priority, and issued a long-awaited reform blueprint in 2015. While we expect the planned reforms to improve SOEs' efficiency to some extent, the deleveraging process will take time.

Government debt – Willing and able to rise further

The ratio of government debt to GDP is likely to rise moderately in 2016 on more proactive fiscal policy and slowing economic growth. China's 2016 budget deficit target of 3.0% of GDP confirms an expansionary fiscal stance. Based on widely accepted accounting methods, we estimate a larger deficit of 3.8% of GDP this year. The central government debt ceiling for 2016 has been raised to CNY 12.59tn from CNY 11.19tn, and the local government debt ceiling (including special local government bonds) has been raised to CNY 17.18tn from CNY 16tn. As such, we expect the total government debt ratio to rise moderately to 67.5% of GDP this year, assuming local governments adhere strictly to the debt ceiling. The larger fiscal deficit in 2016 will be financed by the carryover and leftover funds and government bond issuance. This is a change from the past, when the deficit was almost entirely financed by bond issuance. In 2015, China used CNY 705.5bn of such funds to finance the budget.

Central government debt

Central government debt rose moderately to 30% of GDP in 2015 from 29% in 2014. At end-2015, outstanding central government debt was CNY 16.3tn (excluding borrowing by the Ministry of Railways), up 11.4% from 2014. We expect central government debt to rise to 33% of GDP in 2016 on more central government bond issuance.

Local government debt

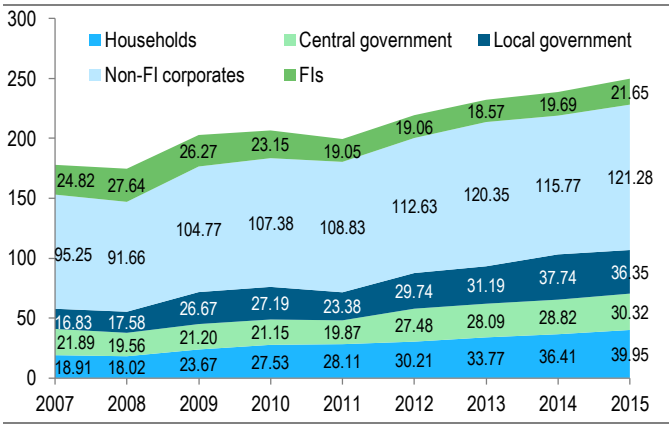
Local government debt issuance is likely to increase this year, largely due to the debt swap programme

Total local government debt was CNY 24tn at end-2014, according to the MoF's latest estimate, up from CNY 17.9tn in June 2013. Of this CNY 24tn, CNY 15.4tn was classified as direct liabilities of local governments, while the rest was defined as contingent liabilities (i.e., debt guaranteed by local governments and debt that may receive government relief).

Local governments have heavily relied on local government financing vehicles (LGFVs) to meet their financing needs since the 2008-09 financial crisis, given the mismatch between their revenue and spending requirements and their limited financing capacity. Rapid growth in LGFV lending since then has raised market concerns about local governments' fiscal position and debt profile.

Figure 3: China's total debt reached 250% of GDP in 2015

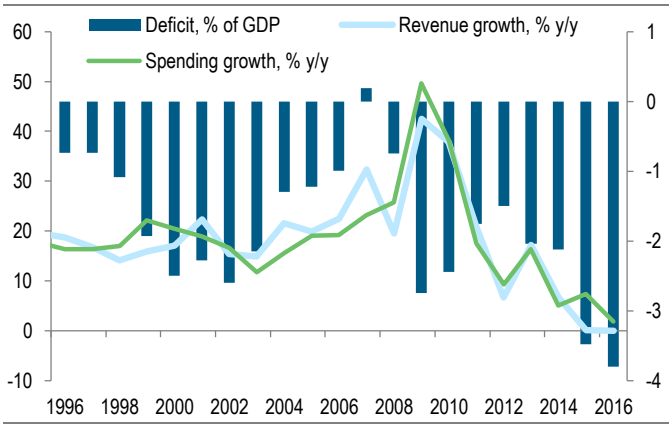
% of GDP (figures include financial institutions)*



*We adjust our previous debt data based on the latest local government debt numbers and reclassification of corporate debt; Source: MoF, Chinabond, CEIC, Standard Chartered Research

Figure 4: China has adopted more proactive fiscal policy in 2016

Growth, % y/y; general public budget and government funds budget combined, % of GDP*



* Government funds budget included since 2009 and is assumed to have been in balance until 2015; Source: MoF, CEIC, Standard Chartered Research

Local governments have been subject to a debt ceiling since 2015 and can issue debt only in the form of bonds, according to the revised budget law. Borrowing by LGFVs is being gradually swapped out over three years under the debt-to-bond programme (note that these swap transactions will not increase the debt stock). The local government debt ceiling was raised to CNY 17.18tn in 2016 from CNY 16tn in 2015. Even so, we expect total local government debt to decline to 35% of GDP this year from 36% in 2015, assuming local governments strictly follow the revised budget law and raise debt exclusively through bond issuance.

We expect the total government debt ratio to rise moderately in the next couple of years, as China has adopted a more aggressive fiscal stance and GDP growth is likely to be relatively low by historical standards.

Financial institutions (FIs)

We expect the FI leverage ratio to increase on higher financial bond issuance and further development of the domestic bond market

We calculate that FIs' borrowing was about 22% of GDP in 2015, significantly lower than McKinsey's estimate of c.62%. The difference between the two figures arises from differing treatment of claims on other depository corporations and claims on other FIs on the central bank's balance sheet. We exclude these items, as we think inter-FI claims should not be treated as debt of the whole sector and are not a major source of systemic risk. We measure FI debt as bond issuance by FIs.

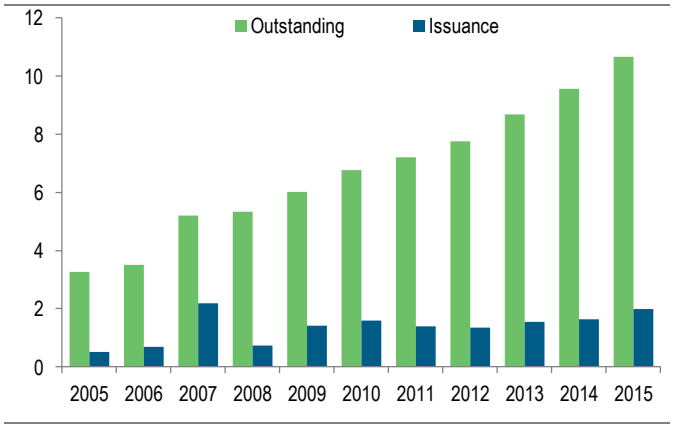
We expect the financial sector's debt level to increase in 2016. China is keen to develop its domestic bond market; the government also called for more issuance of financial bonds to support the economy in 2015 amid tightening local government budgets.

Households – Room to boost leverage from low levels

Household debt is low, but has climbed steadily and is likely to continue to do so

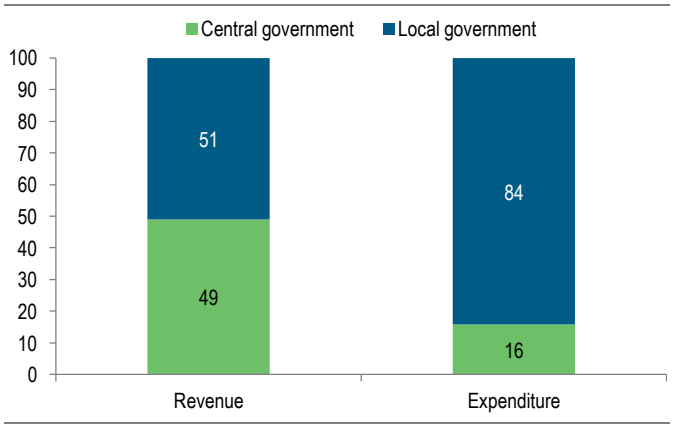
The household debt ratio is low relative to other segments of China's debt, and is also extremely low relative to the rest of the region. This partly offsets concerns about high corporate leverage. We estimate China's household debt at 40% in 2015 and 36% in 2014; this compares with more than 60% in most Asian countries. Financial debt in China's household sector was CNY 23tn in 2014, only 9% of households' total assets, according to an estimate from the Chinese Academy of Social Sciences. Excluding debt for business operation purposes, the share declines further to 6%.

Figure 5: Central government bonds outstanding
CNY tn



Source: CEIC, Standard Chartered Research

Figure 6: Uneven distribution between revenue and spending caused local govt borrowing to surge
% of total, annual average from 2008-15



Source: CEIC, Standard Chartered Research

While China's household debt remains comfortably low by international standards, its ratio to GDP has been on a steady uptrend. Mortgages and auto loans are key drivers of this, in our view. The gradual loosening of property-market policies, accommodative monetary conditions, and plans to make mortgage interest payments tax-deductible are likely to push household debt modestly higher in the future.

The Japanification of China's economy?

China's current debt dynamics and economic situation resemble those of Japan in the 1990s in many ways. The high corporate-sector leverage ratio, mounting deflation fears and subdued growth momentum have raised concerns about China's debt sustainability and whether the country is poised to repeat Japan's experience and enter decades of stagnant growth. We think China has the advantage of learning from history and has the policy options available to avoid repeating Japan's experience.

Japan experienced a severe financial crisis in the early 1990s, marking an end to the post WWII economic 'miracle' era. It subsequently slipped into decades of deflation and sluggish growth. Banks' excessive lending to the property sector, an asset bubble in the domestic stock market, and inappropriate policy responses (including the authorities' delay in forcing banks to recognise their losses) are generally seen as the key factors behind this economic malaise.

Heavy fiscal stimulus to boost growth as the population ages could cause government debt to balloon

The rapid rise in corporate leverage and high NPLs in the banking sector curtailed banks' capacity to lend to high-potential projects in the 1990s. Slow recognition of bad debts and bank recapitalisation resulted in a deflationary mindset among corporates, which later spread to the consumer sector. The government responded with heavy fiscal stimulus when the corporate and banking sectors failed to function, leading to a rapid deterioration in its fiscal position and causing government debt to skyrocket (it is now more than 200% of GDP). The ageing of Japan's population since 1990 has compounded the situation, structurally constraining long-term potential growth and making it more difficult to reverse the growth downtrend.

We see three areas of vulnerability in China that could lead to a Japan-like crisis:

1. Overcapacity and high property inventories could increase corporates' debt burden and reduce their debt repayment ability.

2. Slow progress on reforms aimed at resolving bad debt, and over-leverage, could eventually erode banks' lending capacity and crowd out resources from efficient companies to 'zombie' companies.

3. China's shrinking working-age population may limit its future growth potential, despite the recent loosening of the one-child policy. China's working-age population started to decline in 2012, resulting in a labour shortages and higher social security spending.

China's relatively high potential growth, stable current account balance, proactive policies and urbanisation should mitigate risks

We also identify three areas of strength that could allow China to avoid repeating Japan's experience.

1. We expect China to continue to enjoy above-6% GDP growth and a stable current account surplus in the coming years. This will provide a buffer against shocks to the economy.

2. China has adopted accommodative monetary and fiscal policies during the current economic slowdown. Policy makers are also mindful of the risks of extreme policy measures and are likely to avoid large-scale counter-cyclical stimulus.

3. China's urbanisation and its transition to a services-led economy both still have a long way to go; these developments are likely to increase potential growth and offset the negative impact of less favourable demographics. China has started to take steps (including digesting overcapacity) to deal with excessive leverage, even though progress may be slow in some sectors.

Hong Kong

Vigilant policies help to mitigate risks

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We see Hong Kong as an area of concern, with risks having risen since 2013. We place it in the high-risk category.

However, we expect years of policy vigilance on debt to come to fruition. The Fed is finally hiking interest rates, and residential property prices in Hong Kong are starting to correct. While property-related lending has risen further in recent years, the pace of increase has been modest relative to previous boom times. Successive rounds of macro-prudential measures since 2009 have limited speculation and reined in leverage growth, and should buffer households from any interest rate shock. A shallow Fed-hiking cycle should also ensure a gentle deflating of the property bubble. We see little urgency to remove macro-prudential measures for now.

Hong Kong banks have also been preparing for China-related shocks. The Hong Kong Monetary Authority (HKMA) is closely monitoring banks' exposure to mainland entities. While such exposure has continued to rise in nominal terms in the past two years, other metrics suggest signs of stabilisation. China's slowdown and rising Renminbi volatility have led to positioning adjustments, as reflected in smaller net external claims on China since early 2014. That said, cross-border risks are bound to persist as long as Hong Kong's offshore Chinese yuan (CNH) market continues to expand. Supporting CNH development while limiting banks' mainland exposure is likely to remain a tough balancing act for the authorities.

We consider Hong Kong's current debt-to-GDP ratio of 293% high but manageable for a small, open economy with a large financial sector. Corporates are generally cash-rich; household leverage, at 67% of GDP, is modest by any standard; and the government has plenty of cash and minimal public debt. We take comfort in the government's ample fiscal headroom and regulatory prudence, despite the lack of monetary policy autonomy to manage credit cycles. Banks continue to deserve their reputation of being well managed; their capital adequacy ratio of 17% and loan-to-deposit ratio of 71% suggest no credit over-extension.

The property bubble should deflate gently

Property-related lending – including personal mortgages, loans for building and construction, and loans to property developers and investors – account for 48% of total domestic bank loans outstanding, down from a peak of 56% in 2009, when

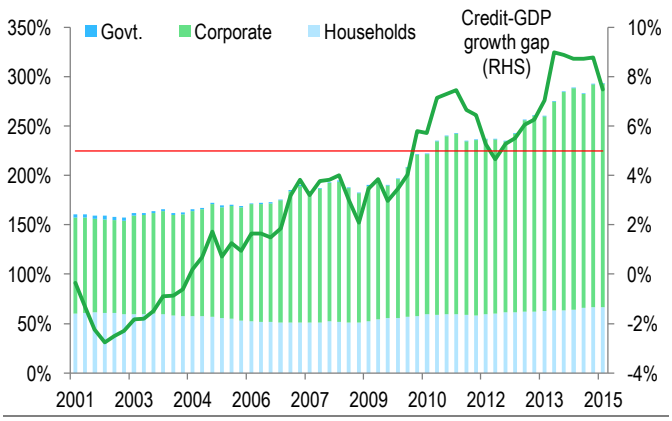
Figure 1: Hong Kong – Summary of leverage

Hong Kong SAR	Total credit/GDP	Debt service ratio
Economy	293%	
Private corporate sector	226%	51%
Household sector	67%	8%
Government	-	-

Source: Bloomberg, BIS, IMF, Standard Chartered Research

Figure 2: Debt distribution

Total debt/GDP (LHS) vs credit-GDP growth gap (RHS)



Source: BIS, IMF, Standard Chartered Research

property-market cooling measures were first introduced. The contribution from property-related loans to domestic loan growth has more stable and manageable since 2012 than in prior boom times (Figure 3).

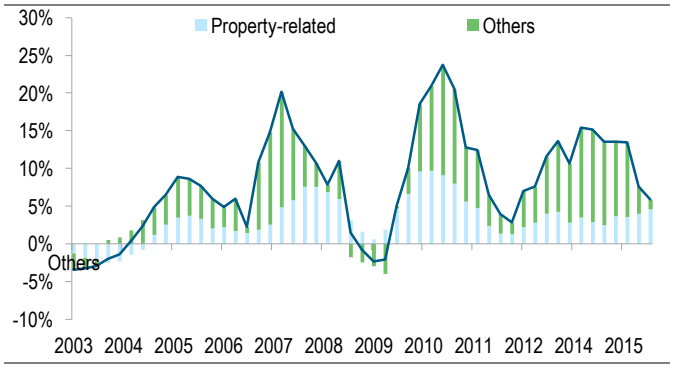
We expect residential property prices to decline by about 10-20% over the next two to three years under pressure from very high prices, a weaker economy and the threat of higher US interest rates. We expect the correction to be orderly, however. Macro-prudential measures have helped to limit not just speculation but also household leverage. Higher down-payment requirements and more stringent mortgage approval thresholds have created a buffer against potential future shocks. The likely modest uptrend in HIBOR should have only a limited impact on the mortgage-servicing burden and housing affordability (Figure 4).

Managing China-related exposure

Banks continue to take on more non-bank China exposure – a natural consequence of the irreversible trend of Hong Kong-China financial integration. As a percentage of total bank assets, however, the rise in cross-border risk appears to have moderated somewhat (Figure 5). We take comfort in greater regulatory scrutiny, and in the notable reduction in banks' net external claims on China since early 2014. China's slowdown, narrowing cross-border interest rate differentials, and successive bouts of Renminbi volatility in recent years have prompted banks to better manage their China exposure and liquidity, while borrowers have also scaled back their positions. As Figure 6 shows, net external claims on Chinese banks have fallen to only one-third of their March 2014 peak; non-bank exposure, which was even healthier to begin with, is also at half the mid-2014 level.

Figure 3: Steadier growth from property-related lending

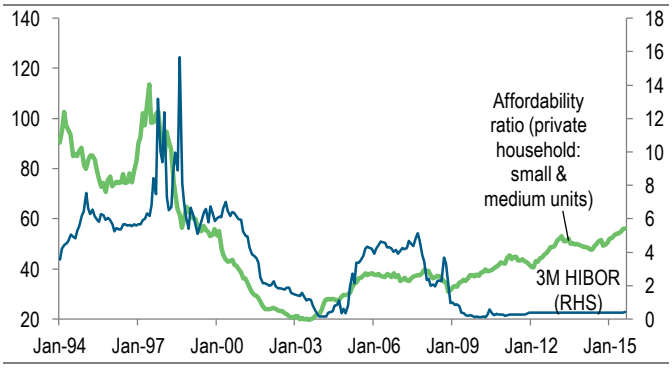
Contribution to y/y growth in domestic bank loans



Source: CEIC, Standard Chartered Research

Figure 4: Subdued HIBOR helps affordability

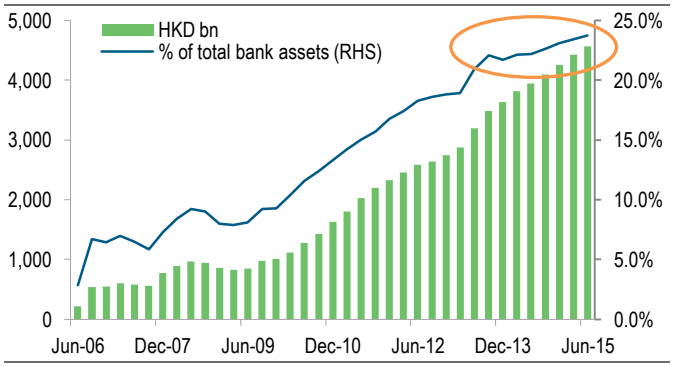
Affordability ratio (LHS) and 3M HIBOR, % (RHS)



Source: CEIC, Standard Chartered Research

Figure 5: Slower rise in non-bank China exposure?

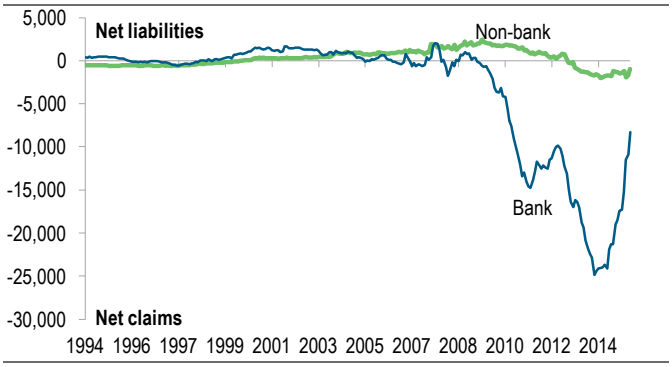
Banking sector's non-bank China exposure



Source: CEIC, Standard Chartered Research

Figure 6: Scaling back cross-border risk since 2014

Net external liabilities and claims on China, HKD bn



Source: CEIC, Standard Chartered Research

India

Deleveraging process faces headwinds

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We place India in the medium-risk category, with risks having risen since 2013. The deleveraging process has faced various headwinds. Despite a slower pace of debt accumulation, both the level and risk profile of aggregate debt have deteriorated, particularly since FY15.

Total debt to GDP deteriorated in FY15 and FY16

Nominal GDP growth was 8.6% in FY16 (year ended 31 March 2016), the slowest since FY03. This raised the debt-to-GDP ratio to an all-time high of 138.3% (our estimate) from 132.1% in FY14. During the FY10-FY14 period, average nominal GDP growth of 15% helped to keep the debt-to-GDP ratio broadly stable. While we expect nominal GDP growth to improve to 10.5-11.5% in the next couple of years, the debt ratio is likely to remain elevated. Weak profitability in the corporate sector and low commodity prices compound the challenge.

For the economy as a whole, a gradual near-term rise in leverage cannot be ruled out given the gradual pace of the economic recovery. While we do not expect negative rating actions by any of the three rating agencies, further structural reforms are needed to improve growth potential and to ensure medium- to long-term debt sustainability.

Government debt – Tough to trim in the near term

The government is the most leveraged sector of the economy

While the government is pursuing fiscal consolidation, the pace of debt accumulation – estimated at 12.5% in FY15 and FY16 – far exceeds nominal GDP growth. The government is the most leveraged sector in the economy; we estimate that its debt rose to c.69% of GDP in FY16 from c.66% in FY14, after having fallen from c.83% in FY04. A pronounced slowdown in debt accumulation looks unlikely in the near future. Rating agencies have highlighted risks related to public finances as a key factor preventing an upgrade of India's sovereign rating outlook.

Government debt to GDP is likely to stay high even as the fiscal deficit is reduced

We expect government debt to remain under upward pressure in the near future. First, slower nominal GDP growth over the next couple of years is likely to outweigh the positive impact of a smaller general government fiscal deficit on the public debt-to-GDP ratio. Most of the reduction in the general government fiscal deficit is likely to come from the central government, which aims to reduce its deficit to 3.0% of GDP by FY18 from 3.9% in FY16. However, with nominal GDP growth set to remain in the 10.5-11.5% range, the ratio of government debt to GDP is likely to remain high as the pace of debt accumulation outpaces GDP growth.

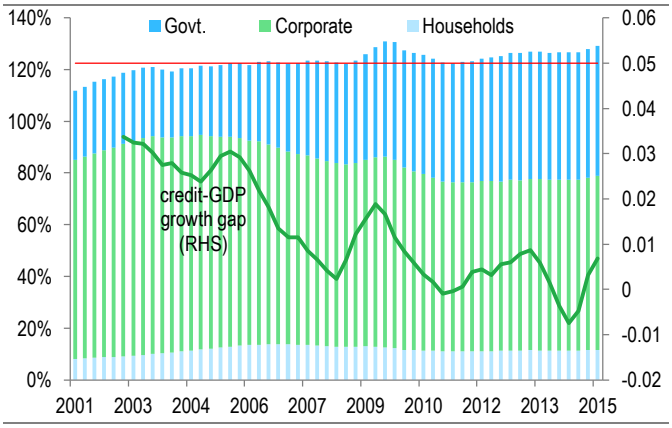
Figure 1: India – Summary of leverage

India	Total credit/GDP	Debt service ratio
Economy	130%	
Private corporate sector	68%	63%
Household sector	12%	3%
Government	51%	14%

Source: Bloomberg, BIS, IMF, Standard Chartered Research

Figure 2: India – Debt distribution

Total debt/GDP (LHS) vs credit-GDP growth gap (RHS)



Source: BIS, IMF, Standard Chartered Research

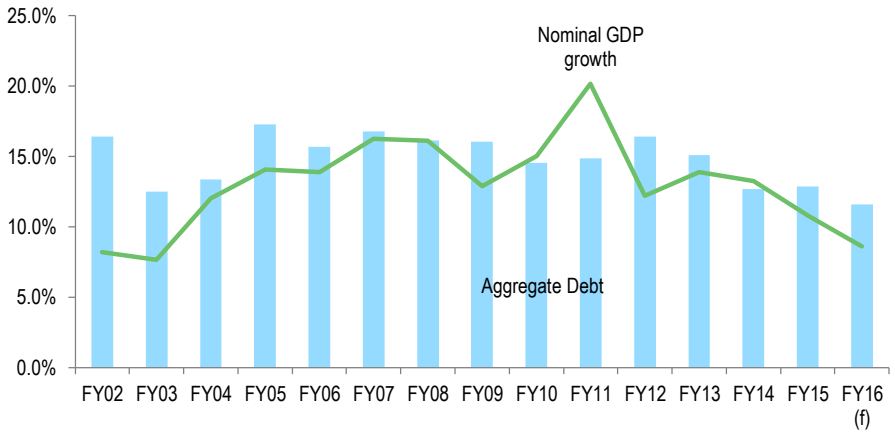
High nominal GDP driven by strong economic activity is key to reducing government debt to GDP

The experience of FY02-FY04 is a good example in this context. Even as the combined government fiscal deficit was reduced to 8.3% from 9.6% of GDP, the public debt-to-GDP ratio rose to c.83% from c.79% as nominal GDP growth averaged less than 10% in all three years. Fiscal consolidation continued until FY08, and the impact of a smaller fiscal deficit was felt as nominal GDP growth picked up in subsequent years on increased economic activity. From FY08 to FY14, the wider fiscal deficit did not increase public debt to GDP, as nominal GDP growth remained high on persistent double-digit inflation.

Structural reforms of fiscal expenditure are necessary to sustainably reduce government debt

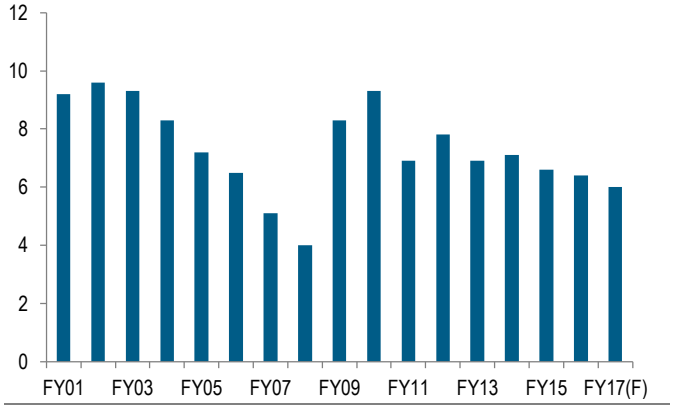
The government debt-to-GDP ratio may increase in FY17, even if aggregate debt remains unchanged, as some debt is shifted from state-owned entities to state governments' books. State government finances likely faced pressure in FY16 on increased efforts to restore State Electricity Boards (SEBs) to financial health. The central government announced a bailout/restructuring package for SEBs in late 2015 that proposes to shift 75% of SEB debt (3.2% of GDP) to state governments over two years – 50% in FY16 and 25% in FY17. Nine states have already agreed to this; we estimate that state government debt increased by c.0.7ppt of GDP in FY16 and is likely to increase by a larger amount in FY17 as more states join the programme.
Since this merely shifts debt between government entities, it does not raise concerns

Figure 3: Slower nominal GDP growth hinders the deleveraging process *(% y/y)*



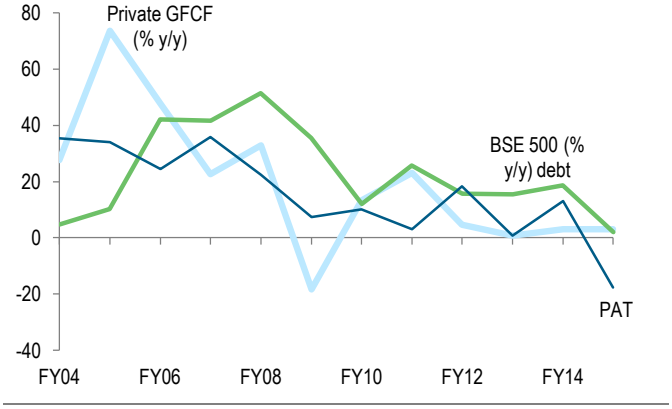
Source: CEIC, Standard Chartered Research

Figure 4: Fiscal consolidation continues, albeit gradually
% of GDP, central and state governments combined



Source: RBI, Standard Chartered Research

Figure 5: Higher corporate debt has not led to higher investment
Private gross fixed capital formation (GFCF) growth and BSE 500 debt growth, % y/y



Source: Bloomberg , Standard Chartered Research

in terms of overall leverage levels. However, the root causes of this debt – such as SEBs' selling of electricity at below cost and their excessive reliance on bank credit to finance their losses – need to be addressed structurally in order to improve debt sustainability. More measures to improve expenditure efficiency and reforms of structural expenditure are necessary to reduce India's high dependence on high nominal GDP growth to keep the government debt-to-GDP ratio in check.

Corporate debt – Weak debt repayment capacity

The corporate sector is the second-most leveraged in India's economy. While the pace of debt growth slowed to single digits in FY16 for the first time since FY03, the sector's debt repayment capacity has remained weak.

Weak profitability on slower demand and the collapse in commodity prices has eroded corporates' debt repayment capacity. We estimate that corporate debt rose to c.56% of GDP in FY16 from c.55% in FY14, even as companies slowed the pace of debt accumulation and sold off assets to deleverage. The net profit of non-financial companies in the BSE 500 declined 17% in FY15 (versus growth of 18% in FY12), and the interest coverage ratio (EBIT/interest expense) deteriorated to 3.77 from a high of 8.94 in FY05.

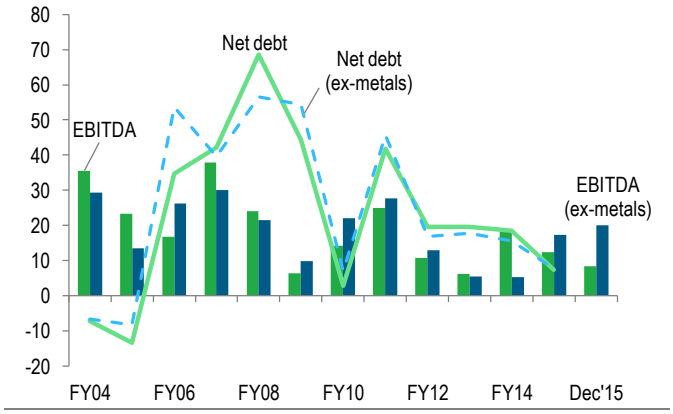
Corporate results for the quarter ended December 2015 showed a modest improvement in some debt metrics, especially for non-metal companies. However, debt concentrations in commodity sectors such as iron and steel are cause for concern, and were noted by the Reserve Bank of India (RBI) in its Financial Stability Report in December 2015.

Weak profitability and low commodity prices has eroded the corporate sector's debt repayment capacity

Lower commodity prices have weighed on corporates' ability to deleverage. Excluding metal-focused companies, EBITDA growth improved to 20% y/y in December 2015 from 5.3% in FY14; including these companies, EBITDA growth deteriorated to 8.4% from 18.8% (Figure 6). The gross debt of metal and mining firms in the BSE 500 with interest coverage ratios below 1.0 – i.e., insolvent companies – increased nearly 4.4x to INR 738bn in FY15 (INR 168bn in FY14). Anecdotal evidence suggests a significant rise in stranded assets in the commodity space over the past year. While the value of stalled projects has declined, it remains high (INR 10.8tn as of end-December 2015). Selling non-core assets has proven to be another challenge for corporates while deleveraging.

Figure 6: Lower commodity prices weigh on profitability

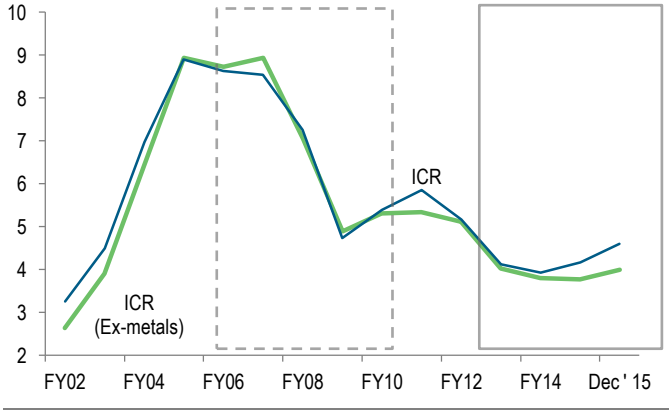
% y/y



Source: Bloomberg, Standard Chartered Research

Figure 7: BSE 500 – Interest coverage ratio has worsened

Non-financial firms



Source: Bloomberg, Standard Chartered Research

Concentration in corporate sector debt is worrisome

Corporate debt-servicing parameters remain weak. The interest coverage ratio for the BSE 500 improved marginally from 3.8x in FY15 to 4.0x in December 2015, but is significantly lower than 9x in FY07 (the higher the better).

The concentration of corporate debt is another source of concern. Stress levels for large corporates have increased over the past two years, as evidenced by the following:

- The gross debt of 10 large conglomerates rose to INR 7.3tn in FY15 (c.30% of BSE 500 gross debt) from INR 6.3tn in FY13. These groups' absolute debt levels have increased despite the sell-off off significant assets in the past two years, suggesting the risk of potential default in future.
- The 15% of total BSE 500 non-financial companies with debt-to-equity ratios of more than 2x now hold 33% of total gross debt.
- The total gross debt of loss-making BSE 500 companies increased to 27% of total outstanding gross debt in FY15, from 23% in FY14 and 7% in FY11.

The RBI governor recently stated the goal of cleaning up banks' balance sheets by March 2017

The RBI's recent Financial Stability Report flags similar concerns. The pace of corporate deleveraging is likely to be slow amid expectations of a gradual economic recovery and subdued equity markets. The RBI governor recently stated a goal of cleaning up banks' balance sheets by March 2017; while this might accelerate the deleveraging process, it could bring significant pain for the corporate sector.

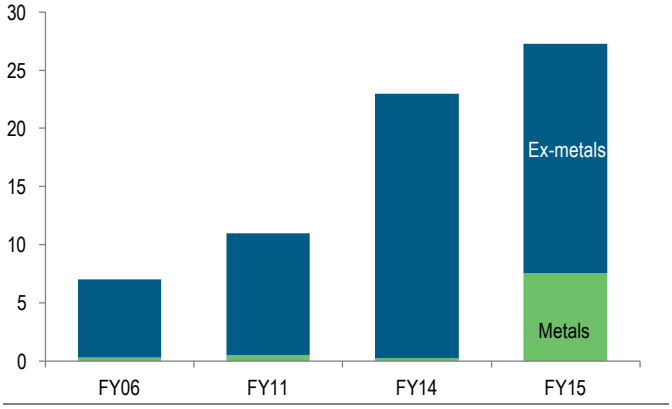
Household leverage – Not a concern

India's household leverage is low relative to other economies

India's household leverage, which we estimate at 12.9% of GDP in FY16, is low relative to other economies. Housing loans (less than 6% of GDP in FY16) could face stress in case of an income shock and/or a sharp fall in property prices. While loan-to-income and loan-to-value ratios have increased in the past two years, risks in this sector remain contained, in our view. Tight macro-prudential regulations, a low level of stressed assets and large financial savings are likely to provide a buffer in case of a stress scenario.

Figure 8: Loss-making firms account for nearly a quarter of total debt

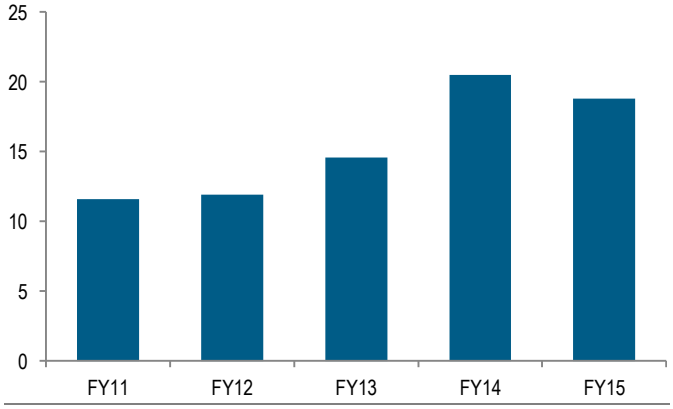
BSE 500 – Proportion of gross debt with loss-making firms



Source: Bloomberg, Standard Chartered Research

Figure 9: One in five BSE 500 firms may find interest servicing difficult

BSE 500 – Proportion of firms with ICRs <1



Source: Bloomberg, Standard Chartered Research

Indonesia

Rising leverage, but stricter borrowing measures

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We place Indonesia in the medium-risk category, with risks having risen since 2013.

Indonesia's leverage levels are still considered safe

The total amount of leverage in the economy continues to rise from low levels. Across the government, corporate and household sectors, ratios of debt to GDP are still low relative to peer countries, at less than 30% of GDP. Stricter policy measures have been introduced to prevent excessive borrowing by non-bank corporates and households, including hedging requirements for non-bank corporations and a maximum loan-to-value (LTV) ratio for housing and auto loans.

Indonesia's total debt-to-GDP ratio has been on an uptrend since 2010, in line with the widening current account deficit. Total debt increased to 66% of GDP in Q3-2015 from 55% in 2010. This was driven by rising corporate and household debt (Figure 2), which rose to 23% and 17% of GDP, respectively, from levels around 14%. We think demand for external financing will continue to grow, in line with plans to increase infrastructure spending and to expand production capacity to sustain faster economic growth.

Short-term vulnerability is more of a concern

Short-term external debt (maturing in less than one year) reached USD 54bn in November 2015, accounting for 18% of total debt. Indonesia's ratio of external debt to FX reserves is among the highest in Asia, at 2.5x. The external debt-service ratio also rose to 29% in 2015 from 23.1% in 2014, mainly due to sluggish export revenue growth. The deterioration in short-term debt metrics indicates higher financing risk, especially for private debtors that earn their income in Indonesian rupiah (IDR).

A detailed look at short-term financing risk suggests that it is manageable

Private-sector debt accounts for 82% of India's total short-term external debt, or around USD 45bn (as of November 2015). The banking sector, which is highly regulated, accounts for 42% of short-term private debt. Banks are required to maintain a net open position of 20% of their capital, limiting currency risk. 23% of the debt (USD 10bn) is from parent/affiliated companies, leaving 35% (USD 15bn) held by private non-bank corporates. Loans to parent/affiliated parties usually have lenient terms and can be rolled over relatively easily. The 18% of short-term debt held by the public sector is adequately covered by FX reserves, which stand at USD 104.5bn (7.5 months of import cover), and by government debt-service payments.

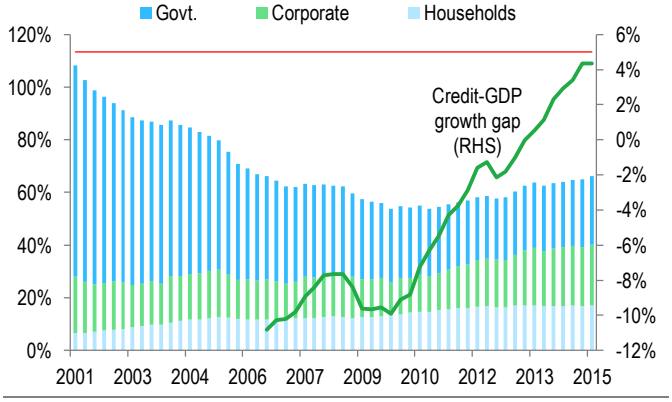
Figure 1: Indonesia – Summary of leverage

Indonesia	Total credit/GDP	Debt service ratio
Economy	66%	
Private corporate sector	23%	37%
Household sector	17%	5%
Government	26%	4%

Source: Bloomberg, BIS, IMF, Standard Chartered Research

Figure 2: Indonesia – Debt distribution

Total debt/GDP (LHS) vs credit-GDP growth gap (RHS)



Source: BIS, IMF, Standard Chartered Research

Corporate leverage – Low commodity prices increase risks

Corporate debt has increased faster than other types of debt in the past five years

Indonesia's private external debt has risen rapidly in the past five years, at a 14.9% CAGR (versus 8.9% for total external debt), and has overtaken government debt in absolute terms. Limited domestic financing capacity and low interest rates abroad have encouraged corporates to seek financing externally. The loan-to-deposit ratio of Indonesia's banking system increased to 92% in January 2016, close the historical high of 93% reached in July 2014. Debt in the financial, mining and manufacturing sectors has contributed the most to private-sector debt growth in the past five years. Property-sector debt has also increased notably over the period, helping to fuel the property-sector boom since 2012.

Weak global demand and falling commodity prices have increased credit risk across sectors. Indonesia's non-performing loan (NPL) ratio increased to 2.7% in January from 2.2% at the end of 2014. The NPL ratios for the mining and manufacturing sectors rose to 4.4% and 2.8%, respectively, from 2.5% and 1.9% over the same period. NPL levels would have been higher in the absence of the relaxation of loan restructuring rules – in 2015, the Financial Services Authority allowed banks to restructure debt before classifying it as non-performing.

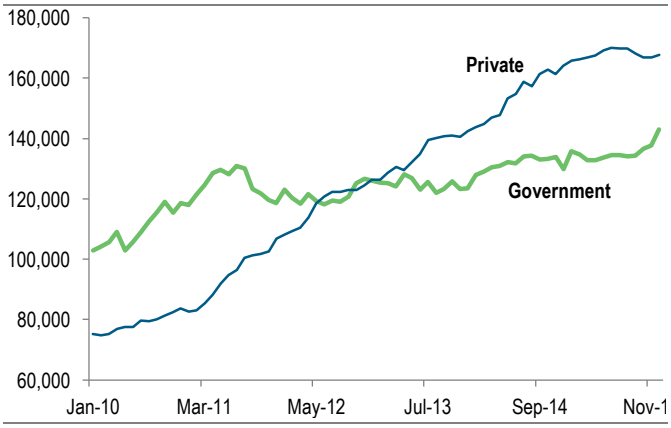
We expect NPLs to edge higher before peaking in H2-2016, driven by the economic recovery and faster loan growth. While the impact will vary across banks depending on their exposure to badly affected sectors, we believe the banking sector is now better positioned to absorb shocks than it was in the late 1990s. The sector's capital adequacy ratio was 21.7% in January 2016, a historical high. Big banks maintain relatively high loan-loss provision ratios of 130-160%.

Bank Indonesia introduced prudential measures for non-bank corporate debt

To prevent excessive risk taking through external borrowing, Bank Indonesia (BI) requires non-bank corporations to hedge the negative balance between their foreign-currency assets and foreign-currency liabilities maturing in the next six months. BI also requires corporations to maintain a certain amount of FX liquidity relative to their external debt holdings, and to have a minimum credit rating in order to issue debt (see Figure 5). According to BI, around 94% of 1,568 reported corporations have complied with the hedging and liquidity ratio requirement as of Q3-2015.

Figure 3: Limited domestic financing encouraged external borrowing by the private sector

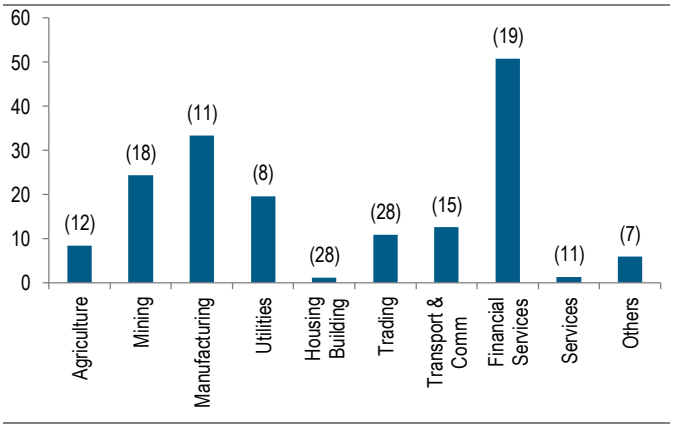
External debt, USD bn



Source: CEIC, Standard Chartered Research

Figure 4: Financial, manufacturing and mining sectors have the highest private external debt

Private external debt by sector, USD bn (figure in brackets are 2010-15 CAGRs, %)



Source: CEIC, Standard Chartered Research

Figure 5: Summary of BI prudential measures on non-bank corporate borrowing

Regulations apply to all foreign-currency debt

Regulation	Phase 1: 2015	Phase 2: 2016	Phase 3: 2017 and beyond
Hedging ratio			
≤ 3 months	20%	25%	
3-6 months	20%	25%	
Liquidity ratio (≤ 3 months)	50%	70%	
Credit rating	Not applicable	Minimum rating of BB-	
Hedging transactions	Not required to be done with bank in Indonesia		Must be done with a bank in Indonesia
Sanctions for non-compliance	Imposed as of Q4-15		

Source: Bank Indonesia, Standard Chartered Research

Government leverage – Positives in the near term

Public-sector leverage remains stable thanks to the budget deficit ceiling

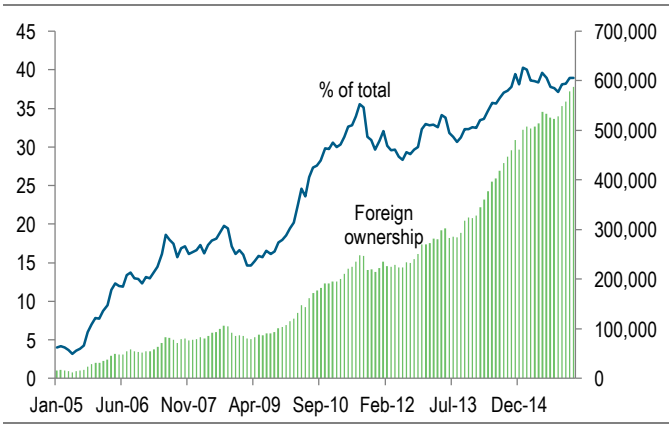
The ratio of total government debt to GDP has been broadly stable for the past five years, averaging 24% of GDP, thanks to the budget deficit ceiling of 3% of GDP. We expect the deficit to widen to 2.6% of GDP in 2016 from 2.2% initially estimated, as government tax revenue is likely to fall short of the target. This will increase bond financing by around IDR 30tn (on top of the IDR 543tn already budgeted), assuming additional financing is equally distributed between domestic and external loans.

Despite potential supply upside, we believe demand for government bonds remains solid. Foreign ownership has risen to IDR 587tn (39% of IDR bonds outstanding), the highest on record. Low interest rates globally, a potential upgrade of Indonesia's sovereign rating to investment grade, and stable domestic macroeconomic conditions make Indonesian government bonds attractive to foreign investors.

Strong foreign appetite is positive for deficit financing. On the negative side, it entails risk in the event that positive sentiment reverses. To mitigate this risk, the government continues to increase domestic investor participation by expanding the retail base and requiring non-bank financial institutions (i.e., insurance companies and pension funds) to hold a minimum portion of their assets under management in government bonds (see *On the Ground, 17 February 2016, 'Indonesia rates –*

Figure 6: Foreign share rises to a record on attractive yields and stable macro conditions

% of total (LHS), IDR bn (RHS)



Source: CEIC, Standard Chartered Research

Figure 7: Insurers and the social security fund government bond holdings will increase on the back OJK regulation

	Investment (IDR tn)	Increase in government bond holdings (ppt)	2016 demand (our forecast, (IDR tn)
Life insurers	283.2	4.1	10-12
Social security fund (BPJS)	204.2	9.1	18-20
Pension funds	147.7	2.2	3-4
General insurance and Re-insurance	66.1	5.8	4-5
Mandatory insurance	76.6	-	-
Total			**35-41**

Source: OJK (Financial Service Authority), Standard Chartered Research

Playing for disinflation'). We expect this minimum holding requirement to increase demand for government bonds by IDR 35-41tn up to 2017. The government's plan to cap the deposit rate for state funds is also likely to boost demand.

Household leverage – Proactive policy

The government imposed a loan-to-value ratio to prevent a property bubble

Demand for housing and vehicle loans surged in 2011-12, driven by low interest rates and the absence of minimum down-payment requirements. House and apartment loans grew by 54% and 167%, respectively, during the period; this was followed by a sharp increase in property prices. To prevent a property bubble, BI imposed an LTV ratio for property and automotive loans in 2012. Only when BI tightened the regulation further in 2013 did it start to slow. The revision lowered the LTV to 70% from 80%, prohibited banks from extending loans for down payments, and – most importantly – required construction of the property to be completed before the borrower was eligible for the loan.

These additional measures reduced room for speculation and effectively cooled the property sector, as only developers with strong capital can operate under the current regulatory framework. In 2015, BI slightly eased the LTV regulation to bolster weak domestic demand (Figures 8 and 9). We do not think this macro-prudential loosening will reignite the property price bubble as long as the central bank keeps the full construction provision unchanged.

Figure 8: Indonesia – Summary of latest LTV ratios for property credit

Property type (m^2)	1st credit facility		2nd credit facility		3rd credit facility	
	Before	After	Before	After	Before	After
Landed house						
> 70	70%	80%	60%	70%	50%	60%
22-70	-	-	70%	80%	60%	70%
Up to 21	-	-	-	-	-	-
Apartment						
> 70	70%	80%	60%	70%	50%	60%
22-70	80%	90%	70%	80%	60%	70%
Up to 21	-	-	70%	80%	60%	70%
Home store						
	-	-	70%	80%	60%	70%

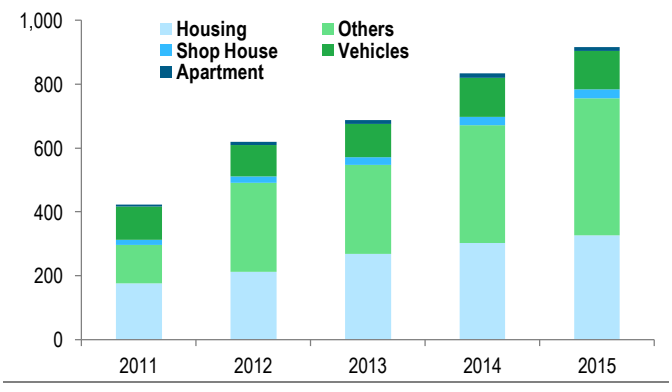
Source: Bank Indonesia, Standard Chartered Research

Figure 9: Summary of loan-to-value ratios for auto credit

Vehicle type	Conventional and Islamic banks	
	Before	After
Two-wheelers	25%	20%
Three-wheelers or more, non-business-related	30%	25%
Three-wheelers or more, business related	20%	20%

Source: Bank Indonesia, Standard Chartered Research

Figure 10: Housing and automotive loans dominate household debt *(IDR tn)*



Source: CEIC, Standard Chartered Research

Malaysia

Stretched but manageable

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We see Malaysia as an area of concern, with higher risks than in 2013. We place it in the high-risk category. While Malaysia's household and external debt are relatively high, the financial system is significantly healthier than it was before the Asian financial crisis. Loan growth has also slowed in line with a softening business cycle. We expect both corporate and household loan growth to slow, dragging on GDP growth. External debt growth has rebounded, but around half of Malaysia's debt is in local currency, with many long-term real-money and sovereign investors. Malaysia's government debt is on the higher side within Asia, but the government's ongoing fiscal consolidation is positive.

Malaysia's household leverage metrics are stretched, but household loan growth is slowing

Malaysia's financial system remains stable due to low non-performing loans (NPLs), at below 2% of total loans since end-2012. The NPL ratio is currently around 1.6%, much lower than the 9%+ level seen in early 2006. This likely signals a healthy and resilient banking system, despite stretched leverage metrics.

Overall loan growth has also stabilised as GDP growth slows. Loan growth averaged 9.2% y/y in 10M-2015, slightly below the 2014 level and also the lowest since 2009. Loan growth may continue to slow amid headwinds to domestic and external demand.

Corporate debt – Growth should ease after a strong 2015

The pick-up in corporate loan growth in 2015 is unlikely to be sustained throughout 2016. Corporate leverage is at a healthy level, at 50% of GDP. Rising corporate loan growth has been led by loans to the manufacturing, wholesale/retail trade, real-estate and financial services sectors. Given the gloomy business outlook, corporate loan growth may ease slightly in 2016. We also expect GDP growth to slow in 2016, albeit mildly; private capital spending is likely to remain supported by the services, health-care and education sectors. The base effect for private consumption will also turn more favourable in Q2-2016, as Malaysia implemented the Goods and Services Tax (GST) in April 2015.

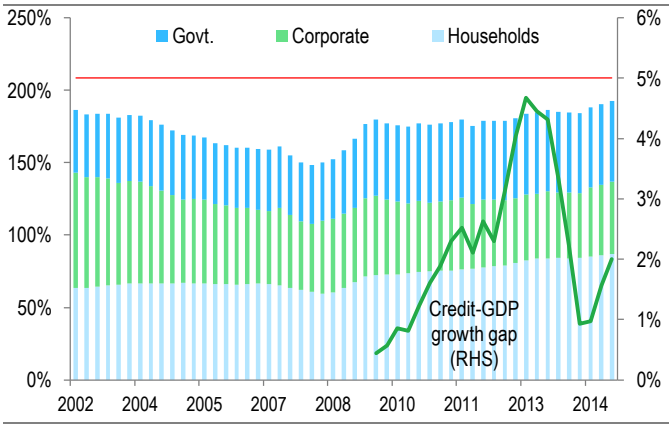
Figure 1: Malaysia – Summary of leverage

Malaysia	Total credit/GDP	Debt service ratio
Economy	193%	
Private corporate sector	50%	44%
Household sector	87%	22%
Government	56%	1%

Source: Bloomberg, BIS, IMF, Standard Chartered Research

Figure 2: Malaysia – Debt distribution

Total debt/GDP (LHS) vs credit-GDP growth gap (RHS)



Source: BIS, IMF, Standard Chartered Research

Household leverage – Stabilising

We expect household leverage to be stable at around 90% of GDP at the end of 2016, similar to 87.9% at end-2014 (the latest annual data available). Monthly household loan growth slowed throughout 2015, hampered by GST implementation, lower consumer confidence, and government measures in recent years to improve household debt sustainability. These measures include minimum loan-to-value ratios for third and subsequent home loans, progressively higher property-gains taxes and the Guidelines on Responsible Financing. Properties that are sold within five years of purchase have been subject to a property-gains tax of 15-30% since 2014, up from 5% in 2010; the tax was increased several times between 2011 and 2014. In July 2013, Bank Negara Malaysia (BNM) also implemented maximum tenors for personal and property loans.

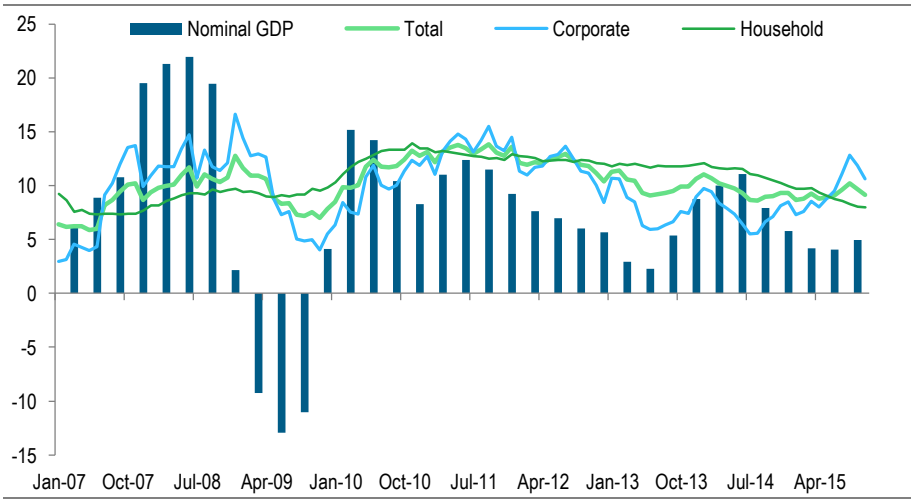
Employment levels and income growth are important swing factors for household leverage, particularly given that leverage levels are already high. The unemployment rate has remained low, at just above 3% for the past five years. Wage increases in the wholesale and retail trade sector have slowed considerably since 2011-12. While this should slow leverage growth, it may raise concerns about affordability, particularly since borrowing is already 198% of household income. The household debt-service ratio is at 22%, higher than most other Asian economies.

A slowing property market may also limit growth in loans for residential properties. Housing price increases have stabilised in recent quarters. The average q/q increase for Q1 to Q3-2015 slowed to 1.5%, the lowest since 2009, as supply caught up with demand.

Government debt – Well managed

While government debt is moderate as a percentage of GDP, debt service is low, at only 1% of total government revenue. More than 60% of government debt is sourced domestically. In addition, the government has made progress on fiscal consolidation in the past five years – it targets a fiscal deficit of 3.1% of GDP in 2016, much lower than the 4.5% target in 2012. Lower oil prices may create near-term headwinds to further progress, however. The government adjusted the 2016 budget by cutting planned expenditure after oil prices fell to around USD 30-40/barrel.

Figure 3: Household loan growth slows in tandem with GDP growth *(% y/y)*



Source: BNM, Department of Statistics, Standard Chartered Research

External debt is not as bad as headline figure suggests

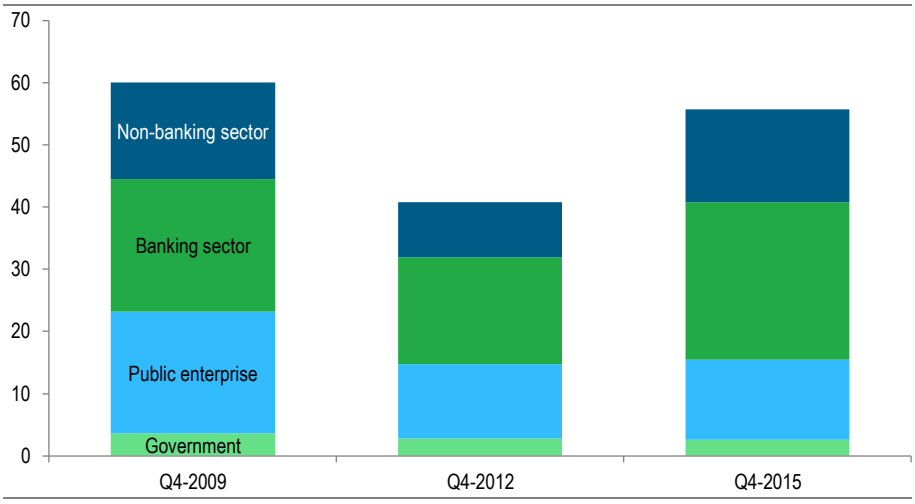
Growth in external debt picked up again in late 2015 after having slowed in late 2014. It grew 11.5% y/y in Q4-2015. This was driven by medium- and long-term external debt, as growth in short-term external debt remained flat throughout 2015. Non-resident holdings of external debt also fell at a quarterly average of 12% y/y in 2015, implying that resident holdings were mainly responsible for the acceleration in external debt growth. However, growth in non-resident holdings has picked up lately, rising 6.2% q/q in Q4.

Around half of Malaysia's external debt is denominated in local currency

While Malaysia's external debt metrics remain higher than those of other Asian economies, more than half (53%) of Malaysia's external debt is denominated in Malaysian ringgit and is insulated from currency fluctuations. The rise in external debt has also been driven by Malaysia's emergence as a component of many international bond benchmark indices, resulting in increased foreign ownership of its local-currency bonds. Many borrowers are long-term real-money, sovereign or quasi-sovereign investors, suggesting that their investments are less fickle in nature.

Figure 4: External debt is still lower than 2009 levels

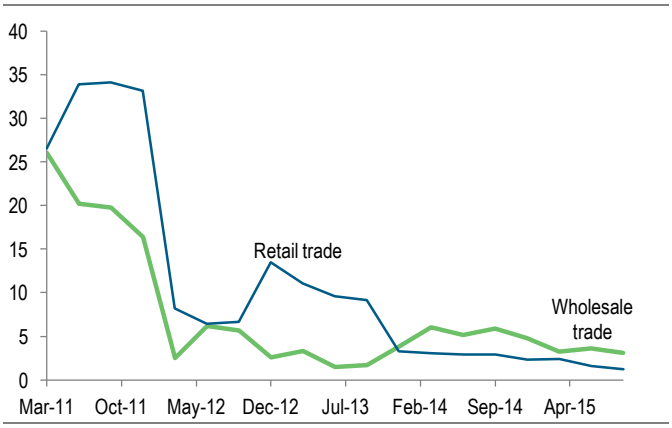
% of external debt



Source: BNM, Standard Chartered Research

Figure 5: Slowing wage growth may cap loan growth

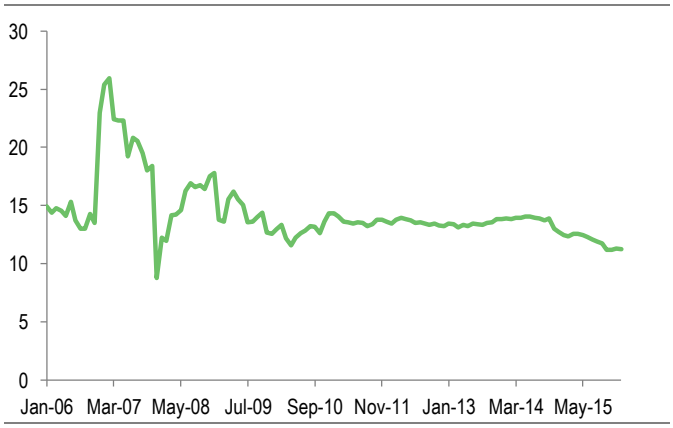
% y/y



Source: Department of Statistics, Standard Chartered Research

Figure 6: Home loans remain resilient

% y/y



Source: BNM, Standard Chartered Research

Philippines

We place the Philippines in the low-risk category, the same as in 2013, and see room for further leverage.

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The ratio of total leverage to GDP, at 88%, is low relative to other economies. Households account for less than 10% of private-sector debt, meaning that most loans are used for business activities. At the same time, household consumption remains robust and is the primary driver of GDP growth. While loan growth has exceeded nominal GDP growth, it is coming from a low base and this reflects positive growth momentum in recent years. In 2015, loan growth slowed in tandem with slower GDP growth. In the government sector, the debt-service ratio has continued to decline as government debt gets smaller relative to GDP. While the government is more leveraged than most other Asian economies, we expect the next administration (to take office in July 2016) to continue to improve debt metrics.

The Philippines has low levels of corporate and household leverage

The Philippines' banking system is relatively healthy, with a low non-performing loan (NPL) ratio. The current ratio of 2.7% is the lowest since the start of the series in 1997. Loan-loss provisions have fallen steadily since 2000.

While loan growth exceeds nominal GDP growth, this is not a big concern, in our view. The five-year average gap is less than 100bps, and is explained by the country's low leverage levels and economic development needs. The use of leverage spurs growth and builds productive capacity. We believe that at current leverage levels, the marginal benefits for loan growth outweigh the marginal costs. In addition, the utilities and construction sectors are key drivers of loan growth. Given their close linkages with infrastructure, high growth in these sectors can benefit GDP growth over the longer term.

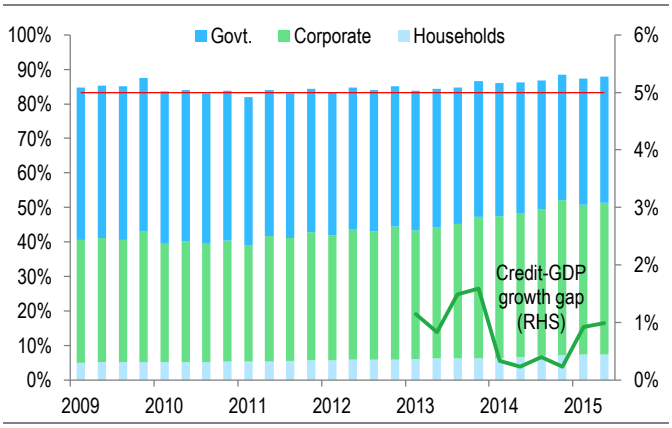
Figure 1: Philippines – Summary of leverage

Philippines	Total credit/GDP	Debt service ratio
Economy	88%	
Private corporate sector	44%	
Household sector	7%	3%
Government	36%	8%

Source: Bloomberg, BIS, IMF, Standard Chartered Research

Figure 2: Philippines – Debt distribution

Total debt/GDP (LHS) vs credit-GDP growth gap (RHS)



Source: BIS, IMF, Standard Chartered Research

Corporate leverage risk is low

Corporate leverage is also benign, at 44% of GDP. Corporate loan growth has been driven in particular by the utilities, wholesale and retail trade, and financial sectors.

We see leverage risks in several sectors. The utilities and real-estate sectors have relatively high loan-to-output ratios. Loan growth in the utilities sector has outpaced nominal output in recent years. In contrast, leverage conditions in the agricultural, construction and other services sectors are more moderate.

Going forward, growth in corporate leverage will depend on business sentiment. Domestic economic growth remains robust, albeit slower than 2012-13 levels. However, subdued global external demand may hamper investment by externally oriented businesses, constraining loan growth.

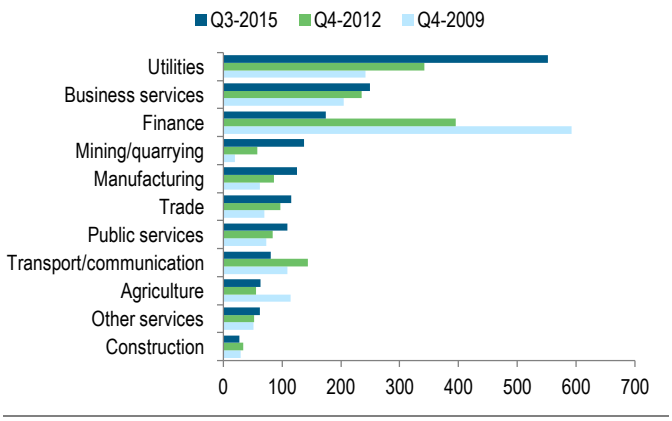
Household leverage is low

Household leverage is growing from low levels

Household loans are less than 20% of GDP and around 25% of household consumption. Growth in household loans has slowed in recent months after stronger growth in 2013 and 2014, partly due to low growth in credit-card loans. Auto loans have been strong in recent years due to strong double-digit growth in motor vehicle sales. However, this is unlikely to be sustainable.

Figure 3: Utilities and business services sectors present higher leverage risks than others

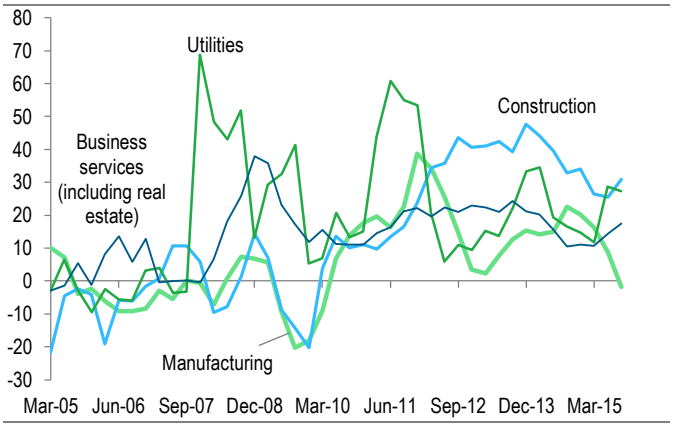
Loan-to-sector output ratio



Source: Philippines Statistics Authority, Standard Chartered Research

Figure 4: Corporate loan growth is supported by the utilities and real-estate sectors

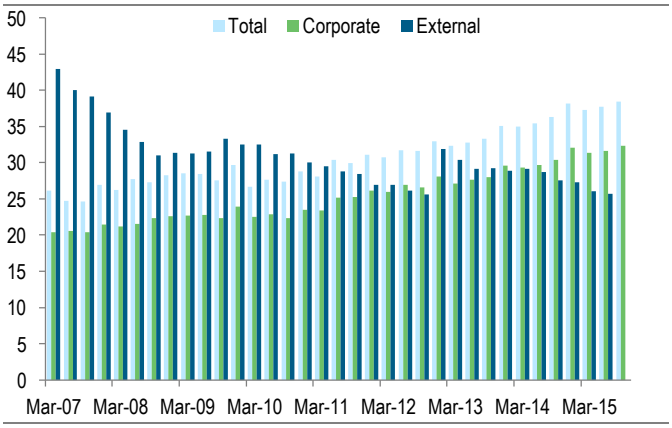
% y/y



Source: Philippines Statistics Authority, Standard Chartered Research

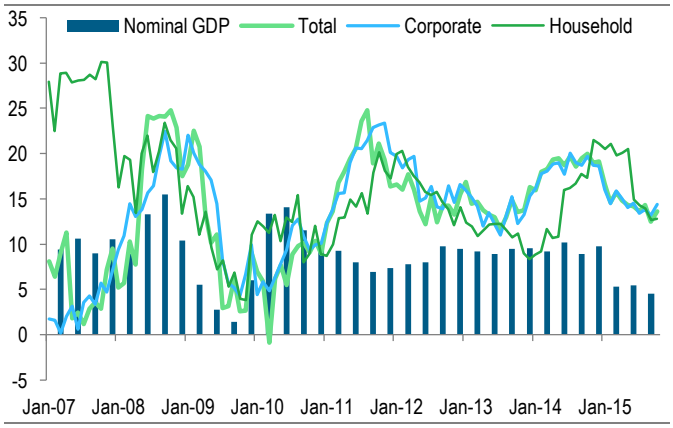
Figure 5: External debt is moderating

Debt, % of GDP



Source: BSP, Standard Chartered Research

Figure 6: Loan growth slowed in tandem with GDP growth in 2015 *(% y/y)*



Source: BSP, Standard Chartered Research

Real-estate loans may be a greater source of concern, comprising around 17% of corporate debt. The domestic real-estate market has been fuelled by solid economic growth and increasing wealth. The business process outsourcing sector has fuelled demand for commercial loans. To limit real-estate loan growth, Bangko Sentral ng Pilipinas (BSP) has tightened lending standards via stricter collateral requirements, wider loan margins, shorter loan maturities and other measures. In 2014, it introduced increased capital requirements, requiring commercial banks to maintain a common equity Tier 1 capital ratio of at least 6% and a total capital adequacy ratio above 10%, even if 25% of a bank's real-estate exposure has been written off. This has led to a moderation in residential real-estate loan growth.

Government debt metrics continue to improve

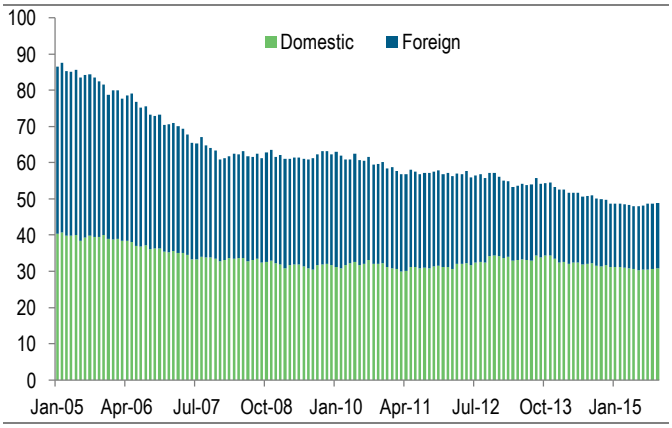
Government debt stabilised at even lower levels in 2014 and 2015. Government debt was only 48.9% of GDP as of October 2015, down significantly from a peak of more than 90% in 2004. Since the Philippines secured investment-grade status in 2013, Moody's and S&P have upgraded the sovereign rating by one more notch. Fitch also has the Philippines on positive outlook. This has reduced the debt-service ratio, freeing up more resources for other spending.

The Aquino administration has focused on reducing the government's reliance on debt, and we expect the next administration to continue to work on improving government debt metrics.

External debt risk is slightly higher than domestic

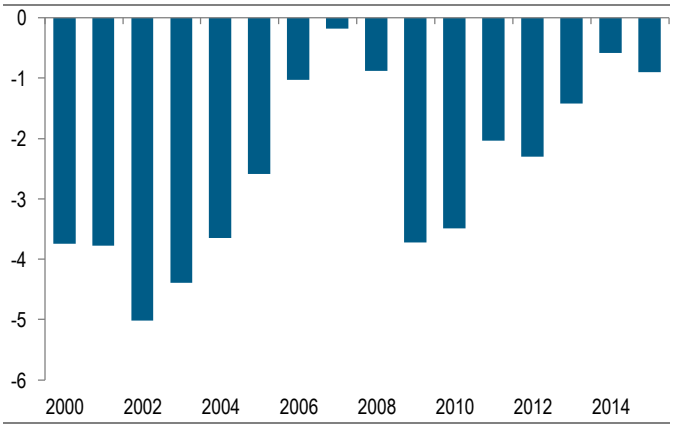
External debt risks look slightly higher than other leverage metrics. External debt is 1.3x FX reserves, and 97% of it is denominated in foreign currency. However, external debt constitutes only 19% of GDP, lower than most other Asian economies. Given stable domestic financial conditions and the Philippines' robust external vulnerability measures, this is unlikely to pose a significant risk except in extreme scenarios.

Figure 7: Government debt continues to decline relative to GDP, particularly foreign-sourced debt *(% of GDP)*



Source: Bureau of the Treasury, Standard Chartered Research

Figure 8: Fiscal deficit has narrowed
% of GDP



Source: Bureau of the Treasury, Standard Chartered Research

Singapore

Leverage levels are moderating

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We place Singapore in the 'moderate risk' category, the same category as in 2013, for overall leverage-related risk at the macro level.

Household debt has stabilised after building up for the past few years, and the debt-service burden remains a concern. However, the government's fiscal policy is very prudent, reflected in Singapore's AAA ratings from all three international rating agencies – one of only 10 countries in the world to enjoy this distinction. Although its debt-to-GDP ratio has exceeded 100% at times, the government does not incur debt to finance its fiscal position.

The government has actively managed leverage risks

Government debt is issued for two main purposes. First, marketable Singapore Government Securities (SGS) are issued to develop the domestic debt market. This debt is equivalent to about 52% of GDP. Second, non-marketable SGS are issued to meet the investment needs of the Central Provident Fund. The proceeds of this debt issuance are not used to finance government expenditure – they are protected under the reserve framework in the constitution, and all borrowings are invested rather than spent by the government.

Household leverage levels are easing

Household leverage levels have stabilised and moderated slightly. This is because household loans are declining even as GDP continues to grow modestly. A higher interest rate outlook, a slowing property market and a modest GDP growth outlook will continue to put the brakes on household loans, particularly housing (76% of the total) and credit card loans.

Singapore is in an economic restructuring phase as it tries to raise productivity

Singapore's residential property prices have fallen about 8% since Q3-2013, reflecting slower economic growth, lower immigration and tighter regulations. Trend economic growth has moderated. The lacklustre global economy has been a key contributor to more modest growth rates; Singapore's domestic economic restructuring and macro-prudential measures are also impacting growth.

The government has introduced two broad sets of economic measures in recent years that will likely continue to put the brakes on the property market, either directly or indirectly. First, a host of property-market cooling measures have been introduced

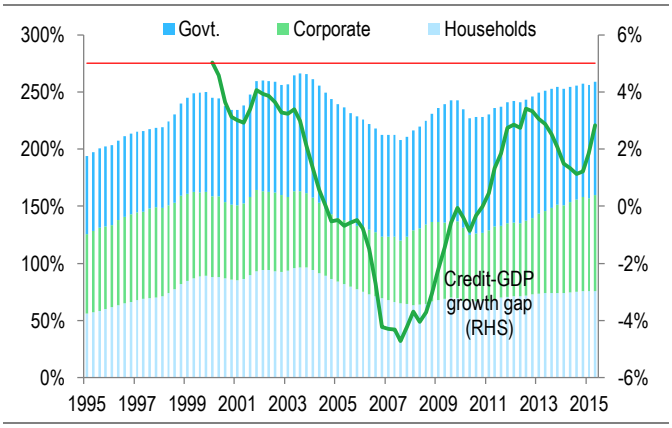
Figure 1: Singapore – Summary of leverage

Singapore	Total credit/GDP	Debt service ratio
Economy	259%	
Private corporate sector	84%	55%
Household sector	75%	15%
Government	100%	-

Source: Bloomberg, BIS, IMF, Standard Chartered Research

Figure 2: Singapore – Debt distribution

Total debt/GDP (LHS) vs credit-GDP growth gap (RHS)



Source: BIS, IMF, Standard Chartered Research

since 2009. These have been effective in moderating property price gains and household leverage. Second, changes in immigration policy in the past five years have slowed growth in foreign labour supply; this is partly aimed at boosting productivity.

Although the property sector has benefited from low interest rates in recent years, 3M SGD SIBOR rose to more than 1.2% in recent months, from 0.4% throughout most of 2010-14. If market expectations of further Fed rate hikes increase (we do not currently forecast further hikes), we expect Singapore's interest rates to gradually move higher. Higher interest rates may dampen the property market going forward.

High supply, higher interest rates, a lacklustre economy and cooling measures may continue to depress the property market

In addition, supply of new private residential units remains high. According to the Urban Renewal Authority, there are about 76,000 units in the supply pipeline. Some 24,000 private residential units were unsold as of Q2-2015. A high of nearly 26,000 units are due for completion in 2016, before supply eases to c.17,000 units for completion in 2017 and 15,000 in 2018. The supply pipeline diminishes sharply to about 4,000 units due for completion in 2019.

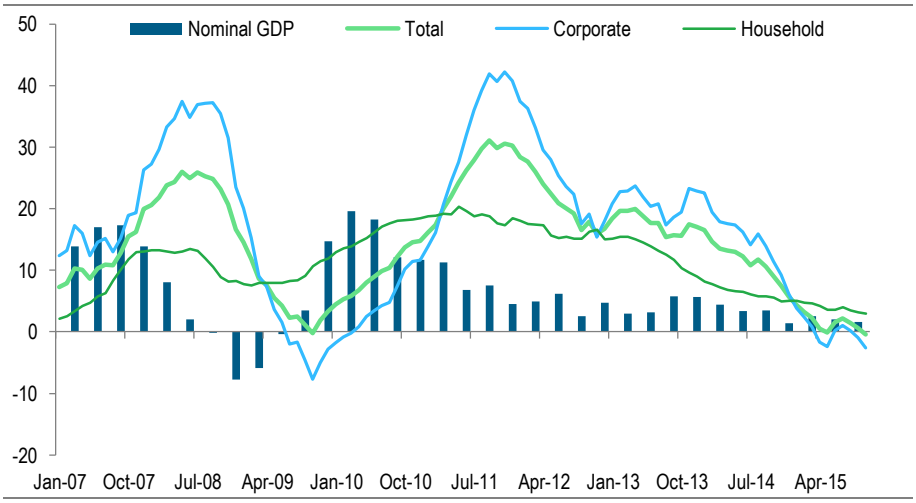
The property-market outlook remains challenging for the next one to two years. The macroeconomic outlook is weak. The government is likely to stay the course in trying to raise productivity, keeping the inflow of foreign workers remaining slow compared to recent history. This, along with potentially higher interest rates, may suppress property demand. The decline in speculative activity has been a positive development. We expect prices to slide further, declining by another 5-10% in the next couple of years.

Corporate loan growth is slowing amid cautious sentiment

Corporate debt levels have stayed at manageable levels. Business loan growth slowed to -1.1% y/y in December 2015 from around +15-20% in 2013. Slowing growth prospects and high external volatility have curbed investment and loan growth. In 2012, gross fixed capital formation added an average of 2.2ppt to quarterly GDP growth. In contrast, it subtracted 0.2ppt on average in the eight quarters through 2014 and 2015.

Figure 3: Loan growth slows in tandem with GDP growth

% y/y



Source: MAS, Standard Chartered Research

Economic restructuring has made business loan growth more uneven, and this is likely to continue. Manufacturing loan growth has contracted at double-digit rates as the economy shifts from manufacturing towards services. In contrast, increased infrastructure development has supported construction loan growth. We see growth in loans to the services sector rebounding more strongly once near-term headwinds to domestic growth fade.

Singapore's financial-sector balance sheet is understandably large given its status as an offshore financial centre

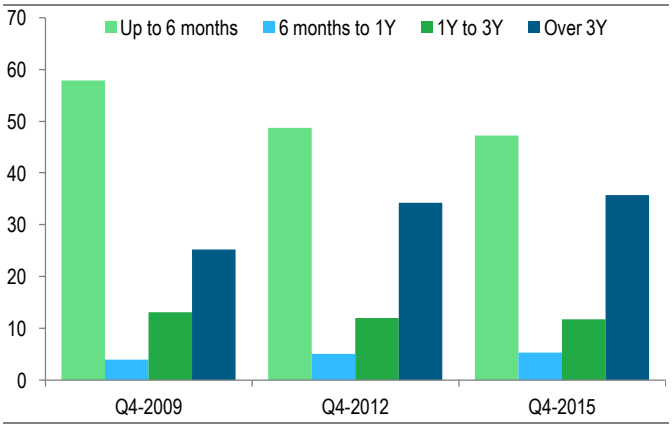
Given that Singapore is an offshore financial centre, its financial-sector balance sheet relative to GDP is understandably large. Most banks in Singapore operate both a domestic banking unit (DBU) and an Asian-currency unit (ACU). DBUs can conduct transactions in all currencies, while ACUs are limited to foreign-currency transactions. Including all DBU and ACU assets, banking-system assets were around 700% of GDP as of end-2015. DBUs account for around 48% of these assets, and ACUs account for the rest.

To limit banks' exposure to speculative activity in the property market, the Monetary Authority of Singapore (MAS) mandates a maximum Section 35 ('S35') ratio of 35%. Banks' S35 property exposures include loans to property and non-property corporations, housing loans for investment purposes, property-related debt instruments, guarantees, performance bonds, qualifying certificates and other contingent liabilities.

Asset/liability maturity matching for the DBU book appears to have stabilised after widening in the 2009-12 period. During the period from Q4-2012 to Q4-2015, assets with maturities over 3Y had a stable share of total assets (moving within a range of about 1ppt). The liability profile remained largely unchanged, with liabilities up to six months accounting for about 88% of total liabilities (see Figures 4-7). The maturity profiles of ACU assets and liabilities have also been relatively stable over the years.

Figure 4: Maturity profile of DBU assets

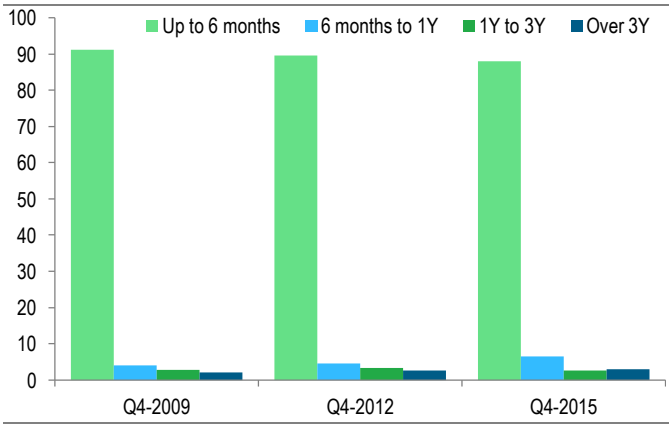
% of total assets



Source: MAS, Standard Chartered Research

Figure 5: Maturity profile of DBU liabilities

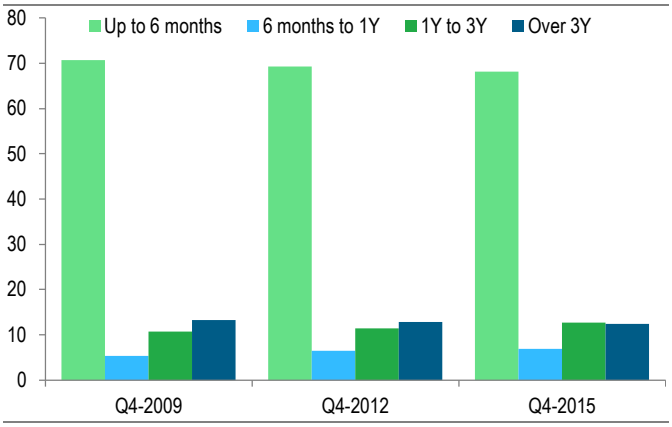
% of total liabilities



Source: MAS, Standard Chartered Research

Figure 6: Maturity profile of ACU assets

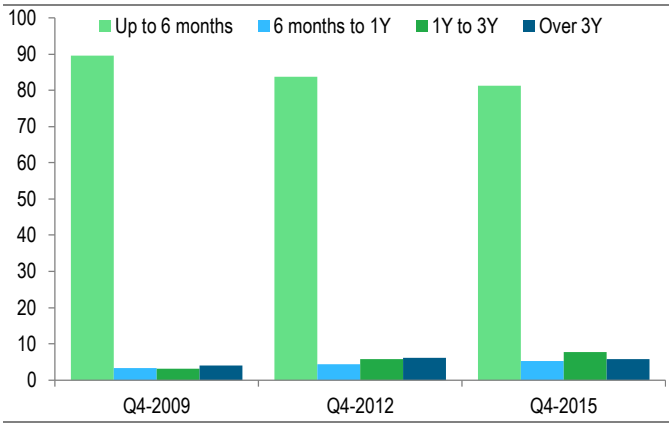
% of total assets



Source: MAS, Standard Chartered Research

Figure 7: Maturity profile of ACU liabilities

% of total liabilities



Source: MAS, Standard Chartered Research

Figure 8: Property-market cooling measures introduced in Singapore

2009-13

Date	Measures
Jun-2013	• Total Debt Servicing Ratio (TDSR) introduced • Threshold ratio of 60% applied
Jan-2013	• Seventh round of property-market measures • Additional Buyer Stamp Duty (ABSD) to be imposed on Permanent Residents (PR) buying first residential property and Singaporeans buying second homes • ABSD raised 5-7% across the board
Oct-2012	• Residential property loan tenor capped at 35Y • Loans exceeding 30Y to face tighter LTV ratios • Non-individual borrowers' LTV ratio lowered to 40% from 50%
Dec-2011	• ABSD introduced • Foreigners and non-individuals pay an additional 10%; PRs pay 3% on second and subsequent properties; and citizens pay 3% on third and subsequent properties
Jan-2011	• Holding period for Seller's Stamp Duty (SSD) raised to 4Y from 3Y • SSD rates raised to 16%, 12%, 8% and 4% for holding periods from 1-4Y, respectively • LTV for non-individuals lowered to 50% • LTV for individuals with one or more outstanding mortgages lowered to 60% from 70%
Aug-2010	• SSD holding period raised to 3Y from 1Y • LTV for second and subsequent mortgages lowered to 70% from 80%
Feb-2010	• Introduction of SSD within 1Y of property purchase • LTV lowered to 80% from 90% on all housing loans except Housing Development Board loans
Sep-2009	• Interest absorption scheme and interest-only housing loans scrapped for private properties

Source: MAS, Standard Chartered Research

South Korea

Leverage conditions are stable for now

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We move South Korea into the medium-risk category (from the high-risk category in our 2013 study). Overall leverage conditions have been stable as government leverage has remained below 40% of GDP and corporate leverage growth has slowed in recent years. However, rapidly rising household debt poses risks to financial stability, while delays in corporate restructuring raise the risk of 'zombie' corporate defaults, in our view. Central bankers have clearly expressed concerns about household debt at their monthly monetary policy meetings for over a year now.

Korea's overall leverage conditions are stable for now

We expect government measures to help stabilise Korea's leverage conditions. The Park administration's strong commitment to restructuring zombie corporates is likely to improve leverage in the corporate sector, while public-sector reforms are likely to include debt restructuring of public institutions. Recent macro-prudential measures targeted at commercial banks – including new guidelines for household loan reviews – may also mitigate household debt growth in the medium to long term. Unless the Fed unexpectedly raises rates at a faster-than-expected pace, Korea's leverage conditions are likely to respond well to government efforts to tackle the issue, in our view.

Household debt – Growing but manageable

Household debt grew to over 85% of GDP in 2015

Korea's rising household debt has raised concerns and is seen as a risk to financial stability. Against the backdrop of low interest rates, household debt growth has accelerated in recent years, averaging more than 8% from 2006-14. The total amount of household debt has more than doubled in the past nine years, while the household debt-to-GDP ratio rose to more than 85% in 2015 (KRW 1,141tn) from 50% in 2006. The current level of household debt is more than 40% higher than during the GFC in 2009. The debt level as of end-2015 exceeded the past-decade average by over 30%, and household debt reached more than 85% of GDP.

Moreover, data on Korea's household leverage is opaque. As of end-2015, household debt comprised 53% mortgages, 6.5% credit-card revolving debt, and 40% 'others', according to BoK data. The BoK provides no clear definition of the 'other' category. We think there is a high chance that this debt is used to cover costs such as living expenses, school tuition and retirement.

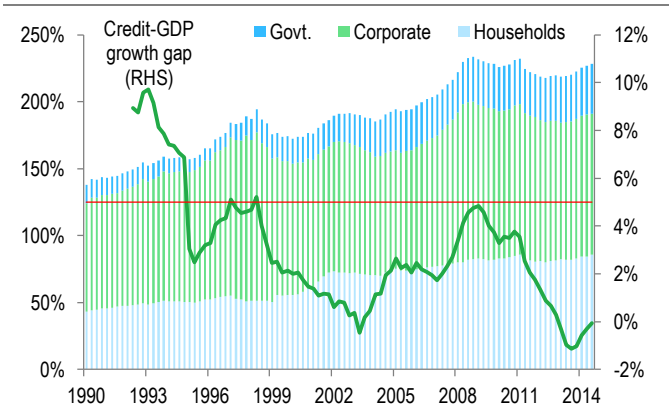
Figure 1: South Korea – Summary of leverage

South Korea	Total credit/GDP	Debt service ratio
Economy	228%	
Private corporate sector	105%	40%
Household sector	86%	15%
Government	37%	7%

Source: Bloomberg, BIS, IMF, Standard Chartered Research

Figure 2: South Korea – Debt distribution

Total debt/GDP (LHS) vs credit-GDP growth gap (RHS)



Source: BIS, IMF, Standard Chartered Research

Policy measures have supported a housing-market revival since 2014, bringing a rise in mortgage debt. The government raised the loan-to-value (LTV) ratio for mortgages to 70% from 50-60% and the debt-to-income (DTI) ratio to 60% from 50% from August 2014. The BoK lowered the policy rate to 1.50% from 2.50% between August 2014 and June 2015. Total household mortgages more than doubled to KRW 479.9tn in Q3-2015 from KRW 221.6tn in 2007.

Household assets are more than 5x higher than household debt

Even so, we think household debt remains manageable. While it is likely to continue to climb as the housing market recovers, the even larger size of household assets helps to contain this risk, in our view. According to the BoK, Korea's average household assets are nearly five times larger than debt per household. As of 2014, household assets reached c.USD 300,000 per household, while debt per household remained below USD 60,000. Household assets are made up of 27% financial assets and 73% real assets. Korean households spend an average of 47% of their assets on savings and financial investments, 23% in the real-estate market, and 23% on debt repayment. Given that the majority of assets go towards savings and investment, rather than spending, we think households are able to cover their debt.

Government debt – Stable

Public debt remains benign, at under 40% of GDP

Korea's government debt has been well managed at a stable level. The ratio of central government debt to GDP, at 33.9% as of 2014, is in line with similar-sized economies such as Australia (39%) and Mexico (31%). External government debt fell to USD 63.4bn as of Q3-2014, down nearly 10% from the Q1 level.

Although the government debt ratio has risen to 33.9% from 19.6% in 2003, growth in government debt has been contained. Korea Treasury Bonds (KTBs) comprise the majority of government debt; KTB issuance has grown steadily on robust demand in global markets. Local government debt rose to KRW 28tn in 2014 from KRW 25tn in 2009. We expect both central and local government debt to remain at manageable levels, with stable growth.

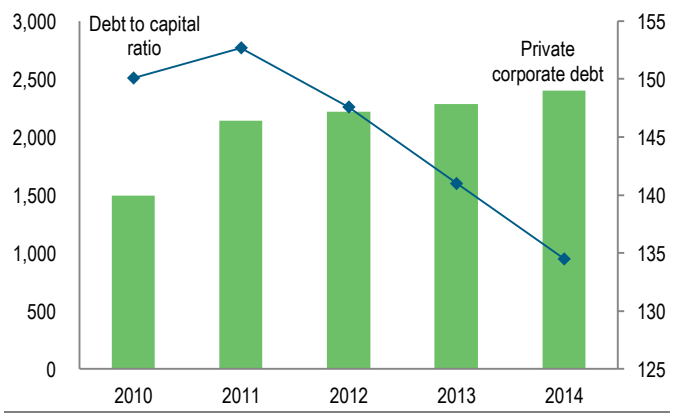
Public-sector debt is undergoing reform

Park's structural reform proposals prioritise public-sector reform

The current administration has prioritised reforming the public sector, particularly public institutional debt, among four key reform areas. At the beginning of her term, President Park announced the public sector as the primary focus area for structural reform and

Figure 3: Private-sector corporate debt stability is improving

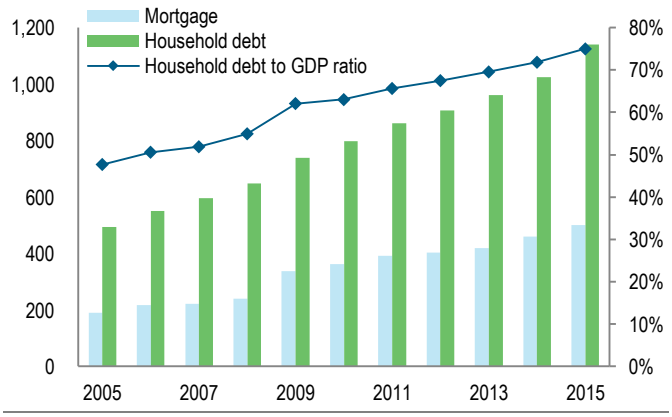
Private corporate debt, KRW tn (LHS), debt-to-capital ratio, % (RHS)



Source: MoSF ALIO, Standard Chartered Research

Figure 4: Household debt rises rapidly on mortgage growth

Household debt, KRW tn (LHS); debt-to-GDP ratio, % (RHS)



Source: Bank of Korea, Standard Chartered Research

forged political consensus on this. However, rigid public-sector structures and conservative practices at public institutions pose challenges to the reform process.

The reform process is likely to be gradual given conservative public-sector practices

Despite government efforts, the level of debt has not improved. Public-sector debt jumped 30.6% in three years, reaching KRW 521tn in 2014. Non-financial public institutions make up 82% of public-sector debt, at KRW 427.4tn as of 2014. Within this, Korea Land and Housing Corporation – which provides and control domestic housing – is the entity with the highest debt, at KRW 98.6tn. Non-financial public institutions' debt exceeded 20% of GDP in 2014. While the government's clear recognition of the issue is encouraging, it is unlikely to be resolved in the short term.

Corporate leverage – Mixed conditions

Corporates' stability metrics have improved, while profitability has deteriorated

Leverage conditions in the private corporate sector are mixed. The sector's leverage stability measures have improved over the past five years, even amid a continuing slump in profitability. According to the BoK, Korea's private corporate debt reached c.KRW 2,300tn as of end-2014, nearly double the size of annual GDP (in real terms). Private-sector debt was almost 83% of total corporate debt. Corporates face downside pressure on growth and profitability, however. The sector's ratio of operating profit to sales declined to 4.3% in 2014 from 4.7% in 2013. Sales growth slowed to 1.5% in 2014 from more than 7% in 2010.

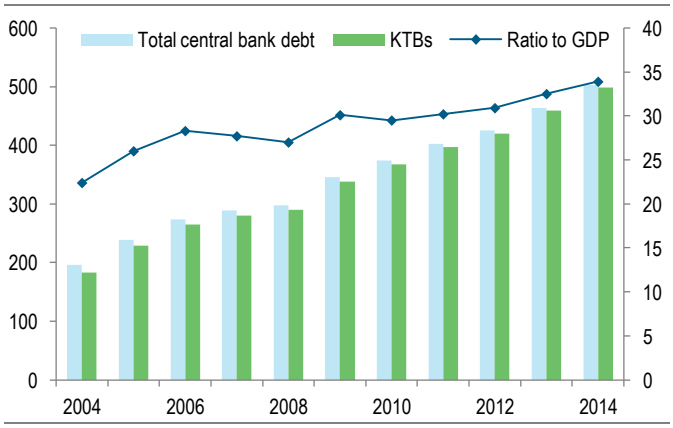
Corporate leverage growth has slowed to below 5% y/y

On the positive side, corporate leverage has stabilised since the aftermath of the global financial crisis. Debt growth has slowed to below 5% y/y in recent years from more than 40% y/y in 2010-11. The corporate sector's debt-to-equity ratio fell to 134.5% in 2014 from 114.8% in 2013, while the equity-to-total assets ratio rose to 42.6% from 40%. Moreover, corporates' debt dependency, which measures financial debt as a share of total assets, has remained stable at 31-32%. Debt-to-asset ratios have recently been on a downtrend across sectors, with the exceptions of shipbuilding (510.5%) and construction (200.7%).

While private corporates' improving debt-related metrics are positive, deteriorating profitability and challenging business conditions are a source of concern. The government's plan to tackle 'zombie' corporates via business and financial restructuring in the near future should bring some improvement in profitability and leverage conditions.

Figure 5: Government debt rises but remains stable

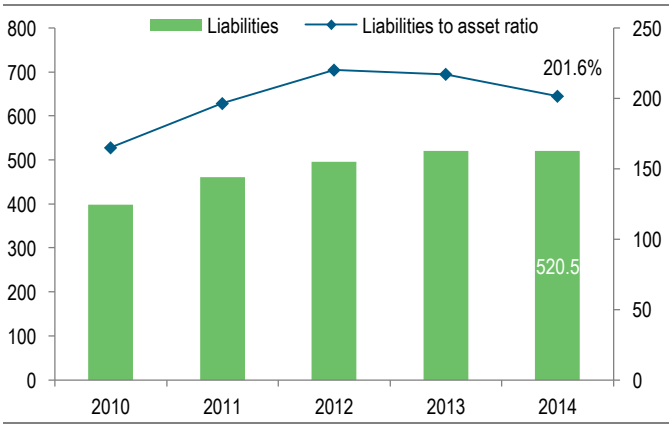
Central bank debt and KTBs, KRW tn (LHS); ratio to GDP, % (RHS)



Source: Open Fiscal Data, Standard Chartered Research

Figure 6: Public-sector debt has not improved much

Public-sector debt, KRW tn (LHS); liabilities-to-assets ratio, % (RHS)



Source: MoSF ALIO, Standard Chartered Research

Taiwan

Total leverage remains manageable; HH debt burden rises

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We place Taiwan in the low-risk category (unchanged from 2013), and see room for further leverage.

The ratio of total outstanding debt to GDP is among the lowest in the region, at 138% of GDP in 2015. This moderated from 145% in 2012 as economic growth outpaced credit growth. However, we see some pockets of stress. The average household debt-service burden has deteriorated, mainly due to rising demand for mortgages. Exposure to China has also risen as Taiwanese businesses have sought cheaper funding locally to finance their China operations.

Household debt – Rising debt-service burden is a concern

Rising household DSR is a concern, but it is still at a manageable level

While the level of household debt remains manageable, rising mortgage exposure could create pockets of stress. Consumer loans rose to TWD 7.3tn in 2015 from TWD 6.8tn in 2012, predominantly driven by rising mortgage demand (Figure 3). Housing loans rose to TWD 6.0tn in 2015, an 11% increase since 2012; they have continued to grow despite the introduction of property-market cooling measures since 2011. These measures include a requirement to disclose actual transacted prices under a new property registration system, lower loan-to-value (LTV) ratios, and a punitive tax on residential property sales within two years of purchase.

The rising household debt-service burden is a concern, in our view. We estimate that consumer loans have hovered around c.140% of annual household income since 2012, higher than the c.100-120% recorded in the late 1990s and early 2000s. The average household debt-service burden rose to more than 44% of disposable income in 2014 from 39% in 2010; the mortgage debt-service burden rose to c.36% from c.29% (Figure 4). These numbers suggest that average growth in household income has failed to match gains in housing prices. The higher debt-service burden could curb households' ability to spend on discretionary items as they set aside larger shares of their income to meet debt and interest obligations.

Taiwan's overall level of household debt remains manageable, in our view. It improved moderately to c.43% of GDP in 2015, while the mortgage-to-GDP ratio was little changed at c.36% (Figure 5). Real-estate loans to households stood at c.32% of

Figure 1: Taiwan – Summary of leverage

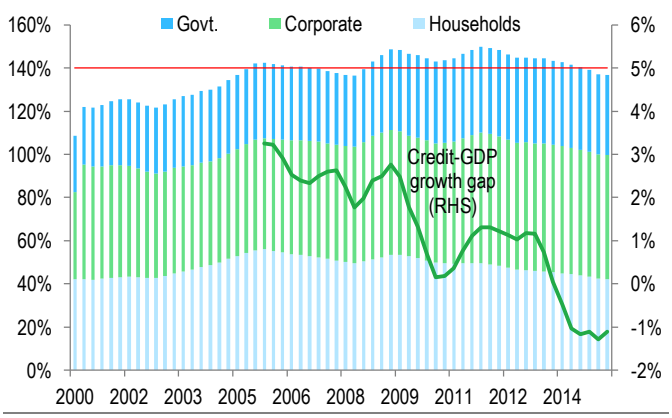
Taiwan	Total credit/GDP	Debt service ratio
Economy	137%	
Private corporate sector	57%	-
Household sector	42%	6%
Government	37%	5%

*Based on BIS data; government estimates government debt to GDP at about 40% in 2012;

Source: Bloomberg, BIS, IMF, Standard Chartered Research

Figure 2: Taiwan – Debt distribution

Total debt/GDP (LHS) vs credit-GDP growth gap (RHS)



Source: BIS, IMF, Standard Chartered Research

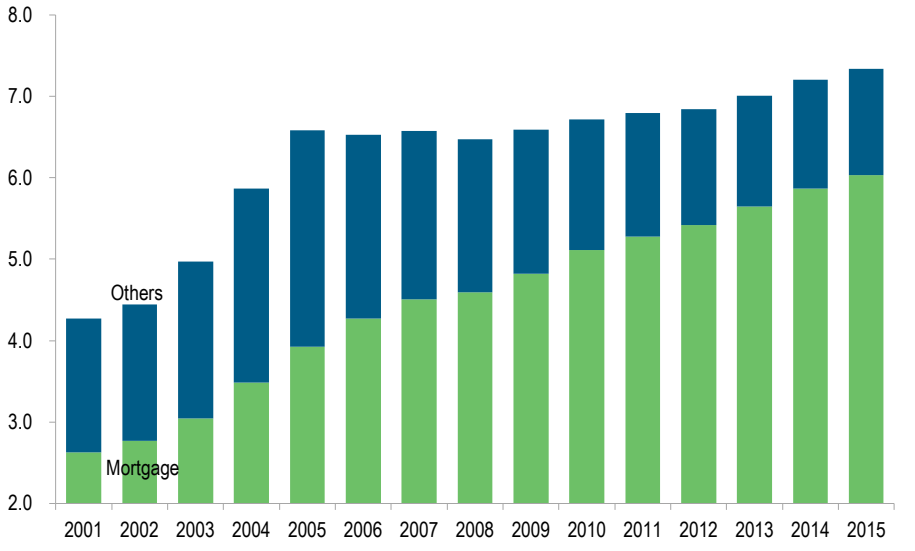
total bank lending and c.26% of total deposits as of end-2015. Local regulations mandate that Taiwan banks' real-estate loans cannot exceed 30% of deposits, in order to prevent heavy real-estate exposure for the financial sector. We see a limited likelihood that household debt will pose significant risk to the system, barring a protracted deflationary growth contraction along with tight credit and/or liquidity conditions – not our base-case scenario.

Corporate debt – Rising exposure to China

Taiwan's corporate borrowing has continued to rise in recent years, but not as rapidly as GDP growth. As a result, corporate debt amounted to 57.2% of GDP in 2015, a slight decline from 58.8% in 2012. Corporates' appetite for credit started to pick up after the 2008-09 global financial crisis, mainly due to government policies aimed at boosting domestic demand and employment. Domestic banks' lending to SMEs increased to TWD 5.4tn in 2015, a 21.7% rise from 2012, according to data from the Financial Supervisory Commission. SME lending accounted for 56.4% of total corporate borrowing in 2015, up from 43% from 2008-09 (Figure 6).

Figure 3: Household debt is driven by strong mortgage demand

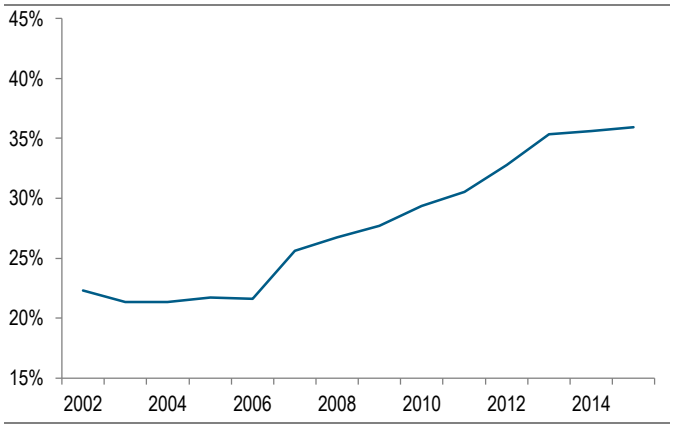
Size of household debt, TWD tn



Source: Taiwan central bank (CBC), Standard Chartered Research

Figure 4: Mortgage debt-service burden increases

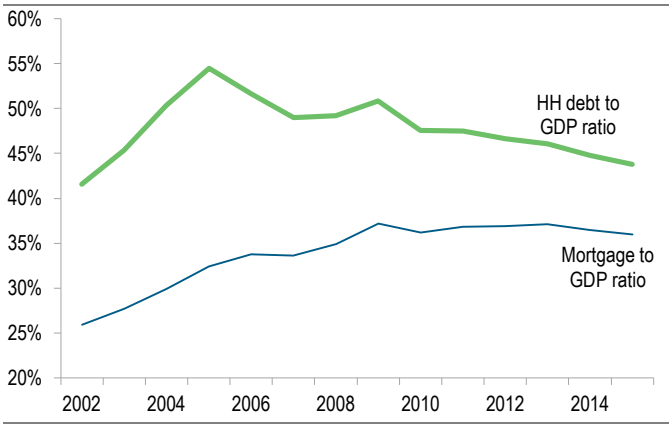
Ratio in mortgage payments to household disposable income



Source: Ministry of Interior, Standard Chartered Research

Figure 5: HH debt, mortgages are at manageable levels

% of GDP



Source: Ministry of Interior, Standard Chartered Research

The rapid rise in corporate lending has fuelled concerns about domestic banks' exposure to China. Loans extended by Taiwan's Offshore Banking Units (OBU) to non-financial institutions in Taiwan increased c.24% from 2012 to 2015, and account for 16.5% of GDP (Figure 7). We believe the surge in credit to SMEs and OBU accounts has been largely to finance operations in China. The local banking sector's exposure to China rose to TWD 1.7tn in 2015 from TWD 1.4tn in 2013 as more Taiwanese businesses seek to finance their China operations via Taiwan amid tightening financial and liquidity conditions in China.

Public-sector debt – Capped at 40% of GDP

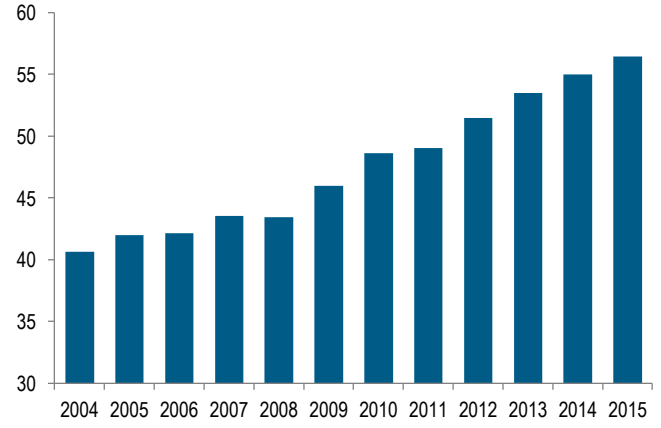
Mandatory cap on government debt limits government borrowing

We do not see public-sector debt as a concern for Taiwan. Government debt was a manageable 37% of GDP in 2015, down from 40% in 2012. Government efforts to improve revenue collection, along with prudent fiscal spending, drove the decline. Government tax revenue rose c.7.5% p.a. in both 2014 and 2015, improving significantly from 4.7% during the 2010-13 period. Reforms of property taxes and the national health-care insurance payment system have reduced the government's financial burden. As a result, the budget deficit narrowed to around 1.5% of GDP in 2015 from c.4.0% in 2009.

By law, outstanding government debt cannot exceed 40% of GDP. The annual government borrowing requirement is also capped at 15% of budgeted expenditures. As a result, the government cannot substantially increase its debt without amending existing laws. This should cap public debt, as we see a very low possibility that lawmakers will consider lifting the 40% cap in the near future.

Figure 6: SMEs' credit appetite has increased

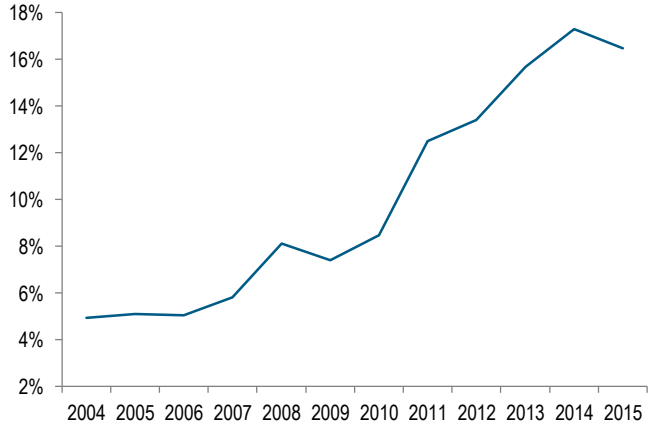
SME loans, % of total corporate borrowing



Source: CBC, Standard Chartered Research

Figure 7: Surging demand for credit via OBU accounts

Non-financial OBU loans, % of GDP



Source: CBC, Standard Chartered Research

Thailand

Plenty of room for manoeuvre

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We place Thailand in the low-risk category (the same as in 2013), and see room for further leverage.

The country's external financial position is strong thanks to net positive outstanding foreign reserves and low foreign ownership of government bonds. Domestically, government debt management is sustainable. The ratio of public debt to GDP is well below the fiscal sustainability threshold of 60%, leaving ample room for the government to implement fiscal stimulus measures and increase public investment. While the corporate sector has plenty of room for further leverage, we see limited room to increase leverage in the household sector.

Government debt is sustainable

Low leverage provides ample room to implement fiscal stimulus measures to support the economic recovery

Thailand has maintained a prudent fiscal position since the financial crisis of 1997. The ratio of public debt to GDP has been below 45% since 2005, after peaking at c.55% in 2000. As of January 2016, public debt totalled THB 5.9tn, or 44% of GDP – well below the self-imposed fiscal sustainability threshold of 60%. More importantly, public debt accounted for just 6.5% of Thailand's foreign reserves as of end-2015. Persistently low public debt is largely the result of fiscal discipline, with the annual budget deficit capped at c.4% of GDP.

Low leverage levels leave ample room for the government to implement fiscal stimulus measures to support the economic recovery, and to increase public investment to build logistics connectivity with the Greater Mekong Sub-region (GMS). Thailand plans to run a larger budget deficit of THB 390bn, or 2.9% of GDP, in FY16 (year ending 30 September 2016); this compares with THB 250bn (1.8% of GDP) in FY15. This year's budget includes a 3.6% rise in fixed expenditure, with a significant 20.9% increase in the investment budget.

Thailand also aims to reposition itself as a regional production hub for international companies in order to leverage its strategic location in the heart of the GMS and to prepare for the implementation of the Asian Economic Community (AEC). To achieve this goal, Thailand plans up to THB 3.3tn of public investment in infrastructure projects from 2016-23. The planned investments aim to establish logistics connectivity with neighbouring countries and reduce transportation costs. To reduce

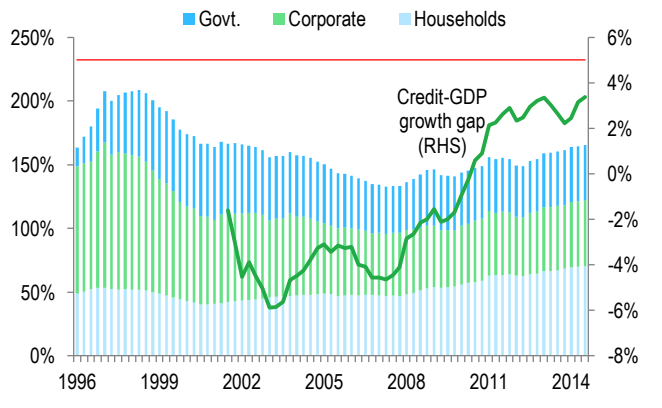
Figure 1: Thailand – Summary of leverage

Thailand	Total credit/GDP	Debt service ratio
Economy	165%	
Private corporate sector	52%	41%
Household sector	71%	13%
Government	43%	12

Source: Bloomberg, BIS, IMF, Standard Chartered Research

Figure 2: Thailand – Debt distribution

Total debt/GDP (LHS) vs credit-GDP growth gap (RHS)



Source: BIS, IMF, Standard Chartered Research

the burden on public finances, the government plans to adopt the Public-Private Partnership (PPP) model to finance some large-scale infrastructure projects. At least seven projects worth about THB 340bn (2.6% of GDP) are due to be implemented under the PPP model in 2016 and 2017.

Corporate leverage is low

Low corporate leverage should allow for new investment by corporate sector when the economic environment improves

Leverage in Thailand's corporate sector is very low. Non-financial corporates listed on the Stock Exchange of Thailand had an average debt/equity ratio of just 0.8x as of end-Q3-2015. The average annualised interest coverage ratio, which reflects corporate repayment ability, remained strong at 5.0x. Despite ample room for further leverage, corporates have generally held off on new investments in recent years amid concerns about the global risk environment, domestic political instability, and particularly the delayed execution of public investment projects. Pent-up demand for corporate investment may translate into actual investment if the government can deliver on large-scale projects from 2016 onwards.

Household debt remains high

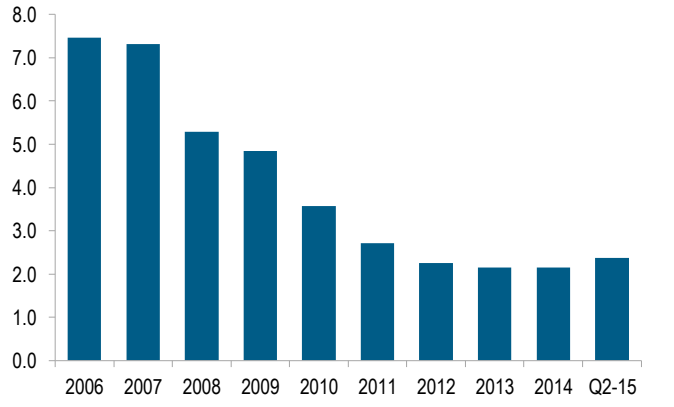
Although household debt has increased, the impact on the banking sector has been limited

Household leverage is high relative to the corporate and public sectors, at 81.1% of GDP as of end Q3-2015, according to the Bank of Thailand (BoT). While this is down from a peak of 83.5% at end Q2-2014, the recent economic slowdown and falling farm prices have weakened households' repayment ability. Rising delinquencies and non-performing loans (NPL), particularly auto and personal loans, are evidence of this. The NPL ratio for commercial banks' consumer loans rose to 6.2% at end Q2-2015 from 5.9% at end Q4-2014. Auto loans accounted for 8.0% of commercial banks' total loans, while personal and credit card loans made up 8.2%.

Although household debt has increased, the impact on the banking sector has been limited. The banking system remains resilient given its high capital base and loan-loss provisions, which act as a cushion against deteriorating loan quality. As of end-Q2-2015, the ratio of actual to regulatory loan-loss provisions was 165% and the capital adequacy ratio was 16.7%. Commercial bank's NPLs were only 2.38% of total loans.

Figure 3: Moderate NPLs

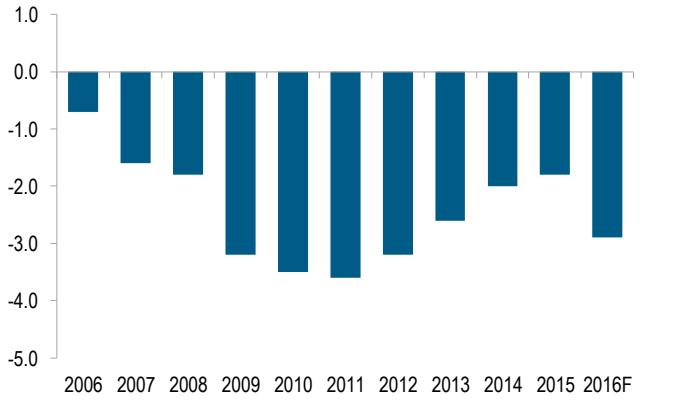
% of total loans



Source: BoT

Figure 4: Prudent fiscal stance

Annual budget deficit, % of GDP



Source: MoF, Standard Chartered Research

Appendix 1 – How we constructed our data

While detailed public-sector debt statistics have been available for several years now, private-sector credit for several economies – particularly emerging economies – has included only bank loans, excluding many non-bank-financial institutions and non-loan debt instruments. In March 2013, the Bank for International Settlements (BIS) published a long data series on credit to the private non-financial sector[1] that addresses these deficiencies. An update of this data forms the basis of our analysis in this report. This new BIS database includes credit provided to the private non-financial sector by domestic banks, all other sectors of the economy and non-residents. It includes both loan and debt securities and is available on a quarterly basis. The IMF public-sector debt database provides government-level debt statistics over several years.

We have built on these databases, augmenting and adjusting estimates in some sectors and economies to better reflect real on-the-ground risks. The result is a comprehensive Asia leverage database that combines the breadth of the multilateral organisations' data with the depth of our on-the-ground expertise to provide a true picture of the Asian leverage landscape.

In addition, we have added credit data for Asian economies not included in the BIS database, namely the Philippines and Taiwan. All data has been sourced from publicly available databases – multilateral sources including the BIS and IMF and country sources including central banks and finance ministries. In addition, for several countries, we have reconstructed data from multilateral sources using a bottom-up approach to further validate our database and increase its granularity. The details of the database used for this report are outlined below.

- **Inclusion:** The database includes leverage data for 12 economies in Asia: Australia, China, Hong Kong, India, Indonesia, Japan, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand. We have also expanded our study to include six other EM economies (Argentina, Brazil, Mexico, Russia, South Africa and Turkey) and four other developed-market economies (France, Germany, Spain, the UK and the US).
- **Lenders:** Borrowings from all sources are included where available – banks, non-bank finance intermediaries, foreign financial institutions, non-residents and other sectors of the economy. For the Philippines and Taiwan, data from domestic sources only includes bank lending for the private sector.
- **Instruments:** Credit covers all financial instruments, including loans and debt securities.
- **Granularity:** Data for each economy is broken into public and private financial-sector debt. The private non-financial sector is further segregated into private non-financial corporate sector borrowing and household borrowings. For most economies, private non-financial sector debt is broken down to a more granular level, by product and sub-sector. This enables us to assess the country's debt burden with an acute level of detail – for example, mortgage debt issued by non-banking financial entities to households in South Korea.
- **Duration and frequency:** The time series now goes back much further than previously, to the early 1990s for most countries. The time series is on a quarterly basis, updated through Q2-2015.
- **Figure 1** shows the composition of our database, listed by region and sector. Standard Chartered Research data has been constructed by consolidating data from various local public sources, including central bank and finance ministry databases.

[1] 'How much does the private sector really borrow? A new database for total credit to the private non-financial sector', BIS quarterly review, March 2013

Figure 1: Asia leverage – Where the data comes from

Economy	Households	Corporates	Government
Australia	BIS	BIS	IMF
China	Standard Chartered Research	Standard Chartered Research	Standard Chartered Research
Hong Kong SAR	BIS	BIS	IMF
India	Standard Chartered Research	BIS	Standard Chartered Research
Indonesia	BIS	BIS	IMF
Japan	BIS	BIS	IMF
Korea	BIS	BIS	IMF
Malaysia	Standard Chartered Research	Standard Chartered Research	IMF
Philippines	Standard Chartered Research	Standard Chartered Research	IMF
Singapore	Standard Chartered Research	BIS	IMF
Taiwan	Standard Chartered Research	Standard Chartered Research	IMF
Thailand	BIS	BIS	IMF

Source: Standard Chartered Research

Figure 2: Asia leverage – What is included

Economy	Households	Corporates	Government
Australia	Sum of domestic bank credit and non-bank financial institutions credit, incl. loans, debt securities, financial derivatives		IMF
China	Data from domestic databases	Data from domestic databases, incl. LGFV debt, trust loans etc	IMF
Hong Kong SAR	sum of domestic bank credit and cross-border credit from non-resident banks		IMF
India	Data from domestic databases, incl. debt to agricultural sector	Data from domestic databases	IMF
Indonesia	Domestic bank credit	Sum of domestic bank credit and cross-border credit from non-resident banks	IMF
Japan	Quarterly financial accounts		IMF
Korea	Quarterly financial accounts		IMF
Malaysia	Sum of domestic bank credit and cross-border credit from non-resident banks		IMF
Philippines	Data from domestic databases	Data from domestic databases	IMF
Singapore	Data from domestic databases	Data from domestic databases	IMF
Taiwan	Data from domestic databases	Data from domestic databases	IMF
Thailand	Domestic bank loans extended to households and non-profits serving households	Sum of domestic bank credit and cross-border credit from non-resident banks	IMF

Source: BIS, Standard Chartered Research

In particular, we have adjusted the debt estimates provided by the BIS and IMF for China, India and Singapore households and used in-house estimates gathered from local databases to construct the time series for the private sectors of Malaysia, the Philippines and Taiwan.

- **China:** We treat debt extended to local government financing vehicles (LGFVs) and the Ministry of Railways as obligations of the government. Our estimate of China's corporate debt excludes these debt obligations.
- **India:** We believe that household debt should include agricultural loans extended to farmers, which in India are essentially households. We classify household debt as including loans extended by banks, agricultural loans extended to farmers, and loans from other lenders including financial institutions, government agencies and co-operative societies. Where unavailable, quarterly data has been obtained by aggregating individual components obtained by interpolation. In addition, we have used government debt as provided by the Ministry of Finance, instead of the IMF estimates.
- **Singapore:** We believe that the BIS data omits Housing and Development Board (HDB) mortgage loans. We construct our estimate of household leverage from the quarterly household sector balance sheet provided by the Monetary Authority of Singapore (MAS). This includes mortgages extended by financial institutions and the HDB, as well as personal loans, which include motor vehicle loans, credit and charge card liabilities, and others.
- **Malaysia, Philippines, Taiwan:** Since the BIS only provides overall private-sector debt for Malaysia, we construct the breakdown by estimating household leverage through quarterly personal loan and mortgage data provided by Bank Negara Malaysia. We use a similar approach to estimate private-sector leverage for the Philippines and Taiwan, which are not included in the BIS private-sector database.

Appendix 2 – Our framework for government debt sustainability

Our debt sustainability equation incorporates the present level of debt and the primary balance

The debt sustainability equation below helps to gauge whether government debt dynamics are becoming unsustainable. In addition to the interest rate (r) and the GDP growth rate (g), it incorporates the present level of debt (D[t]) and the primary balance (pb). If the growth rate is lower than the interest rate, the burden falls to the primary balance to achieve debt sustainability:

$$D[t] = D[t-1] * (1 + (r - g)) - pb$$

where

D[t] = debt/GDP at time t

r = average nominal interest cost on debt

g = nominal GDP growth rate

pb = primary balance

Contrary to the view that only the interest rate matters, the starting level of debt to GDP is also an important factor. The higher the amount owed, the higher the vulnerability to a sudden rise in the interest burden or a negative growth shock[2].

The maximum sustainable debt level is the level above which creditors are unwilling to lend

The long-run debt level shown in Figure 1 is assumed to be the level that is sustainable over the long run (marked d*). If a shock raises debt above this level, the primary balance (the fiscal balance before taking interest expenses into account) will have to exceed interest payments in order to return debt to its sustainable long-run level. The maximum sustainable debt level is the level beyond which creditors are no longer willing to lend (d-bar in Figure 1). Beyond this level, there is no way to recover without first defaulting and losing market access. In the real world, this point is anticipated well before the d-bar is reached, and a higher risk premium is charged for further debt issuance.

[2] For more on this see IMF, 'Modernizing the framework for fiscal policy and public debt sustainability analysis', prepared by the IMF Fiscal Affairs Department (2011)

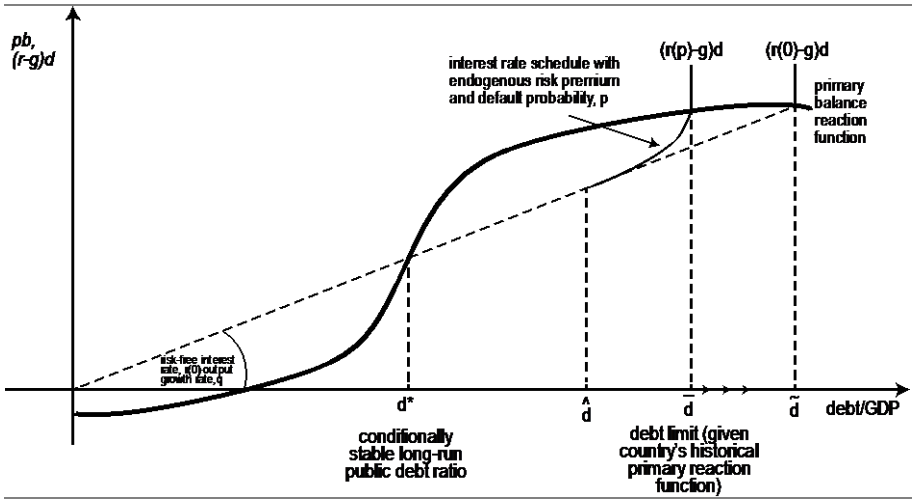
If the primary balance is large enough to compensate for periods when the interest rate being paid on government debt is higher than the economy's growth rate, then as long as the interest rate does not exceed the growth rate, debt is sustainable.

Maturity profile and contingent liabilities must be taken into account, among other factors

There are other important factors to consider when assessing government debt sustainability:

1. The maturity profile of government debt is critical. A higher proportion of short term debt increases refinancing risks, when the debt matures.
2. The average interest cost on maturing debt versus the marginal interest cost on new debt determines how the debt burden will evolve over time.
3. Contingent liabilities must also be taken into account. A 'too-big-to-fail', systemically important financial or non-financial institution can end up as a liability of the government.
4. External debt, i.e. financing from foreign entities, is also important. This is defined not just as debt denominated in foreign currency, but also debt held by foreigners that may at some point create pressure to exchange domestic currency for foreign currency.

Figure 1: Theoretical foundation for public debt threshold determination



Source: Ostry et al (2010)

Thresholds for sustainable debt ratios

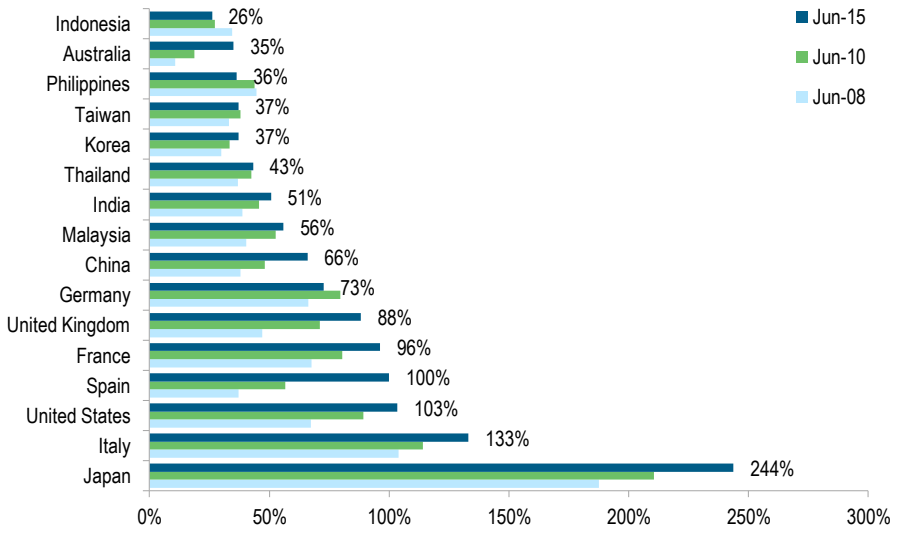
The threshold at which emerging economies' public debt to GDP becomes risky has risen in recent years, according to studies by the IMF and others. There is now little difference between the ratios suggested for advanced economies and for emerging ones. This is in contrast to just a few years ago and reflects structural improvements in EM fundamentals.

Assessing the 'unsustainable' level of government debt to GDP is controversial

Assessing the level at which government debt to GDP becomes unsustainable is a controversial issue. In principle, the higher the ratio, the greater the potential for future problems servicing the debt burden, which diverts funds from more productive uses and may ultimately weigh on growth. There is no definitive threshold for government debt levels, however, beyond which growth deteriorates drastically, as was argued for during the austerity advocates.

Figure 2: Government debt

Debt/GDP, %



Source: BIS, IMF, Standard Chartered Research

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