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Emerging Markets
Asia

Singapore Macro View

Should We Worry About Household Balance Sheets?

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- ***Aggregate* household net worth fell to 405.2% of GDP in 2Q (1Q: 408.6%) and may have fallen further in 3Q** — This was the sharpest fall since mid-2010. We estimate net worth fell further by 2-3%pts of GDP in 3Q, reflecting [1] slower growth in financial assets; [2] peak in residential property assets, especially as HDB resale prices fell QoQ for the first time in 4 years in 3Q13; and [3] rising household debt-to-GDP ratios (1Q: 77.1%, 3Q13E 77.5%). Other metrics of balance sheet strength have weakened in recent years, though still fairly strong at around 2006 levels.

- **Net worth may have peaked but should stay manageable** — [1] Mortgage-to-GDP ratios could rise 2-5%pts over the next 3-4 years, as disbursements of mortgages already approved rise in tandem with housing completions in 2014-2017 despite slower growth in new approvals. [2] On the asset side, home prices should be pressured downwards as vacancy rates rise in line with slowing population growth and rising completions while investment demand is dampened by tightened credit conditions and compressed rental yields. A price decline of 10-15% over the cycle in the next few years is possible. Household net worth could fall 20-30%pts of GDP to close to 2010 levels, though this would be manageable as this would erase less than half of the 73%pt of GDP increase in net worth since 2006, limiting the incidence of households falling into negative equity.

- ***Distribution* matters more than *aggregates*; has asset-based lending been on the rise?** — Recent press releases from the MAS and Credit Bureau paint a picture of rising debt burdens amongst those in their 30s to 50s. Debt levels – especially personal loans – appear to have risen with age, including past the peak income age of 50, which may provide circumstantial evidence of increased utilization of personal loans/asset pledges to obtain more leverage, given that this age group likely owns the bulk of housing equity. If used for asset purchases, an increase in asset-based lending could potentially amplify the downward pressure on asset prices, including possibly for investment properties.

- **Burden of deleveraging likely to fall more on household consumption than banks** — With over 70% of mortgages for owner-occupation and average LTV ratios of 47.5%, the risk of a substantial rise in NPLs is probably limited in our baseline scenario of a fairly tight labour market, even if house prices fall 10-15%. Rather than higher mortgage NPLs, the burden of deleveraging could fall on household consumption. While shrinking unit sizes and low interest rates have kept price-to-income and mortgage servicing ratios manageable, a normalization of mortgage rates to 3.5% could raise debt service burdens of “marginal” private home buyers above the 2007 peaks, compelling them to reduce discretionary spending. Taking a cue from the 2004-2006 Fed rate hiking episode, a significant rise in interest rates will likely have a moderating impact on private consumption.

Summary View

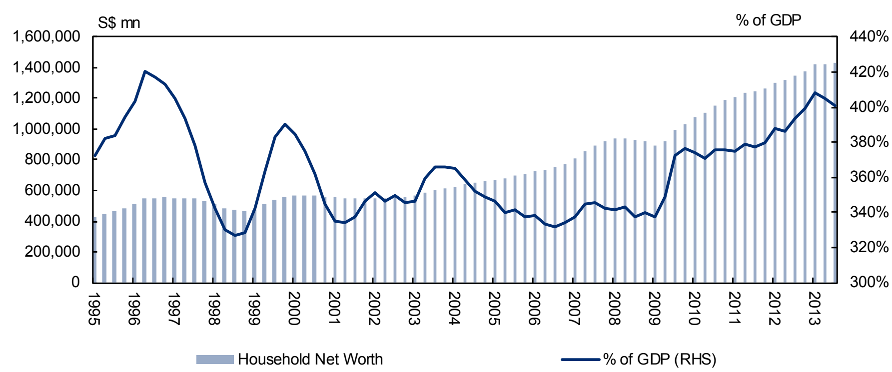
Much ink has been spilled by analysts on risks associated with household debt, particularly after the imposition of the Total Debt Servicing Ratio (TDSR) framework in late June. Pessimists have emphasized the rapid increase in household debt, while optimists have stressed the concurrent improvement on the asset side of the balance sheet as a buffer. We suspect the truth probably lies somewhere in between these polar views.

We argue that [1] while aggregate household balance sheets have improved in the last three years, we may be past the peak in household net worth and other metrics of balance sheet strength, though any deterioration should still be manageable. [2] Even though *aggregate* household net worth should still remain comfortable, segments of the population could be over-leveraged – a possible rise in asset-based lending in recent years may have raised risks in the context of likely falling property prices and higher interest rates. [3] Risks are likely to lie less with the banks, given historically low NPLs even in the worst of times, and more with consumption spending, especially when interest rates start to rise.

Has Aggregate Household Net Worth Peaked?

***Aggregate* household net worth fell to 405.2% of GDP in 2Q13 (1Q: 408.9%) and may have fallen further in 3Q13 by another 2-3%pts of GDP.** Although net worth-to-GDP figures can decline from quarter to quarter, the 3.4%pt of GDP decline was nonetheless the sharpest fall since 2Q10. Notably, household net worth continued to rise in dollar terms to S$1.43trn (2Q: $1.42trn), so the decline in net worth in 2Q as a % of GDP was more a result of a faster growth rate in nominal GDP (+1.14%QoQ) outpacing net worth growth (+0.3%QoQ).

Figure 1. Household net worth



Source: Citi Research

Digging deeper into the household balance sheet data[1], the slower growth in household net worth in recent quarters and likely softening in 3Q reflect a number of factors.

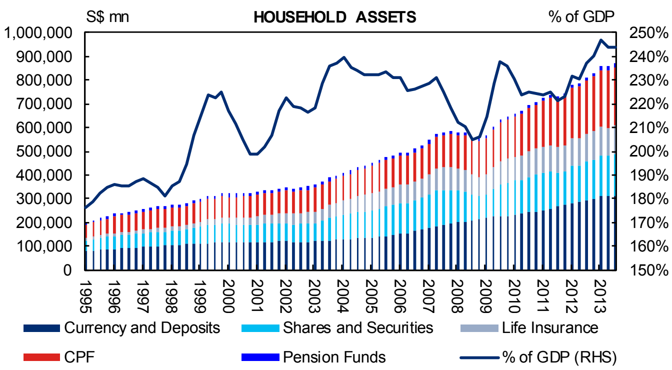
<u>First,</u> financial assets stagnated in 2Q (2Q: S$857.1bn, 1Q: S$856.9bn), and may have only recovered slightly in 3Q. The equity and bond market turmoil in

[1] We have a few unanswered questions about the coverage of the data, which could potentially alter the conclusions about the health of aggregate household balance sheets**.** <u>First</u>, it is not clear whether the balance sheet data adequately captures foreign property assets or mortgages from foreign banks incurred from purchasing these properties. <u>Second,</u> it is also not clear whether there is sufficiently granular data on deposits to determine the deposits due to households (used to calculate “currency and deposits” component of financial assets) – and if there isn’t, it is unclear what the methodology used to calculate this estimate is.

2Q wiped off 2.9% of the value of household's holdings of listed shares and another 3.5% off the value of unit trusts and other investment funds. These may have rebounded slightly in 3Q in tandem with the stabilization of these markets.

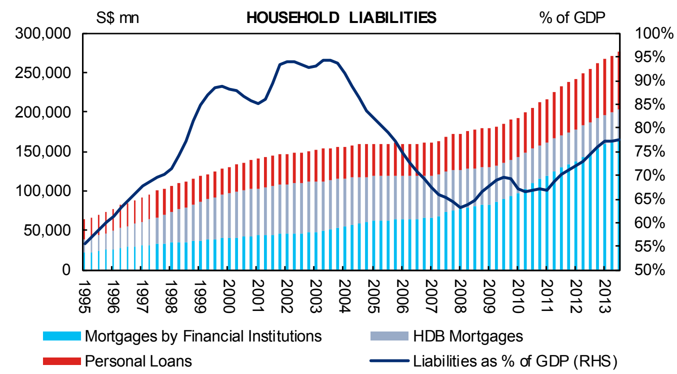
Interestingly, even currency and deposits rose just 0.5% in 2Q – the slowest growth since 3Q09 (0.5%). This is puzzling given still strong income and wage growth. The last time household cash positions declined was during the 2001-2002 recession when households were forced to draw down on past savings to service debt and finance consumption. Thus the bulk of the growth in financial assets came from healthy growth in relatively illiquid financial assets, such as pension funds and CPF balances.

Figure 2. Household asset breakdown



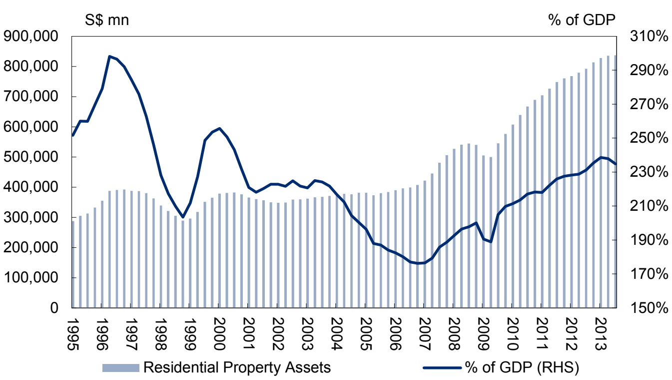
Note: 3Q13 is Citi estimate. Source: Singapore Department of Statistics, Citi Research

Figure 3. Breakdown of household liabilities



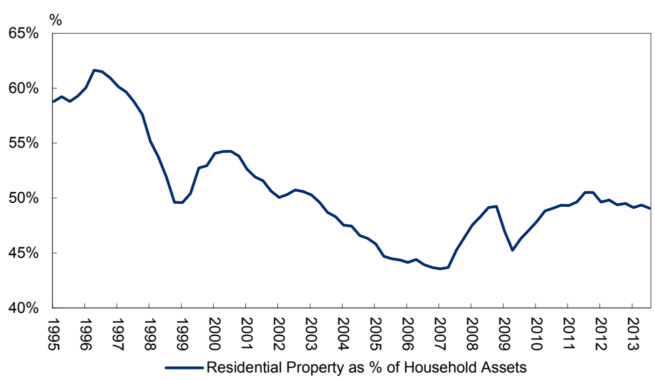
Note: 3Q13 is Citi estimate. Source: Singapore Department of Statistics, Citi Research

Figure 4. Household residential property assets



Note: 3Q13 is Citi estimate. Source: Singapore Department of Statistics, Citi Research

Figure 5. Household residential property assets as % of household assets

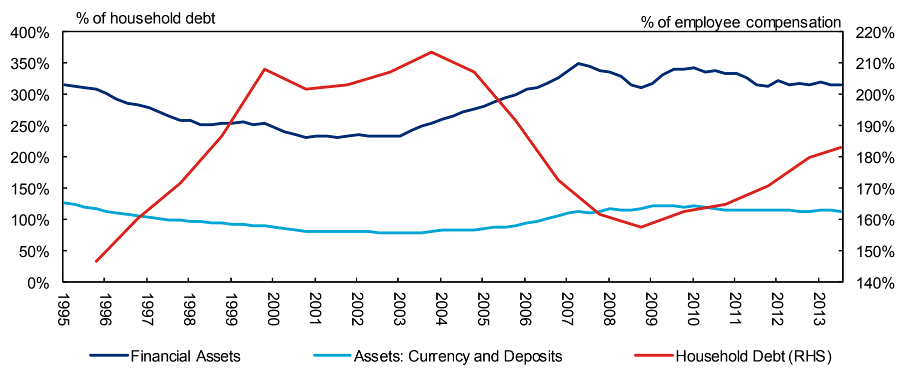


Note: 3Q13 is Citi estimate. Source: Singapore Department of Statistics, Citi Research

Second, growth in residential property asset values slowed (just +1%QoQ in 2Q vs +3.4% on average since 3Q09) and likely saw a small decline in 3Q. This reflects slowdown in both private property and HDB resale prices in recent quarters as well as slower property transaction volumes overall. We suspect residential property assets likely slowed further to 0.2%QoQ in 3Q13, especially with HDB resale prices falling 0.9%QoQ in 3Q13 – the first decline in 4 years – and transaction volumes slowing. With public housing comprising around half of total residential property assets, this likely offset the bulk of increases in private housing assets, which likely also grew at a slower pace given the decline in primary home sales and slower growth of prices.

<u>Third</u>, rising household debt-to-GDP ratios (3QE: 77.5%, 2Q: 77.4%, 1Q: 77.1%) to 2005 levels. While lower than the peaks of >90% in the early 2000s, household debt has risen from a low of 63.3% of GDP in 1Q08 – and three quarters thirds of this increase was led by the rise in mortgages to 57% of GDP in 2Q (1Q13: 56.8%, 1Q08: 46.3%), similar to 2005 levels. The increase has been entirely led by <u>mortgages from financial institutions</u>, with mortgages from HDB consistently falling since 2002. Besides mortgages, <u>personal loans</u> continued to edge up to 20.4% of GDP (1Q: 20.3%) from a low of 17% in 1Q08, back to levels in 2005. As motor vehicle loans had fallen and credit card loans had risen <1%pt of GDP during this period, the rise in personal loans was dominated by a surge in “other personal loans” – which we understand includes both uncollateralized, e.g. overdraft facilities, and collateralized, e.g. pledged against property assets. Based on 3Q mortgage loan data and other DBU loan data provided by MAS, we estimate household debt likely edged up 77.5% of GDP in 3Q.

Figure 6. Other key metrics of household balance sheet strength have weakened since 2009, though generally better than levels of the early 2000s



Source: Singapore Department of Statistics, Citi Research

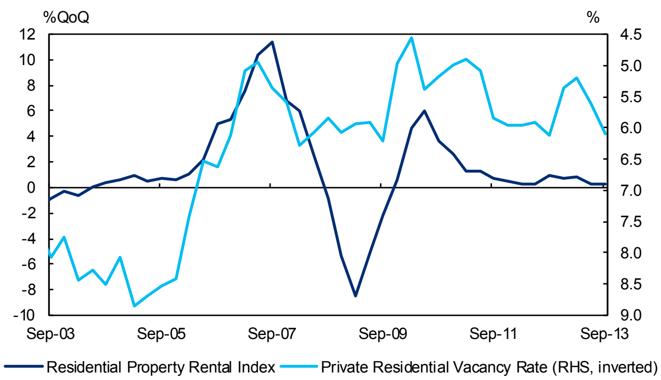
Net worth aside, other metrics of household balance sheet strength have actually *weakened* in recent years to 2006-2007 levels, though better than the lows of the early 2000s when household net worth was less than 300% of GDP. First, the <u>financial asset-to-debt ratio</u> in fact peaked at 342% in 1Q10, falling to 315.9% in 2Q13, similar to levels around 2006, and may have fallen further by about 1%pt in 3Q13. Second, while households continue to have more cash and deposits than debt on aggregate, the <u>currency and deposits-to-household debt ratio</u> in fact peaked at 123.5% and has been creeping downwards ever since to 115% as of 2Q13, similar to the levels in 2006-2007 at the start of the property upswing, possibly falling another 1-2%pts in 3Q13. Third, taking employee compensation in the national accounts as a proxy for household incomes, the <u>household debt-to-employee compensation ratio</u> has also risen to around 180.1% as of 2012 from a low of 157.3% in 2008, likely around levels seen in early 2006, and has likely ticked up to around 183%.

Looking ahead, we see a good chance that household net worth and other indicators of balance strength could be past their peak, with a likely decline in next 3-4 years, though this should still remain manageable.

On the asset side of the balance sheet, with residential property assets accounting for 83% of the 73.2%pt of GDP increase in household net worth since 2006, a likely fall in property prices is likely to materially reduce household net worth. Turning demand-supply dynamics will likely exert downward pressure on housing prices and rentals from 2014. The rising pipeline in private

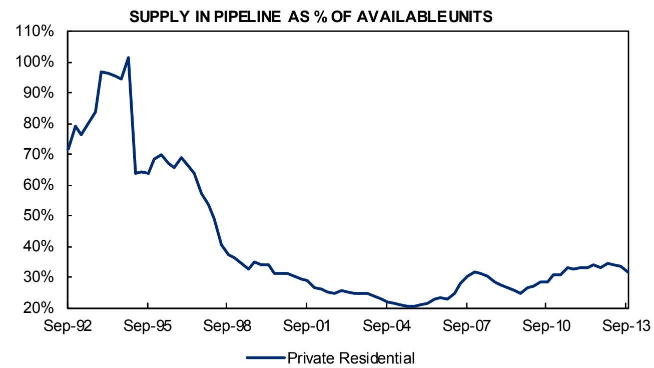
housing completions from 2014 onwards (32% of existing stock – the highest level since the early 2000s) will likely push up vacancy rates from current lows, especially in the context of slower population growth. On aggregate, given the 87K growth in population in 2013, assuming population growth averages 100K per annum in the next few years, consistent with the Population White Paper assumptions) and using the MND's completion estimates, we estimate the ratio of population-to-housing stock (a proxy for overall demand-supply imbalance in the housing market) may have already peaked in 2012 and could fall to the historical average of 4 around 2016. On top of this, property analyst Adrian Chua also notes that overall home ownership levels have now recovered to 90% from a decade long low of 87% in end 2010, suggesting that pent-up core occupation demand of recent years has already been met (please see Singapore Property - 8th Round of Measures: Reinforcing the Ring Fence).

Figure 7. Eventual rise in vacancy rates should moderate private rentals…



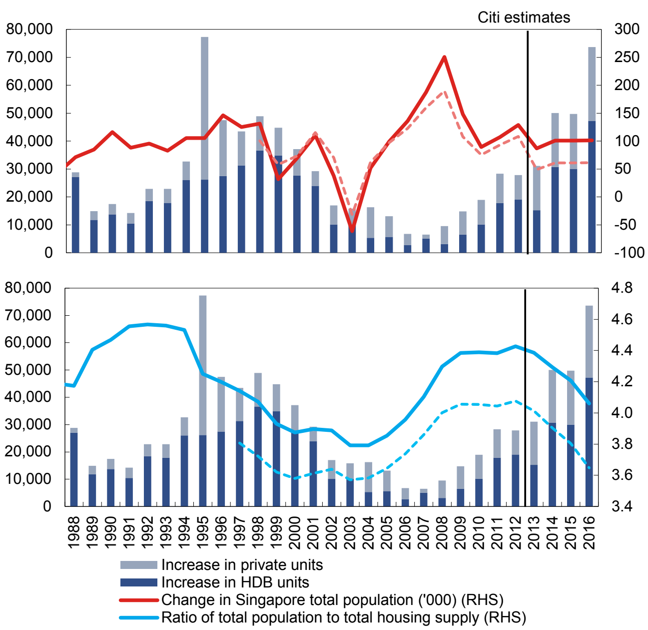
Source: CEIC, Citi Research

Figure 8. …as potential pipeline of housing supply has risen to about 32% of the existing stock of private residential units



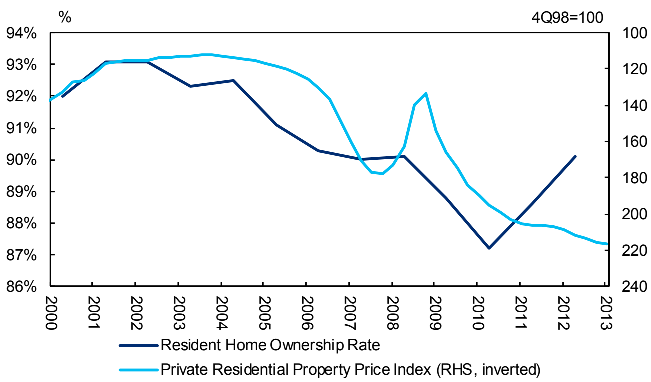
Source: CEIC, Citi Research

Figure 9. Tight demand and supply balance in the overall housing market should begin to reverse by 2014



Note: The perforated lines use population numbers excluding employment in the construction sector as a proxy for foreign construction workers.
Source: MND, CEIC, Citi Research

Figure 10. Rebound in overall home ownership levels suggests pent-up core occupation demand of recent years has already been met



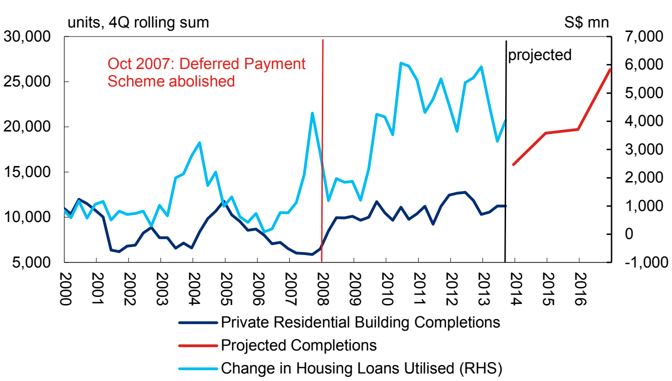
Source: URA, CEIC, Citi Research

While core owner-occupation demand is increasingly saturated, investment demand could be further dampened by tightened credit conditions imposed by the Total Debt Servicing Ratio (TDSR) framework, compressed rental yields, and falling asset values. In the context of rising household leverage, the introduction of the total debt servicing ratio (TDSR) framework has likely put binding constraints on households' abilities to purchase investment properties. Using an analysis of the 61st-80th percentile of households by income, property analyst Adrian Chua notes that the maximum value for a second property that such households can buy remains relatively high at S$1.4-2.0mn (assuming a S$600,000 first mortgage). But given the likely use of cash-out refinancing loans to finance the downpayment of the second property – thus circumventing lower LTV ratios – the maximum value of the second property could be now significantly lower at S$450K-$1mn, as the TDSR framework will apply the higher interest rate benchmark on both the new and refinanced mortgage.

Overall, property analyst Adrian Chua expects a 5% decline in prices over the next 12 months and the changing demand/supply dynamics could bring about a price decline of 10-15% over the cycle even without a macro shock that raises unemployment rates.

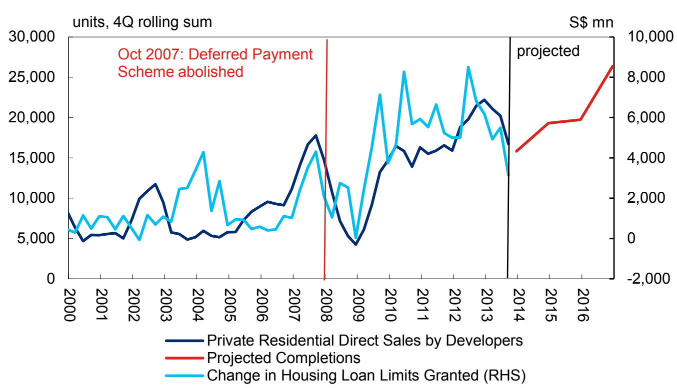
On the liability side of the balance sheet, mortgage-to-GDP ratios could rise 4-5%pts of GDP from current levels to above 60% of GDP over the next 3-4 years as disbursements of mortgages already approved will rise in tandem with housing completions in 2014-2017, despite macroprudential measures to slow loan limits granted. <u>We note that mortgage debt as recorded in the Singstat household balance sheet data refers to mortgage loans already disbursed (or utilized) rather than loan limits granted</u>. Under progressive payment schemes, mortgages loans already approved at the point of purchase of a new property will only be fully disbursed once the property is completed, which is typically two to three years after the initial sale and launch of the property. This explains the strong contemporaneous correlation between housing completion and net increase in disbursed mortgages. The linkage between strong home sales and mortgage approvals is obvious, though this relationship was not as strong before end 2007, when the now defunct Deferred Payment Scheme (abolished in Oct 2007) allowed home buyers to apply and draw down mortgages only when the property was completed, thereby allowing home sales to run well ahead of mortgage applications. Many homes purchased under the DPS were completed from 2009-2011, accelerating the approval and drawdown of mortgages from 2009.

Figure 11. Under progressive payment schemes, mortgages loans already approved at the point of purchase of a new property will only be fully disbursed once the property is completed



Source: CEIC, Citi Research

Figure 12. Many homes purchased under DPS were completed from 2009-2011, accelerating the approval and drawdown of mortgages from 2009



Source: CEIC, Citi Research

Figure 13. Standard and deferred payment schemes

% of purchase price	Payment under a standard payment scheme	Payment under a deferred payment scheme (example A)	Payment under a deferred payment scheme (example B)
Upon the grant of Option to Purchase	5-10% (booking fee)	5% (booking fee)	5% (booking fee)
Upon signing of the Sale and Purchase Agreement or within 8 weeks from the option date	20% less booking fee	20% less booking fee	10% less booking fee
Completion of foundation work	10%		
Completion of reinforced concrete framework of unit	10%		
Completion of partition walls of unit	5%		
Completion of roofing/ceiling of unit	5%		
Completion of door sub-frames/door frames, window frames, electrical wiring, internal plastering and plumbing of unit	5%		
Completion of car park, roads and drains serving the housing project	5%		
Temporary Occupation Permit or Certificate of Statutory Completion	25%		
Notice of Vacant Possession		65%	75%
On completion date	15%	15%	15%

Source: URA

Mortgage loan data provided by MAS shows that outstanding disbursed mortgage loans stood at S$166.9bn as at 3Q13, though there were also mortgages worth S$30.4bn that had been granted but yet to be disbursed. Thus even in the unlikely scenario that no new mortgages are approved, in the absence of repayments of existing mortgages, mortgage disbursements are likely to rise 8-9% of GDP over the next 3-4 years as the pipeline of housing completions rises to a record high, based on current data on limits granted. Factoring in a slower rate of limits granted (and home sales), and repayments, we suspect the mortgage-to-GDP ratio could rise 4-5%pts of GDP to above 60% over the next 3-4 years.

Figure 14. MAS data on housing loans

	1Q11		3Q13	
	S$ mn	% of total	S$ mn	% of total
Outstanding Housing Loans				
Limits Granted	140,217.3	100%	197,275.3	100%
Owner-occupied Property	*97,277.2*	*69%*	*140,499.1*	*71%*
Investment Property	*42,940.1*	*31%*	*56,776.2*	*29%*
Utilised	119,724.2	100%	166,858.7	100%
Owner-occupied Property	*84,162.0*	*70%*	*119,488.0*	*72%*
Investment Property	*35,562.2*	*30%*	*47,370.7*	*28%*
Not utilised	20,493.1	100%	30,416.6	100%
Owner-occupied Property	*13,115.2*	*64%*	*21,011.1*	*69%*
Investment Property	*7,377.9*	*36%*	*9,405.5*	*31%*
New Housing Loans Limits Granted	**124.6**	**100%**	**55.5**	**100%**
Owner-occupied Property	88.3	71%	35.2	63%
Investment Property	36.3	29%	20.3	37%

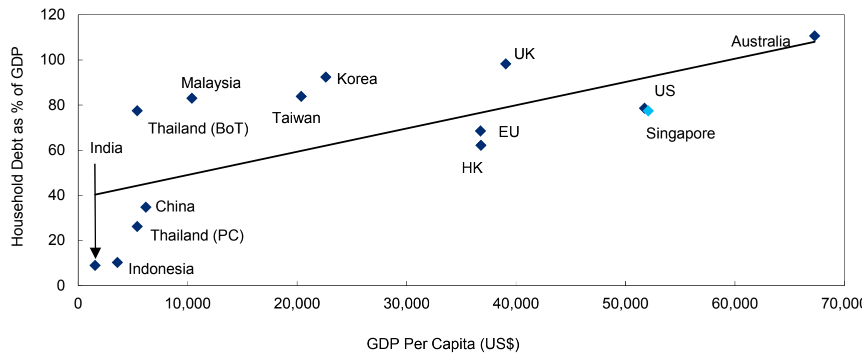
Source: MAS, Citi Research

Overall, in a benign scenario, we sense household net worth could fall to 370-380% of GDP by 2016-2017, close to 2010 levels. This 20-30%pts of GDP decline in net worth from the peak would likely still be manageable as it would erase less than half of the 73.2%pt of GDP increase in net worth since 2006 and would still be less severe than the 70-90% peak-to-trough declines post 1997. Importantly with overall LTV ratios at less than 50%, the 10-15% decline in house prices incorporated in our scenario suggests limited risk of a large proportion of households falling into negative equity.

Distribution Matters More Than *Aggregates*

To be sure, the current *aggregate* household balance sheet – even after factoring a likely decline in net worth – does not seem significantly worse than regional peers. For example, household debt-to-GDP ratios are broadly in line with what one would expect given per capita GDP ratios (a crude proxy for incomes and therefore debt service ratios). At 77.5%, household debt-to-GDP in relative terms is also lower than in the US (79%), UK and Australia.

Figure 15. Singapore's household debt-to-GDP does not look alarming when compared to other countries, considering per capita GDP



Note: Thailand (BoT) uses the BoT definition while Thailand (PC) excludes business loans to households. We proxy household debt with Financial Institutions' Loans to Households for China, Scheduled Commercial Banks' Personal Loans for India, and Commercial and Rural Banks' Loans for Household Consumption for Indonesia.
Source: CEIC, Haver, MAS, BNM, BoT, CBC, Citi Research

Even so, it is not clear that aggregate Singapore household balance sheets are significantly stronger compared to those of developed countries, including the US before the subprime crisis. Household net worth, at slightly over 400% of GDP, remains lower than the US as of 2012 (434% of GDP) and before the sub-prime crisis (486% of GDP). Singapore's financial assets/liabilities ratio, at 316%, is also less than US as of 2012 (435%) and even before the subprime crisis in mid-2007 (381%), though looking at debt-to-income ratios, Singapore's numbers at 180% (measured against employee compensation) are comparable to the peak for US households before the subprime crisis (179%). That said, a critical strength of the Singapore households is the high aggregate cash and deposit-to-liabilities ratio (115%), far higher than for the US (around 43% before the subprime crisis and 59% now) – though this hardly seems to square with the widespread perception that Singapore households are asset-rich and cash-poor, with wealth "plastered into the walls of their homes".

Figure 16. US had stronger household balance sheet metrics than Singapore before the sub-prime crisis

Singapore		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Assets	**% of GDP**	**430.3%**	**440.0%**	**438.3%**	**459.1%**	**432.6%**	**414.8%**	**403.5%**	**406.8%**	**406.4%**	**445.5%**	**442.3%**	**450.5%**	**475.4%**
Nonfinancial Assets	% of GDP	231.6%	222.8%	221.7%	221.7%	200.4%	184.0%	176.2%	188.8%	200.1%	209.7%	218.2%	227.5%	235.3%
Financial Assets	% of GDP	198.7%	217.2%	216.6%	237.4%	232.2%	230.8%	227.2%	218.0%	206.3%	235.7%	224.1%	223.0%	240.0%
	% of liabilities	232.0%	232.9%	233.8%	253.6%	277.5%	299.4%	327.4%	338.7%	310.1%	340.0%	334.3%	313.8%	315.5%
Currency and Deposits	% of GDP	70.5%	76.7%	73.3%	75.5%	70.5%	70.0%	73.3%	72.2%	78.8%	83.4%	78.2%	82.0%	86.3%
	% of liabilities	82.3%	82.3%	79.1%	80.6%	84.2%	90.8%	105.6%	112.2%	118.4%	120.2%	116.6%	115.3%	113.5%
Liabilities	**% of GDP**	**85.7%**	**93.3%**	**92.6%**	**93.6%**	**83.7%**	**77.1%**	**69.4%**	**64.4%**	**66.5%**	**69.3%**	**67.0%**	**71.1%**	**76.1%**
	% of employee compensation	201.5%	203.3%	207.2%	213.5%	207.1%	191.7%	172.8%	161.7%	157.6%	162.7%	165.1%	170.8%	180.1%
Total Net Worth	**% of GDP**	**344.6%**	**346.8%**	**345.7%**	**365.5%**	**348.9%**	**337.7%**	**334.1%**	**342.4%**	**339.9%**	**376.1%**	**375.3%**	**379.5%**	**399.3%**
UK		**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Assets	**% of GDP**	**535.3%**	**511.2%**	**507.5%**	**526.7%**	**545.8%**	**562.2%**	**581.6%**	**587.3%**	**520.4%**	**577.4%**	**583.3%**	**567.9%**	**585.5%**
Nonfinancial Assets	% of GDP	220.2%	225.8%	258.0%	270.1%	285.8%	281.9%	294.5%	306.0%	273.4%	291.7%	295.2%	288.3%	294.7%
Financial Assets	% of GDP	315.1%	285.4%	249.5%	256.6%	260.0%	280.3%	287.1%	281.3%	247.0%	285.7%	288.1%	279.7%	290.8%
	% of liabilities	423.9%	360.9%	292.5%	281.9%	268.2%	286.8%	276.8%	266.3%	235.1%	265.4%	279.9%	281.0%	294.2%
Currency and Deposits	% of GDP	64.5%	66.3%	67.6%	69.3%	71.4%	73.4%	75.3%	76.9%	80.0%	82.8%	81.5%	81.2%	83.6%
	% of liabilities	86.8%	83.8%	79.2%	76.1%	73.7%	75.1%	72.6%	72.7%	76.1%	76.9%	79.2%	81.6%	84.5%
Liabilities	**% of GDP**	**74.3%**	**79.1%**	**85.3%**	**91.0%**	**96.9%**	**97.7%**	**103.7%**	**105.6%**	**105.1%**	**107.7%**	**102.9%**	**99.5%**	**98.8%**
	% of employee compensation	137.2%	143.8%	157.1%	169.6%	181.3%	183.6%	194.4%	198.9%	197.7%	195.6%	190.7%	186.5%	183.6%
Total Net Worth	**% of GDP**	**461.0%**	**432.2%**	**422.2%**	**435.6%**	**448.9%**	**464.4%**	**477.9%**	**481.7%**	**415.3%**	**469.7%**	**480.4%**	**468.4%**	**486.7%**
US		**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Assets	**% of GDP**	**498.6%**	**492.9%**	**481.4%**	**515.3%**	**550.4%**	**572.3%**	**583.4%**	**568.3%**	**485.4%**	**505.8%**	**515.3%**	**503.8%**	**518.6%**
Nonfinancial Assets	% of GDP	164.6%	174.0%	182.8%	190.7%	203.8%	218.3%	213.7%	195.2%	168.7%	164.1%	155.9%	149.7%	153.5%
Financial Assets	% of GDP	334.0%	318.9%	298.6%	324.7%	346.6%	354.0%	369.6%	373.0%	316.7%	341.8%	359.4%	354.2%	365.1%
	% of liabilities	467.4%	424.8%	374.2%	380.5%	387.0%	381.3%	380.7%	375.9%	327.5%	351.7%	390.3%	405.5%	436.1%
Currency and Deposits	% of GDP	34.0%	36.3%	37.9%	38.9%	39.9%	40.3%	41.5%	42.5%	44.4%	46.7%	45.9%	48.6%	49.1%
	% of liabilities	47.6%	48.4%	47.5%	45.6%	44.6%	43.4%	42.7%	42.9%	45.9%	48.0%	49.9%	55.6%	58.7%
Liabilities	**% of GDP**	**71.5%**	**75.1%**	**79.8%**	**85.3%**	**89.6%**	**92.9%**	**97.1%**	**99.2%**	**96.7%**	**97.2%**	**92.1%**	**87.3%**	**83.7%**
	% of employee compensation	125.5%	131.9%	142.6%	154.3%	163.1%	171.6%	179.3%	181.9%	176.2%	179.9%	172.9%	163.9%	157.9%
Total Net Worth	**% of GDP**	**427.2%**	**417.9%**	**401.6%**	**430.0%**	**460.8%**	**479.5%**	**486.3%**	**469.0%**	**388.7%**	**408.7%**	**423.2%**	**416.5%**	**434.9%**

Source: MAS, CEIC, Haver, US Federal Reserve, Citi Research

After taking into account assets, the fact that US *aggregate* household balance sheets were in decent shape before the subprime crisis suggests that the *distribution* of debt and assets matters more, since those who borrow may not necessarily be the same as those who own the financial assets. Obviously, the most adverse scenario would be if the debt is widely distributed amongst the majority of households, while assets – especially cash – are narrowly concentrated amongst a small minority of rich households. Indeed, it may not even require the bulk of borrowers to be distressed for risks to unravel. Subprime mortgages for example comprised 20%% of total US mortgage originations in 2006, though higher than the historical average of 8% of less.

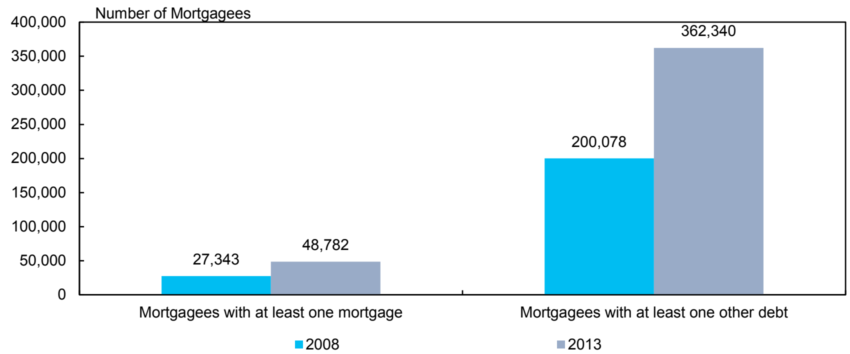
Despite the scarcity of data on debt distribution, putting together recent press releases from the MAS and Credit Bureau, we can paint a picture of rising debt burdens amongst certain segments of the population, particularly those in their 30s to 50s.

- According to the MAS, 5-10% of borrowers may already have accumulated too much debt, defined as spending over 60% of a monthly salary in debt repayments. If interest rates rose by 3%pts, the proportion of troubled borrowers would rise to 10-15%. Despite stretched debt service ratios, the MAS has noted

that most of these borrowers have above average incomes and are hence less likely to default[2].

- A Straits Times report in July cited Credit Bureau data showing a 78% increase in the number of persons with more than 1 mortgage between 2008 and 2013 to around 48,782 or 10.2% of mortgage holders. In a similar vein, the number of mortgagees with at least one other form of debt has jumped 81% since 2008. Borrowers are also taking bigger loans today – the average mortgage based on the principal sum was S$345,998 in May this year, up about 4% from 2008[3].

Figure 17. Multiple mortgage holders have increased by 78%, and mortgagees with other loans have risen by 81%



Source: Credit Bureau, Citi Research

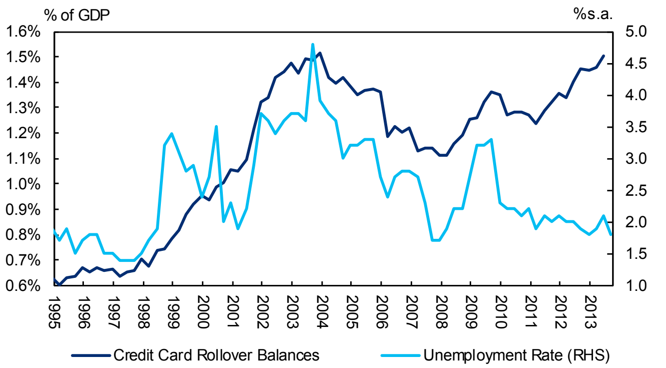
- **Credit rollover balances as % of GDP have been rising to near the peaks of the early 2000s, with those in their 30s and 40s likely more leveraged.** A greater proportion of those in their 30s and 40s tend to rollover their credit card debt and the average age of individuals seeking help from Credit Counselling Singapore (CCS), mostly for credit card debt, is 40 years. In the first half of 2013, about 31% (250) of those who sought help from CCS were 35 years old and younger. Based on data from Credit Bureau Singapore (CBS), the majority of credit cardholders who are past due or who have defaulted on their credit card loans are in their 30s and 40s[4], suggesting some degree of debt-fuelled over-consumption, though also mitigated by the relatively high income levels of this age group.

[2] See http://www.mas.gov.sg/News-and-Publications/Parliamentary-Replies/2013/Reply-to-Parliamentary-Question-on-Rising-Household-Debt.aspx

[3] See https://sg.loangarage.com/article/More-Singaporeans-taking-multiple-loans

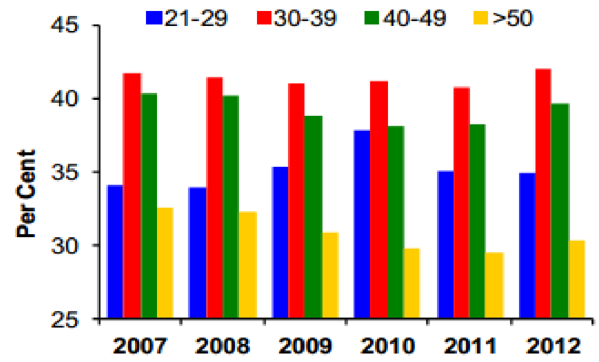
[4] See http://www.mas.gov.sg/News-and-Publications/Parliamentary-Replies/2013/Reply-to-Parliamentary-Question-on-Credit-Cards-Debts.aspx

Figure 18. Credit Card Rollovers as % of GDP vs. Unemployment Rate



Source: CEIC, Citi Research

Figure 19. Credit Cards — % of Each Age Group that are Revolvers



Source: MAS Financial Stability Review Nov-2012

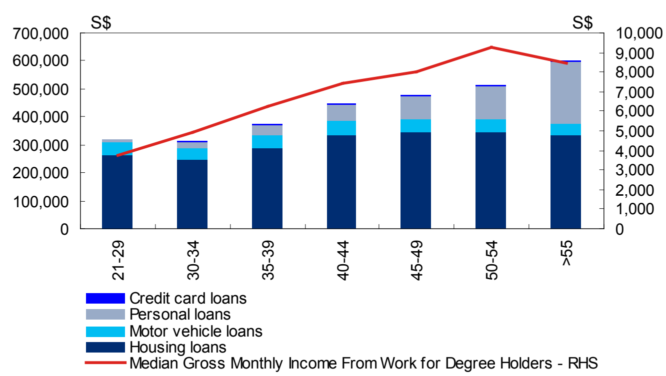
- **Data from the Credit Bureau shows that overall debt levels appear to be rising with age, even past the peak income age of around 50.** We find the average outstanding housing loan for a borrower aged 50 and above in the Credit Bureau's data set is not significantly different from those in their 40s, even though incomes are generally lower for this age group. However, the sharpest increase in tandem with age tends to be in the "personal loans" category, which we understand includes both unsecured loans and those pledged against property assets. At the system level, we note that the stock of personal loans has already exceeded the stock of HDB loans in the system.

Figure 20. Median Gross Monthly Income from Work

Age (Years)	Total	Primary & Below	Lower Secondary	Secondary	Post-Secondary (Non-Tertiary)	Diploma & Professional Qualification	Degree
Total	**3,000**	**1,300**	**1,700**	**2,328**	**2,333**	**3,250**	**5,417**
15 - 19	1,000	s	s	700	1,000	s	s
20 - 24	1,800	1,067	1,200	1,408	1,400	1,950	2,800
25 - 29	2,900	1,200	1,625	1,800	1,830	2,500	3,733
30 - 34	3,733	1,500	1,913	2,167	2,167	3,142	4,929
35 - 39	4,125	1,300	1,950	2,500	2,567	3,750	6,229
40 - 44	4,011	1,500	1,800	2,700	2,914	4,333	7,408
45 -49	3,358	1,500	1,800	2,550	3,021	4,875	8,032
50 - 54	2,708	1,450	1,800	2,500	3,000	5,000	9,300
55 - 59	2,274	1,450	1,625	2,500	3,142	4,875	8,458
60 & Over	1,625	1,029	1,500	2,167	2,708	4,333	8,214

Note: *Excludes employer CPF and sample only includes full-time employed residents, as of June 2012
Source: Ministry of Manpower, Citi Research

Figure 21. Average Consumer Loans outstanding by type for different age groups



Note: The chart depicts the relative size of the four major types of loans (using average loan value for each loan type) for each age group. Note that an average individual may not be exposed to all four types of loans. The median gross monthly income excludes employer CPF and sample only includes full-time employed residents, as of June 2012. For age group between 21-29, median income for degree holders aged 25-9 is used. For age group >55, median income for degree holders aged 55-59 is used.
Source: Citi Research, Credit Bureau

Has Asset-based Lending Been on the Rise?

While the lack of data prevents us from drawing strong conclusions, we suspect the surge in debt levels with age may provide circumstantial evidence of increasing prevalence of asset-based (as opposed to income-based) borrowing amongst older borrowers. Older individuals may have pledged their property assets to obtain more leverage. Based on the 2010 census data of resident households by type of dwelling and the age of heads of households,

alongside HDB and private property transaction data, we estimate that households with heads aged above 50 account for roughly 50.8% of total property assets in Singapore (excluding 1- and 2-room HDB flats). Households with heads aged 50 and above account for 38% of condominiums and private flats as well as 71% of landed properties. These shares are significantly larger than the proportion of those aged 50 and above in the population (31%). This group has benefited the most from the asset appreciation of the last forty years. **Given the earlier entry point of this age group into the property market at lower price levels (and greater proportion of mortgages repaid), it is also likely that this group has a larger share of overall housing equity in the economy, which it has likely tapped to obtain more personal loans.**

Figure 22. Resident households by type of dwelling and age group of head of household

Type of Dwelling	Total	Below 25 Years	25 - 29 Years	30 - 34 Years	35 - 39 Years	40 - 44 Years	45 - 49 Years	50 - 54 Years	55 - 59 Years	60 - 64 Years	65 - 69 Years	70 - 74 Years	75 Years & Over
	Number of Households												
Total	1,145,920	6,579	37,396	86,430	131,447	145,602	165,376	165,699	140,411	106,227	58,122	45,826	56,806
HDB Dwellings*	943,859	4,967	31,957	73,455	107,257	120,206	135,334	136,532	116,159	87,093	48,612	38,606	46,680
1- and 2-Room Flats	52,275	496	1,443	1,424	2,285	3,657	5,139	6,409	6,529	6,380	4,786	5,276	8,452
3-Room Flats	229,718	1,328	7,661	15,121	21,155	24,561	30,038	31,722	27,706	24,121	15,782	14,084	16,440
4-Room Flats	365,423	1,648	13,039	30,476	42,923	46,060	53,521	53,655	46,460	33,027	17,524	12,399	14,692
5-Room and Executive Flats	293,336	1,460	9,622	26,191	40,629	42,667	46,212	44,351	35,082	23,228	10,324	6,735	6,837
Condominiums and Private Flats	128,854	1,252	4,674	10,995	20,094	21,808	21,096	17,870	12,666	9,012	3,913	2,607	2,866
Landed Properties	64,908	207	426	1,305	3,211	5,782	7,992	10,232	10,725	9,139	4,968	4,186	6,736
Bungalows	8,319	67	42	97	249	603	795	1,110	1,384	1,311	756	623	1,281
Semi-Detached Bungalows	19,507	41	101	289	846	1,655	2,278	2,969	3,160	2,949	1,655	1,470	2,094
Terrace Houses	37,082	99	283	918	2,115	3,524	4,920	6,153	6,181	4,879	2,556	2,093	3,360
Others	8,298	152	338	675	885	805	953	1,064	862	983	630	427	524
	% of Total												
Total	100%	0.6%	3.3%	7.5%	11.5%	12.7%	14.4%	14.5%	12.3%	9.3%	5.1%	4.0%	5.0%
HDB Dwellings*	100%	0.5%	3.4%	7.8%	11.4%	12.7%	14.3%	14.5%	12.3%	9.2%	5.2%	4.1%	4.9%
1- and 2-Room Flats	100%	0.9%	2.8%	2.7%	4.4%	7.0%	9.8%	12.3%	12.5%	12.2%	9.2%	10.1%	16.2%
3-Room Flats	100%	0.6%	3.3%	6.6%	9.2%	10.7%	13.1%	13.8%	12.1%	10.5%	6.9%	6.1%	7.2%
4-Room Flats	100%	0.5%	3.6%	8.3%	11.7%	12.6%	14.6%	14.7%	12.7%	9.0%	4.8%	3.4%	4.0%
5-Room and Executive Flats	100%	0.5%	3.3%	8.9%	13.9%	14.5%	15.8%	15.1%	12.0%	7.9%	3.5%	2.3%	2.3%
Condominiums and Private Flats	100%	1.0%	3.6%	8.5%	15.6%	16.9%	16.4%	13.9%	9.8%	7.0%	3.0%	2.0%	2.2%
Landed Properties	100%	0.3%	0.7%	2.0%	4.9%	8.9%	12.3%	15.8%	16.5%	14.1%	7.7%	6.4%	10.4%
Bungalows	100%	0.8%	0.5%	1.2%	3.0%	7.2%	9.6%	13.3%	16.6%	15.8%	9.1%	7.5%	15.4%
Semi-Detached Bungalows	100%	0.2%	0.5%	1.5%	4.3%	8.5%	11.7%	15.2%	16.2%	15.1%	8.5%	7.5%	10.7%
Terrace Houses	100%	0.3%	0.8%	2.5%	5.7%	9.5%	13.3%	16.6%	16.7%	13.2%	6.9%	5.6%	9.1%
Others	100%	1.8%	4.1%	8.1%	10.7%	9.7%	11.5%	12.8%	10.4%	11.8%	7.6%	5.1%	6.3%

Source: Department of Statistics, Citi Research

Despite the lack of data on the uses of personal loans, we would not be surprised if such personal loans were used to fund further exposure to investment properties or other higher yielding instruments such as REITS. Such practices, if prevalent, could exacerbate the feedback loop between falling asset prices, falling net worth, forced deleveraging, and further declines/volatility in asset prices. These risks would be larger if borrowing was used to finance the purchase of illiquid assets such as property.

Indeed, asset-based lending may have extended beyond property assets towards more liquid assets as a pledge for property loans. According to the findings of a MAS thematic inspection of mortgage businesses[5] in Dec 2012,

[5] Monetary Authority of Singapore, "Thematic Inspection of Residential Property Loans Business" (June 2013)

> *"Banks had developed policies to assess property loan applications where customers were unable to meet the banks' internal DSR thresholds. Many banks would approve a loan application if the borrower was able to furnish evidence that he had a certain amount of liquid assets, as an indication of his ability to meet his loan obligations over the next 1 to 2 years. Banks did not normally require such liquid assets, which typically comprised cash deposits, to be pledged to or deposited with the bank. As a result, the borrower could potentially use the same pool of liquid assets as evidence of net-worth or repayment capacity to secure financing with several banks."*

Given the likely highly skewed distribution of household deposits however, we suspect that the practice of extending mortgages based on liquid assets was probably confined to a relatively small segment of households. Given the typical large quantum of mortgage loans, the deposits being used as collateral would presumably have to be of meaningful size as well. Based on studies of depositor profiles, the MAS had noted in early 2010 that the prevailing coverage limit of S$20,000 would fully insure 83% of all depositors covered under the Deposit Insurance Scheme, while raising the coverage limit to S$50,000 would fully insure 91% of all individual and non-bank depositors. This implies only 9% of depositors were holding deposits significantly larger than S$50,000 in order to bring the mean currency and deposit holding per resident to the 2010 figure of S$65.5K (calculated based on household balance sheet data). If only deposits by individuals were used, the proportion would probably be far smaller.

The total debt servicing ratio (TDSR) framework has put binding constraints on the ability to tap into home equity loans to finance the down-payment for second properties and may have been a trigger for price declines. Using an analysis of the 61^{st}-80^{th} percentile of households by income, property analyst Adrian Chua notes that the maximum value for a second property that such households can buy remains relatively high at S$1.4-2.0mn (assuming a S$600K first mortgage) (please see Singapore Residential - Additional Measures Announced for Public Housing Market). But given the likely use of cash-out refinancing loans to finance the downpayment of the second property – thus circumventing lower LTV ratios – the maximum value of the second property could be now significantly lower at S$450K-$1mn, as the TDSR framework will apply the higher interest rate benchmark on both the new and refinanced mortgage. Developers can respond either by cutting prices or, alternatively, reducing unit sizes.

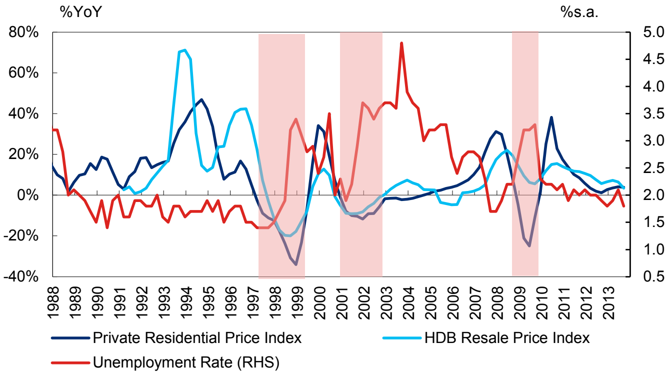
Who Will Bear the Burden of Adjustment?

The more relevant question is not whether households will de-leverage, but whether this adjustment will be orderly and on whom the burden of adjustment will fall.

In the absence of a major negative macro shock that leads to a spike in unemployment, a disorderly fall in asset prices and weakening of household balance sheets is not our base case. All of the property downturns of the past 30 years coincided with a broader export recession and a spike in unemployment. The spike in unemployment and severe curtailment of borrowers' debt-servicing capacity collided with unfavourable demand-supply balances in the property market, given the completion of units sold during the preceding boom, and a sharp slowdown in population growth caused by job cuts borne by non-resident workers, which in turn raised vacancy rates. The exception was in 2008/09, which saw a more moderate rise in unemployment against a backdrop of tight supply and low interest rates – which explains the speed of the subsequent property market rebound when growth and sentiment recovered. **On balance, despite the headwinds from supply,**

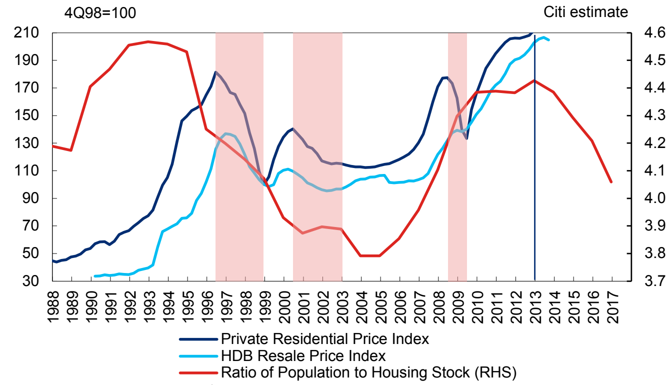
household leverage, and possibly higher interest rates, a more constructive GDP growth outlook may suggest a more gradual decline in property prices compared to past downturns. The concurrent rise in GDP and household incomes then also helped households grow out of their debt, reducing debt-to-GDP ratios over time.

Figure 23. All of the property downturns of the past 30 years coincided with a broader export recession and a spike in unemployment



Note: We shade periods of property price declines.
Source: CEIC, Citi Research

Figure 24. Except for 2008/09, these collided with unfavourable housing demand-supply balances, which raised vacancy rates

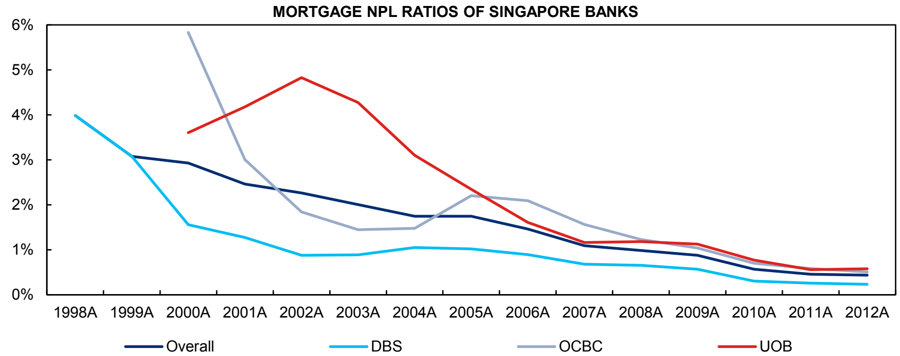


Note: We shade periods of property price declines.
Source: CEIC, Citi Research

Even in the event of a macro shock that results in higher unemployment, it is not clear that credit risks for banks will necessarily escalate for two reasons. First, MAS data shows that over 70% of mortgages are for owner-occupation – and even if debt servicing ratio was eliminated, we think that borrowers will tap into their pool of liquid assets to service their mortgage debt rather than face foreclosure and eviction from their homes. Even when unemployment rose above 4% in the post-1990s bubble, we understand that mortgage NPLs for the three local banks never rose above 3-4% on aggregate. During the recent global financial crisis for example, mortgage NPLs stayed under 2% for most local banks. Even for investment properties, we suspect the high degree of social stigma attached to personal bankruptcies as well as the difficulty of being discharged from bankruptcy are likely to deter borrowers from defaulting.

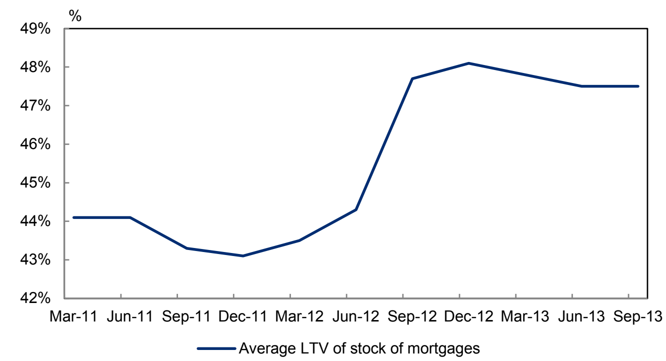
Second, average LTV ratios are just 47.5%, suggesting a limited risk of households falling into negative equity or banks taking on foreclosed properties. Our ballpark estimates – based on the change in loan limits granted and implied home valuations – suggest that new mortgages borrowed from 2011 have an average LTV ratio of less than 60%. In its 2012 Financial Stability Review, MAS notes that the share of housing loans with LTVs above 80% has come down from a high of 17% in 3Q09 to 4.7% as at 3Q12. That said, proceeds from secured personal loans could also have been used for the downpayment of second properties.

Figure 25. During the recent global financial crisis, mortgage NPLs of the three local banks stayed under 2%



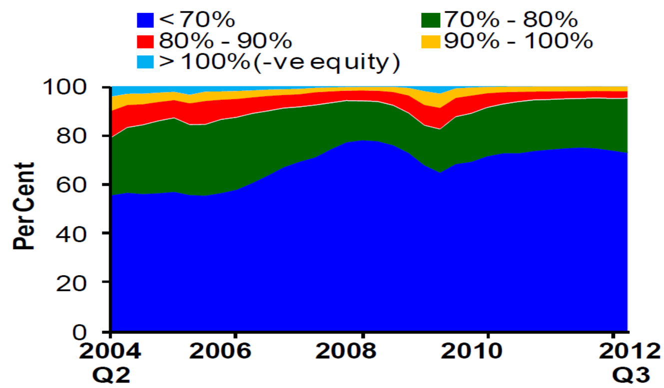
Source: Citi Research

Figure 26.Average LTV ratios are just 47.5%



Source: MAS, Citi Research

Figure 27. Outstanding housing loans by LTV ratios



Source: MAS Financial Stability Review Nov-2012

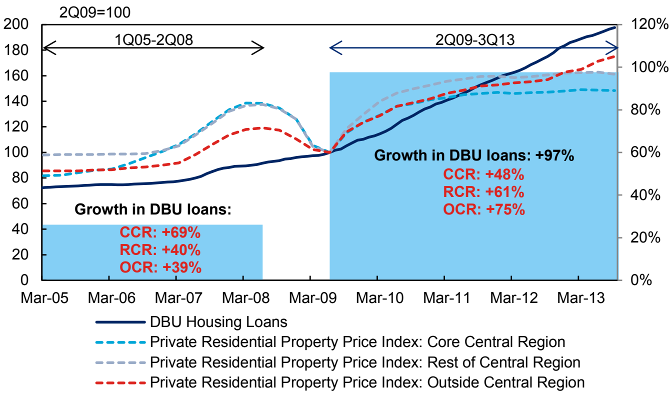
Rather than rising NPLs, the burden of adjustment could instead fall on consumers, especially those who have over-leveraged for the purchase of private properties. While there is a paucity of hard data, there is sufficient circumstantial evidence to suggest that a large chunk of the rise in mortgage debt (>70%) since 2009 may have been incurred for owner-occupation demand for mass market properties, suggesting a larger increase in the debt service burden of upper-middle class households especially when interest rates start to rise.

- The surge in mortgage loans in the last four years for example coincided with the surge in demand and prices of mass market properties, especially Outside the Central Region (OCR), although part of this increase also reflects the lagged disbursal and application for mortgages for properties purchased under the Deferred Payment Scheme before 2007, but only completed after 2008.

- There is also evidence that average unit sizes have been falling in recent years, helping to keep average condominium price-to-income ratios manageable. Thus the median unit size of a property sold has fallen from 116sq m (1248sq f) in 2009 to just 76sq m (818sq f) now, such that the average condo price (ex Central region) has risen only 26% since 2009 despite the far larger 68% increase in median per-square foot prices since then.

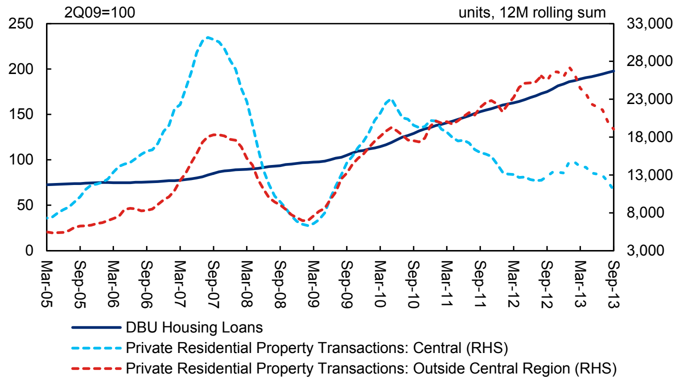
- The MAS data also shows that the proportion of new mortgage limits granted or disbursed for owner-occupation since early 2011 has also been rising. Owner-occupied mortgages accounted for 69.4% of limits granted in 1Q11, rising to 71% in 2Q13.

Figure 28. Surge in mortgages since 2009 has coincided with much more rapid price increases in mass market private residential prices, rather than in the high end…



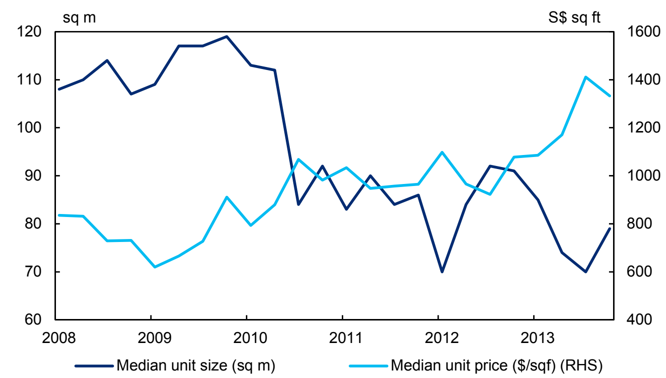
Source: CEIC, Citi Research

Figure 29. …as well as surge in mass market property transactions vs falling high end transactions



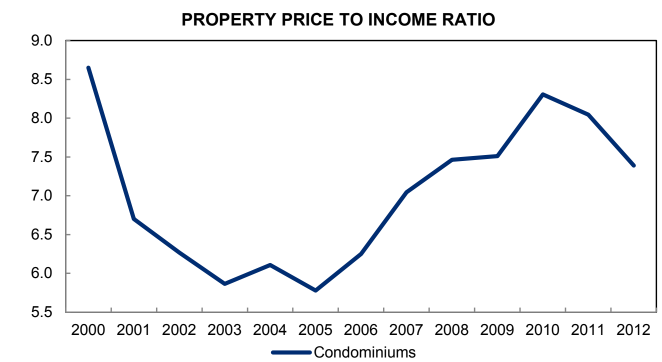
Source: Citi Research

Figure 30. Falling median unit sizes and rising median unit prices of new housing sales…



Source: Citi Research

Figure 31. …have helped keep average condominium price-to-income ratios manageable for marginal buyers that fall just above the HDB income ceiling



Source: Citi Research

While aggregate debt service ratio data is not available, our simulations on debt servicing ratios for "marginal" mass market private property buyers suggest that mortgage service burdens would likely rise above 2007 peaks if mortgage rates were to normalize to the historical average of 3.5% – not disastrous, but enough to slow discretionary spending or savings in our view. This marginal group likely comprises newly wedded couples marrying at a later age, with higher incomes just above the HDB income ceiling, and also some HDB upgraders. We use the average condominium price (ex Central region), and assume a 80% LTV for the mortgage. Finally, we calculate debt service ratios based on household incomes in the deciles of households which fall just above the HDB household income eligibility limits (raised to S$10K/mth in 2011 from S$8K/mth previously) – the 71^{st} -80^{th} percentile of households from 2001-2007 and the 61^{st} to 70^{th} percentile from 2008.

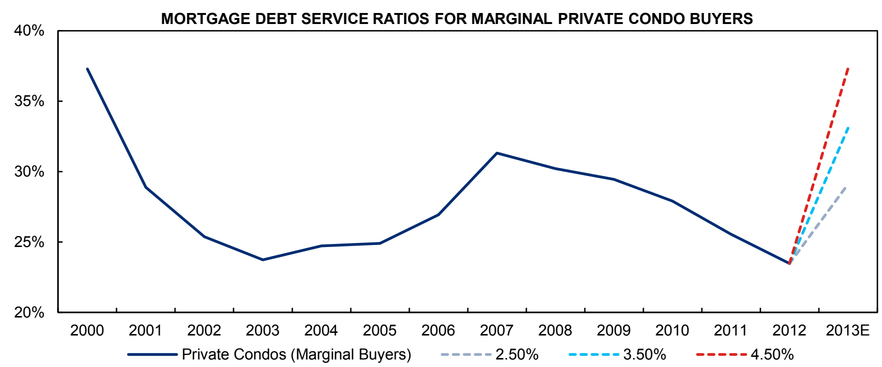
Our simulations indicate that if mortgage rates normalized to 3.50%, households in this group would see their monthly mortgage servicing burden will rise from just under 25% of income currently to 33.1%, above the 2007 peak of 31.3%. If mortgage rates were to rise to 4.5%, monthly mortgage servicing ratios would reach the highs in 2000s (37.3%). Given the good likelihood that this group of borrowers likely own a car and spend roughly 10% of monthly household incomes servicing

the car loan, the total debt servicing ratio could rise to 43% in a normalized interest rate scenario, from 35% currently.

As already noted, property-to-income and mortgage servicing ratios have been kept in check only by shrinking unit sizes, which in turn implies a fall in living standards. If these “marginal” buyers wish to maintain living standards and instead purchase a larger than average condominium of around 1000sf (close to the average size in 2008-2011 based on median psf pricing), the total debt servicing ratios (including car loans) of these marginal condominium buyers would reach 50% of monthly household income if both mortgage and car loan rates normalize (vs around 40% currently). Extending this analysis to a purchase of a 1200sf condominium, the median size of condominiums in 2009 would see mortgage servicing ratios approach 60% in a normalized interest rate scenario.

Thus, all else equal, discretionary incomes could easily fall 8-12% from current levels if interest rates normalize, which will likely prove a headwind to consumption unless offset by a similar rise in wages.

Figure 32. Mortgage servicing ratios for the decile of “marginal” condominium buyers who fall just above the income ceiling for HDB eligibility would see debt service ratios rise 8%-pts to 33% of monthly in a normalized mortgage interest rate scenario of 3.5%, from 25% currently



Note: Assuming 80% LTV, we calculate debt service ratios based on household incomes in the deciles of households which fall just above the HDB household income eligibility limits – the 71st -80th percentile of households from 2001-2007 and the 61st to 70th percentile from 2008.
Source: CEIC, Citi Research Estimates

Figure 33. Including a car loan, overall debt-servicing ratio of “marginal” condominium buyers could rise to 43.5% in a normalized interest rate scenario (vs 35% now), and if living standards were maintained by purchasing a larger home, overall debt service ratios could exceed 50% in a normalized interest rate scenario.

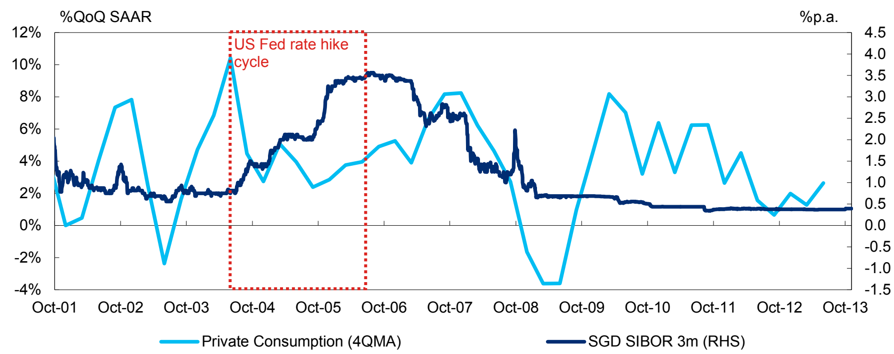
Condominium size	Average price ex Central	Median psf price	Implied unit size	Monthly Income	Monthly mortgage payment – Assume 30 year tenure, 80% loan	Debt Service Ratio by Interest Rate			
						Current Interest Rate (1.4%)	2.50%	3.50%	4.50%
	S$	$S per sq ft	sq ft	S$	S$	%	%	%	%
"Average"	1,003,116	1,204	833	10,894	2,731	25.07%	29.11%	33.08%	37.32%
"Normal"	1,204,000	1,204	1,000	10,894	3,278	30.09%	34.93%	39.70%	44.80%
"Large"	1,444,800	1,204	1,200	10,894	3,934	36.11%	41.92%	47.64%	53.76%
	Car price			Monthly Income	Monthly Repayment – Assume 50% LTV, 5 year loan	Current Interest Rate (3%)	4.00%	5.00%	7.00%
Car	120,000			10,894	1,078	9.90%	10.14%	10.39%	10.91%

Note: Assuming 80% LTV, we calculate debt service ratios based on household incomes in the deciles of households which fall just above the HDB household income eligibility limits – the 71st -80th percentile of households from 2001-2007 and the 61st to 70th percentile from 2008.
Source: Citi Research Estimates

Indeed, consumption could be hit even before an actual rise in interest rates as the TDSR framework is effectively a de facto rise in interest rates in determining the eligibility of new consumer loans. While the imposition of TDSR has already started to curb the *flow* of new borrowers, an actual rise in interest rates will raise debt service ratios of the *stock* of existing borrowers, compelling them to reduce spending, which would be disinflationary or outright deflationary.

The slowdown in consumption spending during the early stages of the last Fed hiking cycle in 2004-2006 should serve as a cautionary tale. During the last Fed rate hiking cycle in 2Q04-3Q06 for example, private consumption growth (measured on a four-quarter moving average SAAR basis) decelerated from a peak of over 10% to just 2.4%. This slowdown in private consumption took place within the context of a general acceleration in overall GDP growth, interestingly rising property prices (corroborating MAS's previous studies of a negative wealth effect from house prices), and a higher unemployment rate than presently. Households were more leveraged then. That said, household debt fell from 86% of GDP to 70% through the last rate hiking cycle, reflecting the swifter growth in GDP (the denominator), while the prevalence of now defunct deferred payment schemes (DPS) delayed the entry of mortgages onto the household balance sheet.

Figure 34. Private consumption slowed during the last Fed hiking cycle in from mid 2004-mid 2006



Source: CEIC, Citi Research

Appendix A-1

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