4 June 2012 | 28 pages

Hong Kong Banks

Basel III's Multi-Year Influences – The Relaxed vs. The Stressed

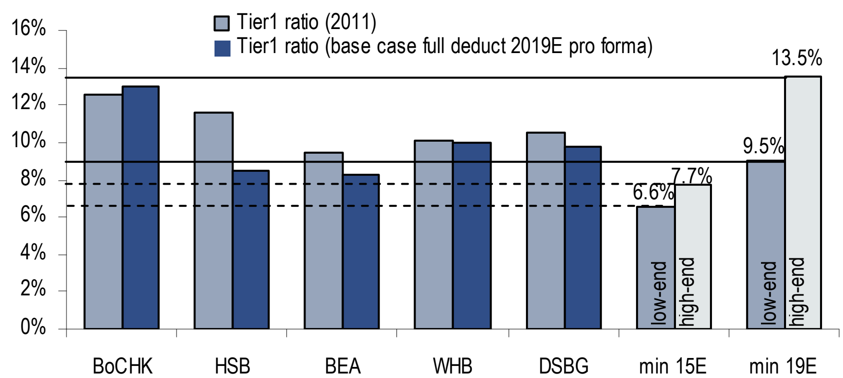
- **HKMA B3 capital requirements…the devil is in the details —** HK banks' Basel III (B3) adoption is insufficiently researched in our view. HKMA adopt official B3 in principle, but key differences exist. We expect all banks can meet the 2015E minimum Tier 1 requirement of c7-9% but that requirements in 2016-19E will increase substantially to c9.5-13.5%. This could put capital pressure on HSB, BEA and DahSing, while BoCHK and WHB are relatively more relaxed.

- **Connecting the dots… B3 impact analysis —** In this report, we analyze the Top 5 areas of impact on HK's B3 adoption. We argue that Tier 1 ratio requirement is the most relevant when analyzing the impact on HK banks (as oppose to CET1). We also connect the recent BIS quantitative study and HKMA's more qualitative assessment to gauge bank specific impact. We expect B3 implementation will play a material role in impacting banks operating strategy in the years to come.

- **BEA, DahSing, HSB to sense stress —** We believe these three banks can meet 2015E minimum Tier 1 requirements, but could be stressed as buffers phase-in during 2016-19E. HSB faces the largest FI investment deductions; BEA faces Hybrid Tier 1 deductions from its lower Tier 1 ratio; DahSing has lower organic profitability and Bank of Chongqing may call for additional capital. While HKMA and HKAB both commented that banks have no need in raising capital for B3, it may result in tightly constrained asset growth, dividend cuts, and need to dispose of non-core assets.

- **BoCHK and WHB relatively relaxed —** We expect BoCHK will be the first HK bank to declare full B3 comfort. Gary He, BoCHK Chief Executive, said its Tier 1 ratio had reached 13-14% YTD, up from 12.5% at end-2011. WHB has highest-in-peers capital generation capability (measured by organic profit as % tier 1 capital base). We view these two banks will have better flexibility in strategy and a solid buffer even if macro deteriorates.

Figure 1. HK Banks – Expected B3 Impact on Tier 1 Ratio



Source: Citi Investment Research and Analysis, Companies, BIS, HKMA

■ Industry Overview

Gary Lam
+852-2501-2743
gary.lam@citi.com

Simon Ho, CFA
+852-2501-2798
simon.ho@citi.com

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

Contents

Summary Analysis of Basel III Capital Requirements

Our analysis on B3 impact is focused on five key quantifiable areas. These include:

1. Deductions from banks' financial institutions investments;
2. Fair value gains on investment & own-use properties;
3. Fair value gains on available-for-sale & trading portfolio;
4. Additional risk-weighted asset (RWA) given tighter counterparty credit risk and market risk requirements; and
5. Bank specific addition or deduction items.

Bull/Base/Bear case analysis

Base case estimates reflect Tier 1 addition or deductions base on HKMA May-2012 proposals. We start the calculations by using end-2011 Tier 1 ratios and then factor in the impact for each of Area 1 to Area 5 and reach the pro forma Tier 1. **Bear case** represents the May-2012 proposal with tighter RWA increment assumptions (8% vs 4% in base case). **Bull case** represents relaxation from HKMA property revaluation treatment, by accepting those revaluation gains as Tier 1 capital after 55% haircut.

Our analysis, as summarized in Figure 2, suggests HK banks pro forma Tier 1 ratio will range from 7.9-13.0% under the base case. BoCHK will likely be the first HK bank to declare full B3 deduction comfort. While the rest of the banks would also be able to meet 2015E capital requirements, they could face stress towards the higher 2016-19E requirements. These banks may grow very conservatively, cut dividends, dispose of FI investments, and dispose of other non-core assets.

Principle of analysis: Capital focused, Tier 1 focused

Focus on capital: Our analysis focused on quantifiable capital requirements and avoided areas which are NOT based on disclosed company data. The focus on capital requirements is important for equity investors as this will impact sustainable ROE (thus equity fair value) and trigger potential corporate/capital action.

Focus on Tier 1 requirements: Our analysis on HK banks is focused on Tier 1 (T1). This is unlike international banks where focus is usually put on Common Equity Tier 1 (CET1). HK banks under our coverage do not have Additional Tier 1 (AT1) capital except BEA. BEA has a Hybrid Tier 1 instrument that represents c1ppt of its 9.4% total Tier 1 ratio. We would see it as risky to focus on CET1 instead of T1 requirement, as T1 requirement is higher than CET1, and miss-focusing on CET1 risks underestimating the effective minimum requirements faced by the HK banks.

B3 liquidity requirement: The official B3 and HKMA proposal includes new liquidity requirements (including new liquidity coverage ratio and net stable funding ratio). We expect banks will have reduced incentive to absorb short-term funding but increased incentive to absorb retail or longer-term funding. However, there is limited publicly available data to analyze the liquidity positions of the banks, and HKMA will further reveal implementation details in 2H12. Our overall sense is that large, liquid, deposit franchise banks will be favored against banks that rely on wholesale funding.

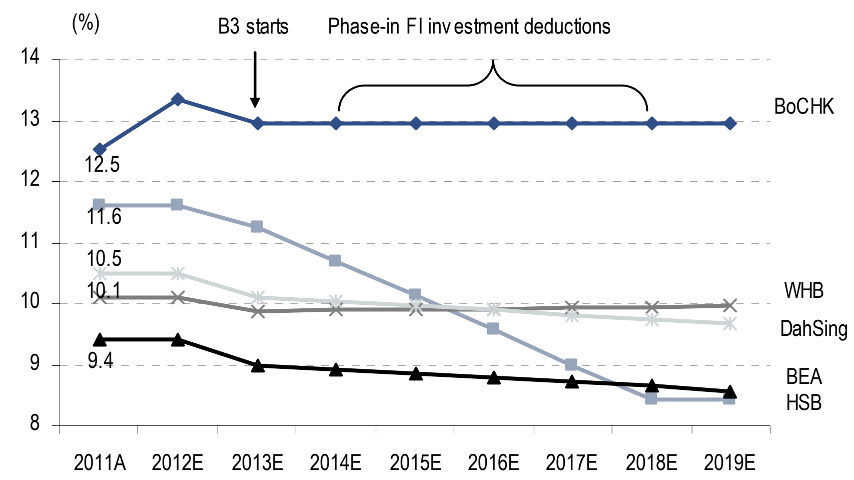
Figure 2. Hong Kong Basel III Implementation Impact Analysis

	Impact on Tier 1 Ratio (ppt)				
	BoCHK	**HSB**	**BEA**	**WHB**	**DSBG**
Tier 1 Ratio (%, 2011A)	**12.51**	**11.62**	**9.42**	**10.10**	**10.50**
Area 1: Investments in unconsolidated financial entities					
Option1: HKMA Jan-2012 proposal – all financial institutions investment being deducted from T1	-0.02	-3.72	-0.51	-0.12	-1.14
Option2: HKMA May-2012 proposal – "10% concessionary threshold" accepted	0.01	-2.81	0.13	0.06	-0.35
Option2 yearly impact on Tier 1 ratio 2014-2018 (ppt)	0.00	-0.56	0.03	0.01	-0.07
Area 2: Unrealized fair value gains on premises and investment properties					
Option1: maintain HKMA May-2012 proposal	0.00	0.00	0.00	0.00	0.00
Option2: relax HKMA proposal to allow T1 inclusion after 55% haircut – possible	1.46	1.94	0.26	0.21	0.27
Option3: relax HKMA proposal to allow T1 without haircut – highly unlikely	3.25	4.30	0.57	0.46	0.59
Area 3: Fair value gains or losses on available-for-sale, trade, or loans at fair value through P&L					
Option1: add AFS reserve (positive reserve only; negative reserve already deducted in existing rule)	0.08	0.07	0.02	0.17	0.00
Area 4: Sensitivity to additional RWA growth[1]					
Option1: estimate 8% additional RWA – bearish assumption	-0.93	-0.86	-0.70	-0.74	-0.78
Option2: estimate 4% additional RWA – base or bullish assumption	-0.48	-0.45	-0.36	-0.38	-0.40
reference: BIS Apr-2012 study suggest 6.3% avg RWA increase for global domestic banks					
Area 5: Bank specific items					
BEA (Hybrid Tier 1 instrument phase out in 10 years starting 2013, c10bp deduction per year)			-0.94		
BoCHK (2nd year FIRB adoption decreases RWA, c80bp uplift in 1H12)	0.82				
Bull/Base/Bear case analysis					
Current - Tier 1 Ratio (2011A)	12.51	11.62	9.42	10.10	10.50
Bear case – HKMA May-12 proposal bear assumptions (A1 op2, A2 op1, A3 op1, A4 op1)	12.50	8.02	7.93	9.58	9.37
Base case – HKMA May-12 proposal base assumptions (A1 op2, A2 op1, A3 op1, A4 op2)	**12.95**	**8.43**	**8.27**	**9.94**	**9.74**
Bull case – Assume relaxation from May-12 proposals (A1 op2, A2 op2, A3 op1, A4 op2)	14.41	10.37	8.52	10.15	10.01
Likely "Pillar 2 requirements" – low c0.75%, mid c1.5%, high c2.25% "add-on" Tier 1 requirement					
HKMA decide bank specific Pillar 2 in "less qualitative" measures, we proxy via regulatory reserves	low/mid	low	mid/high	mid	mid/high
Capital generation capability					
2012E ex-associate retained earnings plus scrip dividend as equivalence to Tier 1 ratio (ppt)	1.04	0.70	0.65	1.20	0.41

Source: Company Information, Citi Investment Research and Analysis Estimates

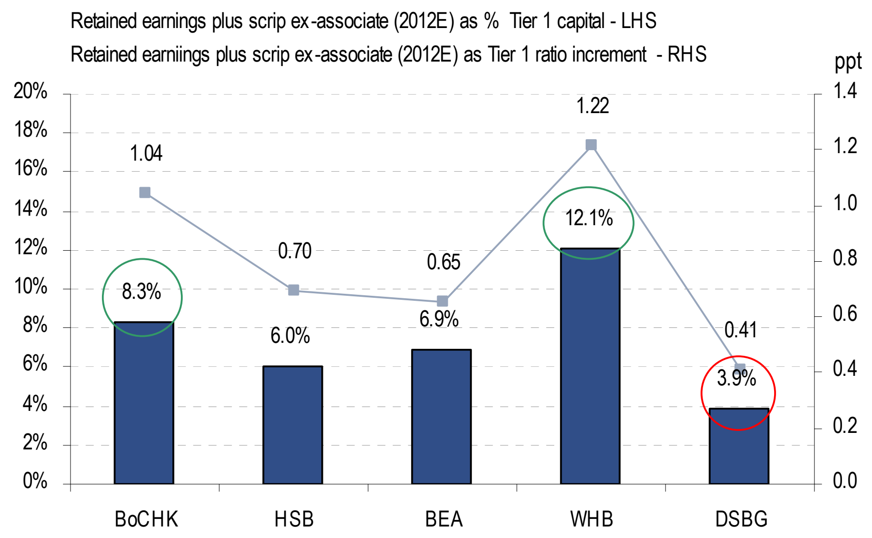
[1] BIS April-2012 quantitative analysis suggests banks on average will experience a 6.3% RWA increase under B3 adoption (based on 1H11 B/S and without mitigation measures).

Figure 3. B3 capital deductions impact on Tier 1 ratio – base case*



Source: Company Information, Citi Investment Research and Analysis Estimates
*Excl. capital generation, profit growth, risk weighted asset growth
Applied key area of B3 adoptions in Area 1-5 in above table

Figure 4. Capital generation capability**



Source: Citi Investment Research and Analysis Estimates
**excl. capital generation, profit growth, risk weighted asset growth
Bullishly assumed ex-associate retained earnings are eligible for Tier 1

Basel III Tier 1 Capital Requirements

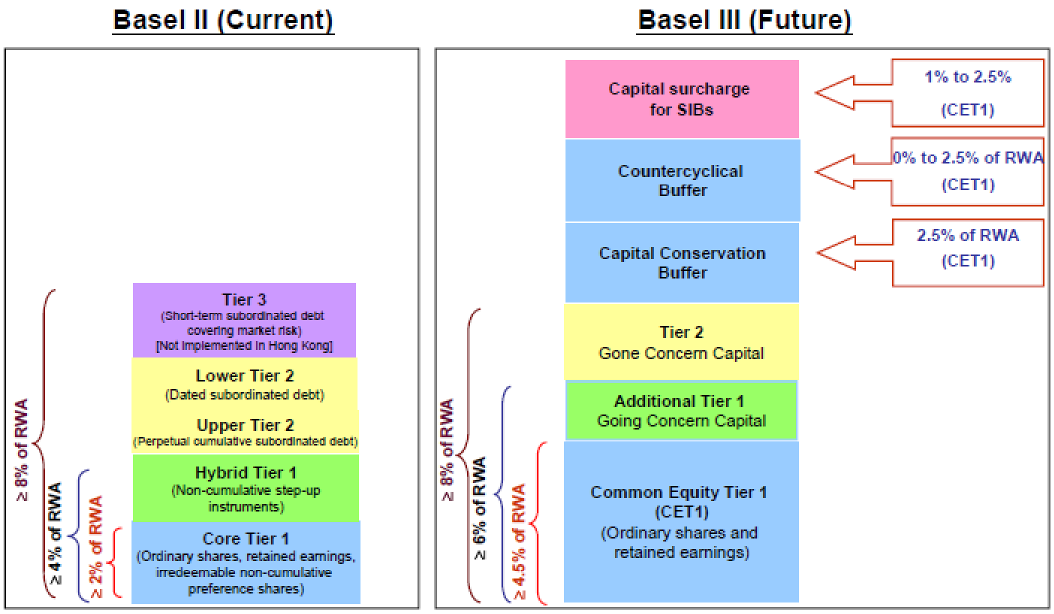
Figure 5 below illustrates the B3 Tier 1 ratio requirements and considers four other buffers (i) capital conservation buffer, which will phase-in starting 2016 and reach 2.5% by 2019, (ii) countercyclical buffer, which may phase-in starting 2016 and reach 2.5% by 2019, (iii) pillar 2 requirements which will be apportioned to raise minimum Tier 1 ratio by c0.5-1.7% but may phase-out as other buffers phase in, and (iv) surcharge for systemic important banks (SIBs) at 1-2.5%.

By 2015: Tier 1 capital requirement is not high as the two B3 capital buffers not yet phase-in, require only c7-8% minimum Tier 1 ratio (incl. HKMA Pillar 2 requirements).

By 2016-19: Tier 1 capital requirement will be substantially raised as the two buffers phase in, requirement will likely range from 8.5%-11% (include B3 minimum Tier 1, capital conservation buffer, and countercyclical buffer); inclusion of SIB surcharge of 1%-2.5% brings stated Tier 1 requirement as high as 9.5%-13.5%.

Citi base case: We expect full B3 implementation will likely **require banks to maintain a Tier 1 ratio of 9.5%-11.5%**, buffers inclusive. This estimate assumed: (i) all banks are labeled as locally systemically important, but (ii) countercyclical buffer/capital conservation buffer offsets pillar 2 requirements. Overall Tier 1 ratio requirement will unlikely to exceed 11.5% in our view.

Figure 5. HKMA - Definition of capital under B3
Full adoption min Tier 1 requirement at 9.5% to 13.5%; we expect probable range will be within 10-11.5%



Source: HKMA

Differentiating minimum requirement vs comfort range: The B3 minimum Tier 1 ratio will phase-in from 4.5% in 2013 to 6.0% in 2015. While this bottom-line minimum requirement is not high, the additional buffers to be applied could result in a substantially higher effective Tier 1 ratio comfort range for banks.

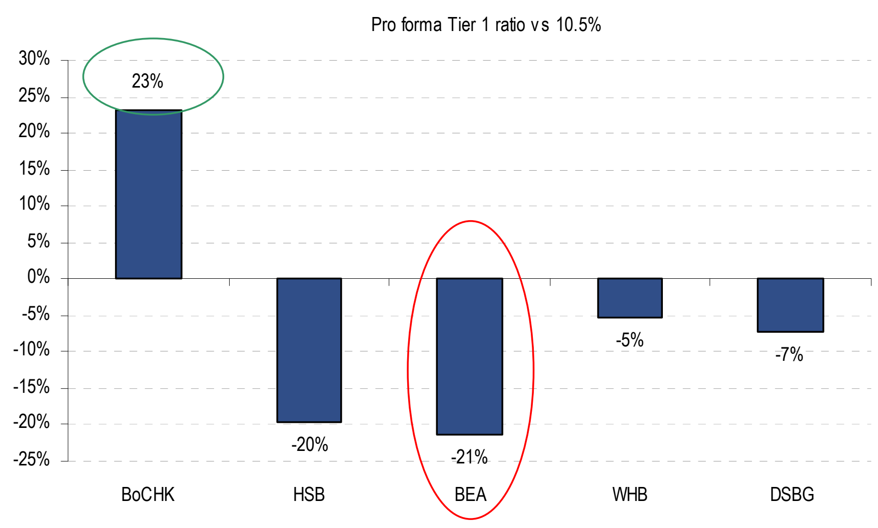
The HKMA May-2012 proposal suggests: (i) A likely phase-in of 2.5% capital conservation buffer – this does NOT form part of minimum requirement, albeit that banks missing this buffer will face constrains on dividends, share buyback and discretionary bonus payment; (ii) A possible phase-in of 0-2.5% of countercyclical buffer, if imposed, will likely be linked to economic cycle or credit growth cycle. Conditions for this buffer to phase-in remain under discussion; (iii) Capital surcharge for systemically important banks (SIB) that require 1-2.5% of capital; (iv) A bank specific Pillar 2 requirement will translate into 0.75-2.25% of additional minimum Tier 1 ratio requirement during 2013-15E. This Pillar 2 requirement may partially phase-out as other buffers phase-in during 2016-19E.

Figure 6. Hong Kong Basel III Implementation – Tier 1 Ratio Requirements

Year	Basel III minimum Tier 1 requirement	(incl. capital conservation buffer)	(incl. countercyclical buffer, if impl.)	(include low pillar 2)*	(include medium pillar 2)*	(include high pillar 2)*	Surcharge of "Sys. Important Bank"	Remarks
2013	4.50%	4.50%	4.50%	**4.94%**	**5.38%**	**5.81%**		HKMA may further impose Systemically Important Banks (SIB) surcharge of 1% to 2.5%, timing not announced. Countercyclical buffer is still under consultation, will require 0-2.5%.
2014	5.50%	5.50%	5.50%	**6.00%**	**6.50%**	**7.00%**		
2015	6.00%	6.00%	6.00%	**6.56%**	**7.13%**	**7.69%**		
2016	6.00%	**6.63%**	**7.25%**	*7.81%*	*8.38%*	*8.94%*		
2017	6.00%	**7.25%**	**8.50%**	*9.06%*	*9.63%*	*10.19%*	**1 – 2.5%** timing unclear	
2018	6.00%	**7.88%**	**9.75%**	*10.31%*	*10.88%*	*11.44%*		
2019	6.00%	**8.50%**	**11.00%**	*11.56%*	*12.13%*	*12.69%*		**Citi base case:** Full B3 implementation to require **9.5%-11.5%** of Tier 1 ratio, all buffers inclusive by start of 2019.

Source: Citi Investment Research and Analysis, HKMA
**shaded area* indicates area of uncertainty – we see strong likelihood for relaxation but saw little clarity based on HKMA May 2012 document; each bank will be given a different pillar 2 requirement base on less quantifiable areas like credit concentration risk, interest rate risk in the banking book, reputation risk and strategic risk.

Figure 7. Pro forma Tier 1 ratio vs 10.5% (mid-point of base case 9.5-11.5% Tier 1 comfort level)



Source: Citi Investment Research and Analysis

Area 1: Investments in Financial Institutions

HKMA existing approach – 50:50 deductions from T1 and T2: Deduction is applied if a bank invests in shares or capital instruments on any company (including HSB on Industrial Bank, BEA on Affin Holding, and DahSing on Bank of Chongqing).

HKMA May-2012 proposal – deduction with 10% concessionary threshold[2]: For bank's FI investments within the threshold, 250% risk weight will be assigned instead of directly deducted from Tier 1. This approach represents relaxation from HKMA's Jan-2012 proposal where all FI investments are deducted from Tier 1. Also, HKMA adopt a 5-year phase-in approach for the deduction, starting 2014.

HSB, DahSing most negatively affected (but less negative on HKMA May-12 proposal vs Jan-12 proposal): Full B3 implementation by Jan-2018 will impact **HSB** Tier 1 ratio by 2.8ppt and **DahSing** by 0.35ppt. **BoCHK** and **WHB** are not noticeably affected. **BEA** may receive a 0.13ppt benefit in Tier 1 ratio, as some existing 50:50 deduction will be risk weighted under the new approach. New B3 requirement will phase-in in a straight line over 5 years starting Jan-2014 till 2018.

Disposal of FIs investments possible: HK banks will have years to consider a disposal, if needed. A bank will have more incentive to dispose if synergy is not obvious or if the bank faces capital stress. Shareholders may request banks to justify synergy if it intends to hold on to such an investment.

[2] Reference: understanding "concessionary threshold" of B3: "For insignificant investments in the capital instruments of unconsolidated financial entities, paragraph 81 of Basel III: A global regulatory framework for more resilient banks and banking systems specifies that any amount up to 10% of the investing bank's common equity is allowed to be risk-weighted according to the relevant approaches. For significant investments in the common shares of unconsolidated financial entities, paragraphs 87 to 89 allow any amount up to 10% of the investing bank's common equity to be risk-weighted at 250%, subject to the additional restriction that the amount of such investments (together with the investing bank's MSRs and DTAs that arise from temporary timing differences) does not exceed 15% of the investing bank's common equity."

Figure 8. Investments in Financial Institutions – eased in May-2012 HKMA proposal

HK$ mn	BoCHK	HSB	BEA	WHB	DSBG
Interest in associates	**234**	**22,608**	**3,820**	**249**	**2,030**
(i) Existing approach: 50% deduction from Tier 1	117	11,304	1,910	125	1,015
(ii) B3 concessionary thresholds: 10% CET1 capital	**8,460**	**3,536**	**3,150**	**1,088**	**936**
Interest in associates > concessionary thresholds?	**No**	**Yes**	**Yes**	**No**	**Yes**
If no, then just add RWA					
(iii) B3 within concessionary thresholds add RWA	585	8,839	7,876	623	2,341
If yes, then add RWA and deduct rest via T1					
(iv) B3 deduction without concessionary thresholds	0	19,072	670	0	1,094
Assuming HKMA allow "concessionary thresholds" (HKMA May-2012 proposal, also official B3)					
Deduct/(add) to Tier 1(iv) – (i)	-117	7,768	-1,240	-125	79
Additional to RWA (iii)	585	8,839	7,876	623	2,341
B3 new Tier 1 ratio	12.5%	8.8%	9.5%	10.0%	10.1%
B3 impact Tier 1 ratio (ppt)	0.01	-2.81	0.13	0.06	-0.35
Assuming HKMA prohibit "concessionary thresholds" (HKMA earlier Jan-2012 proposal)					
Deduct on Tier 1	117	11,304	1,910	125	1,015
Additional to RWA	0	0	0	0	0
B3 new Tier 1 ratio	12.5%	7.9%	8.9%	9.9%	9.4%
B3 impact to Tier 1 ratio (ppt)	-0.02	-3.72	-0.51	-0.11	-1.14

Source: Citi Investment Research and Analysis, Companies *calculations for BoCHK, BEA, WHB and DSBG based on associate investment position – this is a conservative approach as some associates may not be financial institutions (thus not deducted in B3), calculations for HSB based on disclosed deduction on unconsolidated investments.

Area 2: Unrealized Gains on Investment and Own-Use Properties

HKMA existing approach: Under the existing framework, unrealized gains on the revaluation of properties held for investment or own-use are excluded from Core Capital, but may be included in Supplementary Capital subject to a haircut of 55%. The amount of Supplementary Capital recognition also faces a cap (known as “1998 Cap”), and amount or revaluation reserve in excess of the 1998 Cap can be deducted from risk-weighted assets.

HKMA May-2012 proposal (same vs HKMA Jan-2012 proposal but tighter than official B3): Different from the official B3 proposal, HKMA proposes to exclude unrealized properties gains in Tier 1 capital base. The HKMA cites volatile property prices in HK and some banks hold sizable property revaluation gains as % Tier 1 capital. Meanwhile, HKMA proposed removal of the “1998 Cap” for Tier 2 inclusion.

This HKMA proposal is different from that for Singapore and Australia. Singapore allows Tier 1 capital inclusion after 55% haircut and Australia seems to allow full Tier 1 inclusion without hair cut. We believe there is a moderate chance for HKMA to reconsider their tighter-than-official requirements, which offers potential upside to the sector.

The below table illustrates potential impact according to different approaches.

Figure 9. Premises revaluation reserve – a possible upside for B3 adoption

HK$ mn	BoCHK	HSB	BEA	WHB	DSBG
Existing approach: 55% haircut and include as Tier 2	9,873	5,894	970	225	238
Assuming HKMA keep unchanged, ie 55% haircut & include in Tier 2 (HKMA May-2012 proposal)					
B3 addition to T1	0	0	0	0	0
B3 new T1 ratio	12.5%	11.6%	9.4%	10.0%	10.5%
B3 impact to T1 ratio (ppt)	0.00	0.00	0.00	0.00	0.00
Assuming HKMA allow 55% haircut then include in Tier 1 (approach adopted by Singapore) – possible					
B3 addition to T1	9,873	5,894	970	225	238
B3 new T1 ratio	14.0%	13.6%	9.7%	10.3%	10.8%
B3 impact to T1 ratio (ppt)	1.46	1.94	0.26	0.21	0.27
Assuming HKMA no haircut then include in Tier 1 – unlikely					
B3 addition to T1	21,939	13,098	2,156	499	530
B3 new T1 ratio	15.8%	15.9%	10.0%	10.6%	11.1%
B3 impact to T1 ratio (ppt)	3.25	4.30	0.57	0.46	0.59

Source: Citi Investment Research and Analysis, Companies
*BoCHK did not disclose existing Tier 2 contribution via unrealized gains on properties, we approximate by summing premises revaluation reserve and recent five years of accumulated investment properties gain

If HKMA decides to maintain the May-2012 proposal, we expect no impact on Tier 1 capital base vs 2011 standard.

If HKMA allows recognition in Tier 1 after haircut, then banks can enjoy a c0.3-2.1ppt Tier 1 increase. Banks most leveraged to this benefit are **HSB and BoCHK**, at c1.5-2.0ppt of Tier 1, and to a lesser extent **BEA, DahSing and WHB**.

We note that BEA is the only HK bank carrying property premises at cost. If these are reclassified as investment properties, or arranged via sale and lease back arrangements, then a sizable revaluation revealed. This could raise the Tier 1 ratio by as much as 1ppt by our rough estimate.

Area 3: Unrealized Gains on Available-For-Sale or Trading Securities

HKMA existing approach: "Unrealised gains on AFS or FVO securities are required to be derecognized (i.e. excluded) from Core Capital, but may be included in Supplementary Capital subject to a haircut of 55%". In addition, banks with negative AFS reserve have already deducted those from Tier 1 capital base.

HKMA May-2012 proposal – same as B3, more relaxed vs existing: "HKMA proposes to adopt the Basel III approach of allowing unrealized gains and losses on AFS (available-for-sale) or FVO (designated as fair value) securities to be included in determining CET1 Capital". While this proposal marks a relaxation on capital classification, the HKMA plans to balance by adopting a more stringent standard on valuation in these securities[3].

Net positive at inception, higher volatility going forward: Inclusion of unrealized securities gains in Tier 1 will be net positive for HK banks because any banks with positive AFS reserve can recognize those as Tier 1 capital (vs as Tier 2 after haircut in existing approach). We acknowledge that the inclusion of gains/losses from equities and debt into Tier 1 capital will bring in additional market-driven volatility; but as a response to the overall B3 capital & liquidity implementation, banks may increase concentration on high quality sovereign exposure and reduced overall risks in the investment book.

Figure 10. Potential unrealized gains/losses from equities and debt – mix of plus to minuses

HK$ mn	BoCHK	HSB	BEA	WHB	DSBG
Existing gains classified as Tier 2 after 55% haircut	308	117	34	102	1
B3 addition to T1 estimated	560	213	62	185	2
B3 new T1 ratio	12.6%	11.7%	9.4%	10.3%	10.5%
B3 impact to T1 ratio (ppt)	0.08	0.07	0.02	0.17	0.00

Source: Citi Investment Research and Analysis, Companies

Unrealized gains/losses from loans & receivables: HKMA in its May-2012 proposal decided to also accept unrealized gains from loans & receivables held by banks to be eligible as Tier 1 capital inclusion. This approach is inline with official B3 but suggests a relaxation compared with the HKMA Jan-2012 proposal.

[3] Future valuation practice follow Supervisory Policy Manual module issued by the HKMA in December 2011 on "Financial Instrument Fair Value Practices" (CA-S-10). It reflects the recommendations in the Supervisory guidance for assessing banks' financial instrument fair value practices issued by the Basel Committee on Banking Supervision (BCBS) in April 2009 and the relevant enhancements to the Basel II capital framework which the BCBS issued in July 2009 to broaden the application of prudential valuation guidance to all positions (i.e. in both trading book and banking book).

Area 4: Additional RWA

Basel III introduces multiple area of RWA uplift, but banks can partly mitigate: The HKMA proposals follow the B3 framework to apply 1250% risk weight on items including securitization exposures, certain equity exposures under PD/LGD approach, and non-financial holdings of over 20% voting power. Other detailed adjustments include on internal rating based risk weight and refinement of default risk assessment and credit valuation adjustments (CVA). Meanwhile, B3 assigned lower risk weighting for positions against eligible central counterparties (CCP) for clearing.

Reference points to BIS April 2012 analysis[4], domestic banks globally on average increase RWA by 6.3% in B3 based on 1H11 balance sheets and before mitigation measures. Separately, KPMG published analysis that expected bank measures can mitigate RWA increase by 0% to 50%.

Ball park estimate - adding c4-8% of RWA: Our base/bull case estimate (see Figure 2 on page 4) factors in 4% RWA addition, whereas our bear case factors in 8% RWA addition. Reference was made to the Bank for International Settlements (BIS) April-2012 quantitative analysis. The BIS analysis suggested that global domestic banks on average show 6.3% RWA increase under B3 adoption (based on 1H11 B/S and without mitigation measures). The BIS analysis was focused on banks with either less than €3bn Tier 1 capital or those without internationally active presence.

Figure 11. HK Banks – Tier 1 ratio sensitivity to RWA increase

RWA (HK$ mn, 2011)	BoCHK*	HSB	BEA	WHB	DSBG
Credit RWA	590,009	266,567	319,631	91,584	75,791
Market RWA	22,834	2,054	7,521	2,155	1,783
Operational RWA	51,287	35,649	48,885	14,007	11,592
Capital floor adjustment	43,906				
Deductions	-31,778				
RWA	**676,259**	**304,270**	**376,036**	**107,746**	**89,166**
RWA mix (% total)					
Credit RWA	87%	88%	85%	85%	85%
Market RWA	3%	1%	2%	2%	2%
Operational RWA	8%	12%	13%	13%	13%
Capital floor adjustment	6%	0%	0%	0%	0%
Deductions	-5%	0%	0%	0%	0%
RWA	**100%**	**100%**	**100%**	**100%**	**100%**
Sensitivity of RWA increase (HK$ mn)					
Credit RWA: 5% up	59,001	26,657	31,963	9,158	7,579
Market RWA: 20% up	2,283	205	752	215	178
Operational RWA: 20% up	5,129	3,565	4,888	1,401	1,159
Total RWA	**67,626**	**30,427**	**37,604**	**10,775**	**8,917**
Total RWA increase %	**6.6%**	**6.9%**	**7.3%**	**7.3%**	**7.3%**
Tier 1 ratio (%, pro forma 2011)					
Credit RWA	12.0%	11.1%	9.0%	9.6%	10.1%
Market RWA	12.4%	11.6%	9.4%	9.9%	10.5%
Operational RWA	12.3%	11.4%	9.2%	9.7%	10.2%
Total RWA	**11.7%**	**10.9%**	**8.8%**	**9.3%**	**9.8%**
Tier 1 impact (ppt difference vs 2011)					
Credit RWA	-0.52	-0.49	-0.38	-0.41	-0.43
Market RWA	-0.08	-0.02	-0.04	-0.04	-0.04
Operational RWA	-0.19	-0.27	-0.24	-0.25	-0.27
Total RWA	**-0.77**	**-0.75**	**-0.64**	**-0.68**	**-0.71**

Source: Citi Investment Research and Analysis, Companies
*BoCHK RWA breakdown not disclosed in 2H11, proxy via 1H11's mix

[4] BIS Basel Committee on Banking Supervision analysis (http://www.bis.org/publ/bcbs217.pdf)

Area 5: Bank Specifics

BoCHK Tier 1 up c80bp in 1H12, benefit on FIRB adoption

We expect c80bp uplift in the T1 ratio for BoCHK on a pro-forma basis in 1H12, i.e. extending the Tier 1 capital sufficiency leadership vs peers. To recap, BoCHK adopted foundation IRB approach of credit risk assessment in 1H11. HKMA requires banks to phase in the benefit of IRB adoption vs standardized credit risk assessment approach gradually such that the total credit RWA recognized is capped at 90% of standardized approach RWA in 1H11, and then relaxed the cap to 80% in 1H12 and further to 70% in 1H13.

Figure 12. BoCHK – to reduce 'capital floor adjustment' entering 2nd year of FIRB adoption

HK$ mn	2H11 Foundation IRB	1H11 Foundation IRB	1H11E* Standardized	2H10 Standardized
Credit RWA	590,009	561,273	711,573	648,236
Market RWA	22,834	21,722	20,119	18,328
Operational RWA	51,287	48,789	52,575	47,895
Capital floor adjustment	43,906	41,768	Na	na
Deductions	-31,778	-30,230	-26,193	-23,862
RWA	**676,259**	**643,322**	**758,073**	**690,597**

Source: Citi Investment Research and Analysis, Company Information
*estimated via HoH asset growth in 1H11E vs 2H10 but exclude RMB interbank liabilities to adjust for RMB clearing

BEA to cut c10bp per year on Hybrid T1 phase out, starting 2013

We expect the Hybrid Tier 1 instrument (notional value USD500mn issued Nov-2009) will be phase out by BEA on a straight line basis in 10 years starting Jan-2013. In 2011, the Hybrid T1 instrument represented c1ppt of total Tier 1 ratio; net results of the instrument will infer a c10bp yearly decline in Tier 1 ratio.

Add-on Tier 1 Requirements: "Pillar 2"

HKMA follow BCBS B3 framework in establishing minimum Tier 1 ratio requirements with expected phase-in on capital conservation buffer and possible phase-in of countercyclical buffer; these requirements are relatively straight forward. But on top of these, a bank-specific case-by-case "Pillar 2" requirement will be imposed.

What is Pillar 2? Pillar 2 requirement exists under the existing HKMA capital framework. HKMA requires individual bank to provide for a 1-3% additional capital requirement on top of the statutory minimum core capital requirements (currently at 2%) and minimum total capital adequacy ratio (currently at 4%). HKMA also acknowledged that Pillar 2 assessments are "less quantifiable", including "credit concentration risk, interest rate risk in the banking book, reputation risk and strategic risk".

Pillar 2 minimum requirements calculations: HKMA proposed to allocate the Pillar 2 add-on to the three capital ratios (for CET1/T1/CAR) in accordance with the 4.5% / 6% / 8% split. During the phase-in period, the split of Pillar 2 will be 3.5% / 4.5% / 8% for 2013 and 4% / 5.5% / 8% for 2014. These largely map into the below adaptation timeline:

Figure 13. The expected capital requirement based on qualitative factors (Pillar 2)

	Pillar 2 requirement for individual bank		
	Low	**Mid**	**High**
Existing	1%	2%	3%

	Addition to min CET1 from Pillar 2		
	Min	**Avg**	**High**
2013	0.4375%	0.8750%	1.3125%
2014	0.5000%	1.0000%	1.5000%
2015	0.5625%	1.1250%	1.6875%
2016	0.5625%	1.1250%	1.6875%
2017	0.5625%	1.1250%	1.6875%
2018	0.5625%	1.1250%	1.6875%
2019	0.5625%	1.1250%	1.6875%

	Addition to min T1 from Pillar 2		
	Min	**Avg**	**High**
2013	0.5625%	1.1250%	1.6875%
2014	0.6875%	1.3750%	2.0625%
2015	0.7500%	1.5000%	2.2500%
2016	0.7500%	1.5000%	2.2500%
2017	0.7500%	1.5000%	2.2500%
2018	0.7500%	1.5000%	2.2500%
2019	0.7500%	1.5000%	2.2500%

Source: Citi Investment Research and Analysis, HKMA

Pillar 2 requirement analysis

Since the existing Pillar 2 requirements are qualitative and non-public, we apply proxies to gauge HKMA's view on individual banks risk level for the estimate of B3 Pillar 2 requirements.

HKMA applies a minimum requirement for banks regulatory reserve (RR) plus collective impairment allowance (CIA) as percentage of total loans. This particular requirement was been reviewed in early 2011, phased in during 1H11, and was in full adoption in 2011. This proxy measure reflects part of HKMA's view on each banks credit management capability and track record.

We also cross reference the rating agencies long term counterparty credit rating. While acknowledging one of B3's principles to downplay reliance on rating agencies, we see such ratings as continuing to play a role in affecting banks' funding costs and required collateral level when dealing with counterparts.

Figure 14. RR + CIA as proxy to HKMA's qualitative view on banks' risks mgmt practices

	RR + CIA as % loans			S&P	Moody's	Fitch	Pillar 2
Bank	**2H10**	**1H11**	**2H11**	**May-12**	**May-12**	**May-12**	**likely range**
BoCHK	1.15%	1.31%	1.36%	A+	AA3	A	low/mid
HSB	0.50%	0.71%	1.04%	AA-	AA1	A+	low
WHB	1.10%	1.23%	1.36%	na	A2	A-	mid
BEA	1.05%	1.05%	1.50%	A	A2	na	mid/high
DSBG	1.16%	1.36%	1.64%	na	na	BBB+	mid/high

Source: Citi Investment Research and Analysis
*S&P long-term counterparty credit rating, Moody's long term bank deposit rating, Fitch long term rating
*HKMA introduced higher regulatory reserve requirement on HK banks during 2011

HKMA May-2012 proposal – Pillar 2 as a separate add-on, level different by bank: "The HKMA proposes to maintain the basic concept of the existing Pillar 2 framework that is the Pillar 2 risks of a locally incorporated AI will be covered by a capital "add-on" as part of its minimum capital requirements". "HKMA proposes to reserve the right to vary the allocation method for individual AIs on a case-by-case basis should supervisory concerns regarding the risk profile of a given AI so warrant". HKMA considers it "important to consult the industry at an early stage on its current thinking in this area."

Figure 15. Hong Kong Basel III Implementation – Tier 1 Ratio Requirements

Year	Basel3 minimum Tier 1 requirement	(incl. capital conservation buffer)	(incl. countercyclical buffer, if impl.)	(include low pillar 2)*	(include medium pillar 2)*	(include high pillar 2)*	Surcharge of "Sys. Important Bank"	Remarks
2013	4.50%	4.50%	4.50%	**4.94%**	**5.38%**	**5.81%**		HKMA may further impose Systemically Important Banks (SIB) surcharge of 1% to 2.5%, timing not announced. Countercyclical buffer is still under consultation, will require 0-2.5%.
2014	5.50%	5.50%	5.50%	**6.00%**	**6.50%**	**7.00%**		
2015	6.00%	6.00%	6.00%	**6.56%**	**7.13%**	**7.69%**		
2016	6.00%	**6.63%**	**7.25%**	*7.81%*	*8.38%*	*8.94%*		
2017	6.00%	**7.25%**	**8.50%**	*9.06%*	*9.63%*	*10.19%*	**1 – 2.5%** timing unclear	
2018	6.00%	**7.88%**	**9.75%**	*10.31%*	*10.88%*	*11.44%*		
2019	6.00%	**8.50%**	**11.00%**	*11.56%*	*12.13%*	*12.69%*		**Citi base case:** Full B3 implementation to require **9.5%-11.5%** of Tier 1 ratio, all buffers inclusive by start of 2019.

Source: Citi Investment Research and Analysis, HKMA
**shaded area* indicates area of uncertainty – we see strong likelihood for relaxation but saw little clarity based on HKMA May 2012 document; each bank will be given a different pillar 2 requirement based on less quantifiable areas like credit concentration risk, interest rate risk in the banking book, reputation risk and strategic risk.

Capital Generation Capability

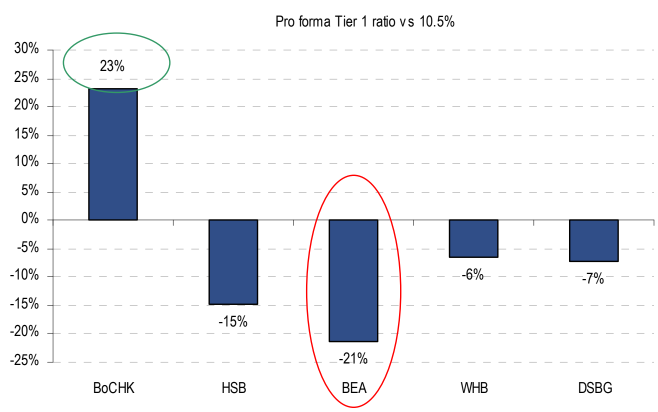
Surplus / deficit against minimum requirement (Figure 16): We estimate HK banks' B3 Tier 1 ratio comfort level will range from 9.5-11.5%, and if using 10.5% (the mid point of our base case range; this is also minimum Tier 1 ratio requirement adopted by Singapore including SIB surcharge) as the base case threshold, then BoCHK will have the largest surplus of c23% over the 10.5% level. For the other banks, WHB and DahSing will be moderately below, HSB will be substantially below at c15% deficit and BEA at 21% deficit. That said, B3 requirements will phase-in gradually, capital generation is therefore important.

On-going generation capability (Figure 17): BoCHK and **WHB** have the stronger organic capital generation capability vs peers due partly to smaller associate profit contribution, controlled cost-income ratio and thus solid organic ROE. **HSB** and **BEA** fall into the mid-range vs peer; they generate retained earnings (ex-associate) equivalent to 6-7% of Tier 1 capital. **DahSing** falls into the lower end vs peers with 3.9% of organically generated retained earnings as % Tier 1 capital.

Connecting the dots… implications on dividend payout, RWA growth and potential disposals: We expect **BoCHK** and **WHB** will be able to maintain their current payout ratio ranges; they also have good buffer to maintain such dividend policy under moderate crisis scenarios. Contrary to some extreme bearish views on the street, we expect **HSB** will be able to honor its progressive dividend policy (i.e. maintain dividend per share flat or up but payout ratio to fall if EPS grows). However, it is likely HSB will conservatively manage RWA growth, as shown with a 4.1% HoH risk weighted assets decline 2H11.

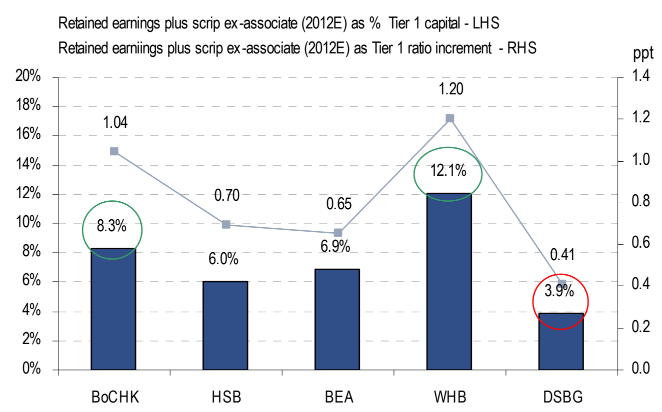
On the flipside, we see **BEA** and **DahSing** as having higher likelihood of payout ratio cut, with neither management having committed to specific payout ratio. If macro deteriorates then the probability of dividend payout cut increases. It is also possible that BEA may consider reducing its 23.52% stake in Malaysian Affin Holding and DahSing may consider reducing its stake in Bank of Chongqing.

Figure 16. HK Banks – Pro forma Tier 1 ratio vs 10.5% estimated threshold after B3 adoption



Source: Citi Investment Research and Analysis, Companies

Figure 17. HK Banks – Organic Capital Generation Capability



Source: Citi Investment Research and Analysis, Companies

Figure 18. HK Banks – Organic Capital General Capability

Capital & Equity Base (2011A, HK$ mn)	BoCHK	HSB	BEA	WHB	DSBG
Shareholders' funds	129,765	78,755	47,616	18,240	15,700
(a) Tier 1 capital	84,600	35,357	35,418	10,882	9,362
(b) RWA	676,059	304,270	376,036	108,974	89,166
Part 1 - Tier 1 ratio and surplus/deficit vs an estimated 10.5% threshold					
Tier 1 ratio (2011A)	12.51	11.62	9.42	10.10	10.50
Tier 1 ratio (2011 pro forma after base case B3 adoption)	12.95	8.43	8.27	9.94	9.74
Tier 1 ratio surplus/ (deficit) over 10.5% threshold	2.45	-2.07	-2.23	-0.56	-0.76
Surplus/(definite) over 10.5% threshold as % Tier 1 capital	23%	-20%	-21%	-5%	-7%
Part 2 - Capital generation capability (2012E, HK$ mn)					
Attributable profit	20,175	16,456	4,176	1,737	1,051
Associates profit	16	4,395	413	56	418
Attributable profit ex-associates	20,159	12,061	3,762	1,682	633
Dividend payout	-13,114	-9,942	-1,879	-434	-315
(i) Retained earnings ex-associates	7,045	2,120	1,883	1,247	318
(ii) Scrip dividend*	0	0	564	65	47
(iii) = (i) + (ii) Organically generated capital	7,045	2,120	2,447	1,312	365
(iv) = (iii) / (a) Organically generated capital as % Tier 1 capital	8.3%	6.0%	6.9%	12.1%	3.9%
This implies the possible RWA growth to keep Tier 1 ratio flat ex-B3					
Organically generated capital as ppt of Tier 1 ratio (ppt)	1.04	0.70	0.65	1.22	0.41
Part 3 - Payout ratio expectations					
Payout ratio (2012E)	65%	60%	45%	25%	30%
Payout ratio trends expected (Citi estimates)	Flat	Lower	Lower	Flat	Lower
Dividend policy guidance	60-70% payout	DPS flat/up	NA	Up if T1 high	NA

Source: Citi Investment Research and Analysis, Companies *assume 30% scrip take up from BEA, 15% for WHB and DahSing

Investment Theme 1: BoCHK First to Declare B3 Comfort

All things considered, we believe BoCHK's capital sufficiency leadership will substantially increase against domestic peers and likely also on regional players, given the 1H12 increment on 2nd FIRB adoption and in the absence of specific deduction items in B3. Its Tier 1 ratio could be c30% higher than sector peers average. This can offer flexibility in growth strategy, certainty on dividend payout, and room for market share gain (particularly in RWA consuming areas).

Priced in? We believe the market has been delaying pricing in such differential for BoCHK given large short-term volatility, insufficient studies on the Basel III impact, and the view that full B3 impact will only be revealed in years to come. BoCHK's dividend yield of c5-6% is on par/higher than HSB's dividend yield of c5%. Meanwhile, our calculations show that under full B3 deduction, BoCHK pro forma Tier 1 ratio of 13.1% would be c50% higher than the HSB Tier 1 ratio of 8.4%. As B3 adoption phases-in, market understanding of B3 improves, and an actual Tier 1 ratio gap emerges, we believe the market will start to price it in to the advantage of BoCHK.

Reduced competition on RWA, market share gain or increased pricing power - Competitors will potentially step back from high risk weighting asset growth, offering an opportunity for BoCHK to gain market share or benefit by having increased pricing power against the customers.

Loan demand higher than expected YTD despite macro weakness - Year-to-date sector loan growth (3.2% YTD 4mth-2012, or annualized 9.8%) was ahead of our expectations of 6-8% 2012E, while deposit growth is largely solid. Fast loan growth was achieved despite softened macro in HK/China, driven by trade finance and offshore borrowing (annualized growth 4mth-2012 at 42% and 19% respectively). This may hint that HK has increased its role to finance China-related demand. Despite softening trade, HK's market share increased. Banks are less likely to sit with excess and un-deployed assets, reducing risks on intense loan pricing competition. Specific to BoCHK, strength in China-related clientele could lead to first comer benefit in penetrating major Mainland corporates with state-owned or blue chip backgrounds.

Figure 19. HK Banks – Historical Dividend Payout Ratio

Banks	2004	2005	2006	2007	2008	2009	2010	2011
BoCHK	63%	63%	64%	63%	139%	66%	63%	61%
HSB	87%	88%	83%	66%	85%	76%	67%	60%
BEA	68%	62%	66%	63%	1321%	58%	49%	49%
WHB	49%	50%	50%	50%	27%	17%	25%	25%
DSBG	50%	58%	55%	47%	89%	0%	30%	32%
DSFH	35%	51%	42%	36%	166%	0%	30%	32%

Source: Citi Investment Research and Analysis, Companies

Figure 20. HK Banks – Historical Tier 1 Ratio

Banks	2004	2005	2006	2007	2008	2009	2010	2011
BoCHK	15.2%	14.6%	14.9%	12.2%	10.9%	11.6%	11.3%	12.5%
HSB	10.8%	10.4%	10.6%	8.4%	9.5%	12.4%	10.8%	11.6%
BEA	12.3%	11.2%	10.6%	7.4%	9.2%	9.4%	9.8%	9.4%
WHB	10.5%	10.2%	10.6%	8.5%	8.4%	10.7%	10.3%	10.1%
DSBG	13.8%	10.8%	12.2%	9.1%	6.8%	10.2%	10.2%	10.5%
DSFH	13.8%	10.8%	12.2%	9.1%	6.8%	10.2%	10.2%	10.5%

Source: Citi Investment Research and Analysis, Companies

Investment Theme 2: HSB, BEA, and DahSing Face Capital Headwind

Constrained growth and reduced flexibility (HSB, BEA, DahSing): We view that HSB, BEA and DahSing will have to control RWA growth conservatively in years to come. RWA growth has to be slower than organic capital generation so as to preserve capital. Likely strategy is to focus growth in low risk weighting areas (mortgages, high quality corporate, collateralized trade finance etc.). Capability to increase risk appetite will be constrained.

On bank specifics, BEA may have to control risk asset growth in China and rethink the position of its Hybrid Tier 1 instrument. DahSing will face capital headwinds that go against its strategy to grow high yield loans (which is usually at high risk weighting). HSB will likely focus on mortgages and trade financing but demand of the latter is volatile, as seen in the 38% HoH drop in outstanding trade finance in 2H11.

Scrip subscription doubtful (BEA): Over the past five years, BEA effectively reduced the cash dividend payout as major stakeholders including CaixaBank (17% stake) and Guoco (15% stake) both subscribed to scrip dividend in lieu of cash. The scrip arrangement effectively reduced BEA's cash dividend payout ratio to lower than 30% (vs top line payout of 49%). While BEA management recently reiterated confidence on its relationship with CaixaBank, given the volatile situation in Spain, CaixaBank's intention to choose scrip dividend will still be questioned.

Dilemma in disposing of financial institutions investments (HSB, DahSing): B3 puts additional deduction on financial institutions investments. As the size of investment grew over past years and new B3 phase-in, the capital consumption became much larger as compared with HSB's first inception of Industrial Bank's stakes in 2004, or DahSing's investment in Bank of ChongQing in 2007. Associate income accounted for 24% of HSB 2011 net profit and 34% of DahSing's. Both banks face the dilemma of holding on to such a position and face additional deductions, or to dispose of those investments which could result in substantial recurring profit decline.

Risks on dividend policy increase with macro deterioration (HSB, BEA, DahSing): Banks profitability will undoubtedly be affected by macro environment, as reflected in asset quality deterioration, potential liquidity outflow, and sluggish market-related income. Our base case estimate suggests organic capital generation of HSB and BEA will be able to cushion additional deductions in Tier 1. However, if such future profitability is at risk, then its related dividend payout will also be at risk.

Summary – Prefer BoCHK and WHB

We believe the market has not sufficiently analyzed HKMA Basel III implementation details; partly due to complexity of proposals and limited public disclosure on banks. This offers opportunity for investors who are able to distinguish capital deduction trends to position for long-term investments and pick banks with relative strength.

Our analysis presents key areas of impact relating to B3 capital requirements. We believe the understanding of these is important and timely given HKMA just announced first feedback on B3 in May-2012 and will further consult before implementation starts in Jan-2013.

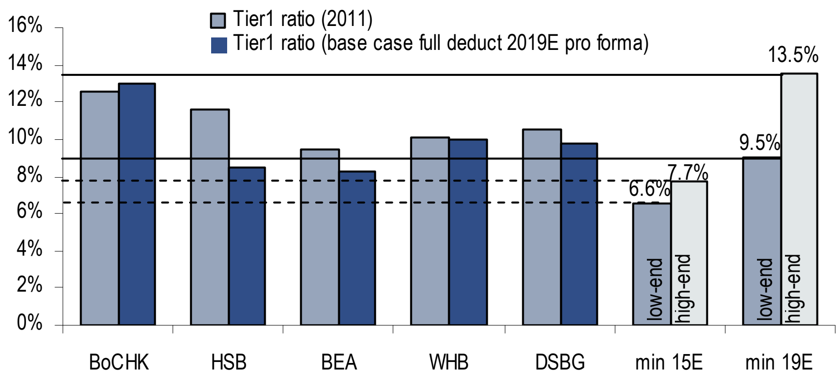
The HKMA May-2012 proposal showed moderate relaxation versus the earlier Jan-2012 proposal, primarily via acceptance of "10% concessionary threshold" and acceptance of 5-year phase-in on 50/50 deduction items.

While the incremental development is moderately positive, HSB, BEA and DahSing remain structurally disadvantaged against B3 deductions. These three banks face larger Tier 1 deductions. Meanwhile, BoCHK and WHB are relatively insensitive to B3 deductions.

We believe B3 implementation will expand BoCHK's capital leadership (Tier 1 ratio over 30% higher than peer avg, vs currently 16% above peer avg). The capital impact of B3 on WHB will also be smaller vs. peers. These differences could structurally affect ROE outlook in coming years.

We reaffirm our preference on BoCHK (Top Pick) and WHB. Meanwhile, if macro deteriorates, we see increased concern on dividend cuts, assets disposals and growth constraints for HSB, BEA and DahSing.

Figure 21. HK Banks – Expected B3 impact on Tier 1 ratio



Source: Citi Investment Research and Analysis, Companies, BIS, HKMA

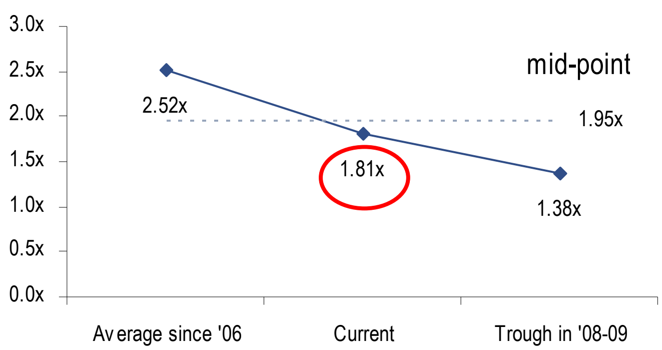
HK Banks Valuation Comp

Figure 22. HK Bank – Valuation Comp (as of 4th June 2012)

Bank	Stock Code	Rating	Target Px (HK$)	Current Px (HK$)	Market Cap (US$bn)	TP Upside	PBV 2012E	PBV 2013E	PBV LT avg	PER 2012E	PER 2013E	PER LT avg	ROE 2012E	ROE 2013E	Dividend Yield 2012E	Dividend Yield 2013E
Large Banks																
BoCHK	2388.HK	Buy	28.00	21.10	28.6	33%	1.63x	1.52x	1.87x	11.1x	10.4x	16.6x	15.1%	15.2%	5.9%	6.3%
HSB	0011.HK	Neutral	112.00	99.50	24.4	13%	2.20x	2.01x	3.62x	11.6x	10.5x	14.7x	19.9%	19.8%	5.2%	5.2%
Mid/Small Banks																
BEA	0023.HK	Neutral	30.00	25.80	6.8	16%	1.06x	1.01x	1.64x	12.8x	12.2x	16.1x	8.5%	8.5%	3.5%	3.7%
WHB	0302.HK	Buy	90.00	74.05	2.8	22%	1.22x	1.13x	1.93x	12.8x	12.0x	15.5x	9.9%	9.7%	2.0%	2.1%
DSBG	2356.HK	Buy	9.20	6.58	1.0	40%	0.51x	0.49x	1.23x	7.7x	6.8x	20.6x	6.9%	7.4%	3.9%	4.4%
DSFH*	0440.HK	Buy	34.00	22.20	0.8	53%	0.41x	0.39x	1.13x	6.2x	5.5x	23.2x	6.7%	6.7%	4.8%	5.4%
Mkt cap w/ avg							1.74x	1.61x	2.52x	11.4x	10.6x	15.9x	15.8%	15.8%	5.1%	5.3%
Large Banks							1.90x	1.76x	2.71x	11.3x	10.4x	15.7x	17.4%	17.4%	5.6%	5.8%
Mid/Small Banks							1.03x	0.97x	1.66x	12.1x	11.4x	16.5x	8.6%	8.7%	3.2%	3.4%

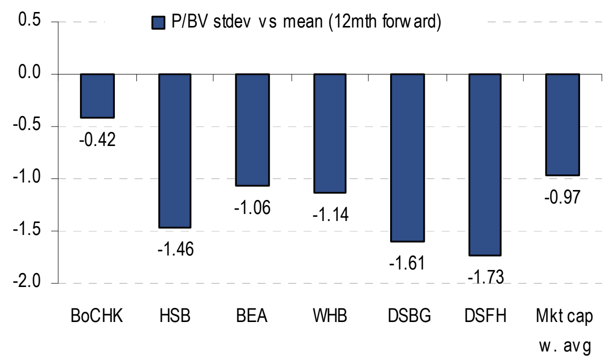
Source: Citi Investment Research and Analysis Estimates
*LT average since Jan-2006, DSFH excluded from the aggregate to avoid double counting of DSBG

Figure 23. HK Banks – Sector P/BV vs. mean



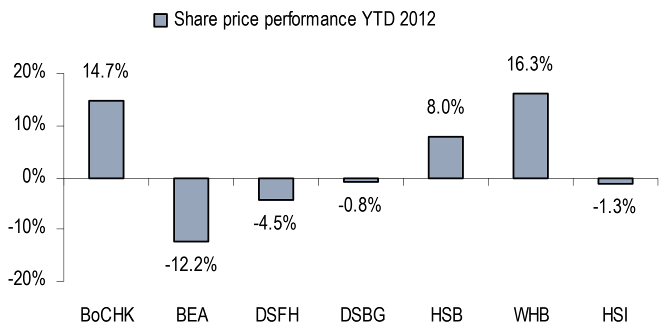
Source: Citi Investment Research and Analysis *LT average since Jan-2006

Figure 24. HK Banks – Forward P/BV, number of std dev below mean



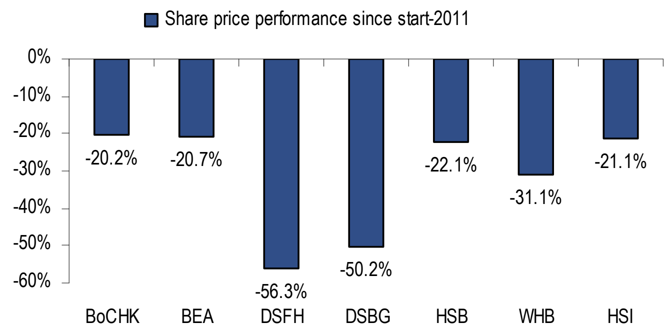
Source: Citi Investment Research and Analysis *LT average since Jan-2006

Figure 25. HK Banks – Share price YTD 2012



Source: Citi Investment Research and Analysis, DataStream

Figure 26. HK Banks – Share price since start-2011



Source: Citi Investment Research and Analysis, DataStream

Appendix – Other Items on HKMA B3 Proposals

This appendix highlights other items under the HKMA May-2012 B3 proposal which represent a change in calculation method but are of less significance compared with the areas highlighted in the main section of this report. HKMA Jan-2012 consultation for capital requirements is available *here*; liquidity requirements available *here*, and HKMA May-2012 feedback available *here*.

Additional Area 1: Regulatory reserve and collective impairment allowance as T2 capital

HKMA existing approach: The existing capital framework allows limited recognition of RR and CIA in T2 capital. For banks using standardised approach of credit risk assessment, regulatory reserve (RR) and collective impairment allowance (CIA) with limit of *1.25% of total risk-weighted assets* can be recognized and the excess deducted from total RWA. For banks using the IRB approach of credit risk assessment, the aggregate amount of RR, CIA and individual impairment allowance (IIA) can be included in T2 capital up to *0.6% of credit risk-weighted assets*.

HKMA May-2012 proposal: To align with Basel III, the HKMA proposes that (i) CIA be excluded from banks capital base; and (ii) for banks in standardised approach, only RR can be included in T2 with cap of 1.25% of credit risk-weighted assets (vs total risk-weighted assets under existing approach). The impact to banks in standardized approach (i.e. WHB and DahSing) look small as credit RWA accounted for c85-90% of total RWA. The proposal does not look to affect banks under IRB approach (i.e. BoCHK, HSB and BEA).

Additional Area 2: Goodwill, intangible assets, deferred tax assets

HKMA existing approach: Banks are required to fully deduct goodwill and other intangibles in T1 capital base. Similarly, banks are also required to fully deduct deferred tax assets from T1.

HKMA May-2012 proposal: HKMA clarified that deductions on goodwill and intangible is net of associated deferred tax liabilities. For deferred tax assets, deduction is net of deferred tax liabilities. Since most HK banks have larger deferred tax liabilities than tax assets, the related deduction is small in our assessment.

Additional Area 3: Preferred shares to be excluded in CET1

"HKMA proposes to confine share premium, for the purpose of inclusion in CETI Capital, to the amount standing to the credit of an AI's share premium account resulting from the issue of instruments included in CET1 Capital"

This suggests that *preference share* may not be acceptable as part of CET1 capital under HKMA's B3 adoption.

"For instruments classified as liabilities for accounting purposes to be included in Additional Tier 1 (AT1) Capital, Basel III requires that they be capable of being written down or converted at a "pre-specified trigger point"."

"HKMA proposes that write-down or conversion be triggered when the issuing AI's CET1 Capital ratio is at or below 6.25%."; AIs intending to issue capital instruments that do not include "point of non-viability" conversion or write-down provisions, and which as a result will be subject to "phase-out" from 1 January 2013.

"AIs are expected to consult the HKMA prior to the issuance of such instruments."

Additional Area 4: Minority interest

"Current regime permits full recognition of minority interests arising from the consolidation of partially-owned subsidiaries engaged in any "relevant financial activity", "These however exclude subsidiaries which are insurance companies or securities firms. In the case of these companies or firms, an AI's capital investment is required to be deducted from its capital base."

Additional Area 5: Additional Investments in commercial entities

"Where the amount of the bank's capital holding in any company, or companies in aggregate, exceeds 15% of the bank's capital base, the bank shall apply a risk weight of 1250% to the portion of those holdings in excess of 15% of the bank's capital base."

The HKMA proposes to adopt the Basel III approach of applying a 1250% risk weight items including (i) securitization exposures, (ii) certain equity exposures under the PD/LGD approach, (iii) first loss portion of credit protection in respect of an AI's exposures, and (iv) non-payment / non-delivery transactions.

"Basel III requires deduction of investments in a bank's own capital instruments and in the capital of other financial entities to be made on a "corresponding deduction approach". Deduction should therefore generally be applied to the corresponding tier of capital for which the capital investment, subject to deduction, would qualify if it were issued by the investing bank itself. If the corresponding tier is insufficient to satisfy the required deduction, the shortfall will be deducted from the next higher tier of capital."

Figure 27. HKMA – Transitional Implementation Timetable

	2011	2012	2013	2014	2015	2016	2017	2018	2019
			Basel III Capital Standards						
Min CET1 capital ratio			3.5%	4.0%	4.5%	4.5%	4.5%	4.5%	4.5%
Capital conservation buffer (CSB)						0.625%	1.25%	1.875%	2.5%
Maximum countercyclical capital buffer [if imposed]						*[0.625%]*	*[1.25%]*	*[1.875%]*	*[2.5%]*
Min CET1 + CSB			3.5%	4.0%	4.5%	5.125%	5.75%	6.375%	7.0%
Min Tier 1 capital ratio			4.5%	5.5%	6.0%	6.0%	6.0%	6.0%	6.0%
Min Total Capital ratio	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Min Total Capital + CSB			8.0%	8.0%	8.0%	8.625%	9.25%	9.875%	10.5%
Capital instruments that no longer qualify as non-CET1 capital or Tier 2 capital			Phased out over 10 year period starting 1.1.2013						
Regulatory adjustments from CET1 (same for AT1 and Tier 2) required under Basel III			0%	20%	40%	60%	80%	100%	100%
Minority interests not recognized under Basel III but recognized under current framework			100%	80%	60%	40%	20%	0%	0%
			Basel III Liquidity Standards						
Liquidity coverage ratio	Observation period begins				Introduce minimum standard				
Net stable funding ratio								Introduce minimum standard	

Source: HKMA

Appendix A-1

Analyst Certification

The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

IMPORTANT DISCLOSURES

Within the past 12 months, Citigroup Global Markets Inc. or its affiliates has acted as manager or co-manager of an offering of securities of Hang Seng Bank, Bank of East Asia, Bank of China (Hong Kong).

Citigroup Global Markets Inc. or its affiliates has received compensation for investment banking services provided within the past 12 months from Hang Seng Bank, Bank of East Asia, Wing Hang Bank, Dah Sing Financial, Dah Sing Banking, Bank of China (Hong Kong).

Citigroup Global Markets Inc. or its affiliates expects to receive or intends to seek, within the next three months, compensation for investment banking services from Hang Seng Bank, Bank of East Asia, Bank of China (Hong Kong).

Citigroup Global Markets Inc. or an affiliate received compensation for products and services other than investment banking services from Hang Seng Bank, Bank of East Asia, Wing Hang Bank, Dah Sing Financial, Dah Sing Banking, Bank of China (Hong Kong) in the past 12 months.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as investment banking client(s): Hang Seng Bank, Bank of East Asia, Wing Hang Bank, Dah Sing Financial, Dah Sing Banking, Bank of China (Hong Kong).

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as clients, and the services provided were non-investment-banking, securities-related: Hang Seng Bank, Bank of East Asia, Wing Hang Bank, Dah Sing Financial, Dah Sing Banking, Bank of China (Hong Kong).

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as clients, and the services provided were non-investment-banking, non-securities-related: Hang Seng Bank, Bank of East Asia, Wing Hang Bank, Dah Sing Financial, Dah Sing Banking, Bank of China (Hong Kong).

Analysts' compensation is determined based upon activities and services intended to benefit the investor clients of Citigroup Global Markets Inc. and its affiliates ("the Firm"). Like all Firm employees, analysts receive compensation that is impacted by overall firm profitability which includes investment banking revenues.

The Firm is a market maker in the publicly traded equity securities of Hang Seng Bank, Bank of East Asia, Bank of China (Hong Kong).

For important disclosures (including copies of historical disclosures) regarding the companies that are the subject of this Citi Investment Research & Analysis product ("the Product"), please contact Citi Investment Research & Analysis, 388 Greenwich Street, 28th Floor, New York, NY, 10013, Attention: Legal/Compliance [E6WYB6412478]. In addition, the same important disclosures, with the exception of the Valuation and Risk assessments and historical disclosures, are contained on the Firm's disclosure website at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures. Valuation and Risk assessments can be found in the text of the most recent research note/report regarding the subject company. Historical disclosures (for up to the past three years) will be provided upon request.

Citi Investment Research & Analysis Ratings Distribution

	12 Month Rating			***Relative Rating***		
Data current as of 31 Mar 2012	**Buy**	**Hold**	**Sell**	**Buy**	**Hold**	**Sell**
Citi Investment Research & Analysis Global Fundamental Coverage	52%	37%	11%	10%	79%	10%
% of companies in each rating category that are investment banking clients	44%	42%	40%	47%	42%	43%

Guide to Citi Investment Research & Analysis (CIRA) Fundamental Research Investment Ratings:
CIRA's stock recommendations include an investment rating and an optional risk rating to highlight high risk stocks.
Risk rating takes into account both price volatility and fundamental criteria. Stocks will either have no risk rating or a High risk rating assigned.
Investment Ratings: CIRA's investment ratings are Buy, Neutral and Sell. Our ratings are a function of analyst expectations of expected total return ("ETR") and risk. ETR is the sum of the forecast price appreciation (or depreciation) plus the dividend yield for a stock within the next 12 months. The Investment rating definitions are: Buy (1) ETR of 15% or more or 25% or more for High risk stocks; and Sell (3) for negative ETR. Any covered stock not assigned a Buy or a Sell is a Neutral (2). For stocks rated Neutral (2), if an analyst believes that there are insufficient valuation drivers and/or investment catalysts to derive a positive or negative investment view, they may elect with the approval of CIRA management not to assign a target price and, thus, not derive an ETR. Analysts may place covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and / or trading in the company's securities (e.g. trading suspension). As soon as practically possible, the analyst will publish a note re-establishing a rating and investment thesis. To satisfy regulatory requirements, we correspond Under Review and Neutral to Hold in our ratings distribution table for our 12-month fundamental rating system. However, we reiterate that we do not consider Under Review to be a recommendation.
Relative three-month ratings: CIRA may also assign a three-month relative call (or rating) to a stock to highlight expected out-performance (most preferred) or under-performance (least preferred) versus the geographic and industry sector over a 3 month period. The relative call may highlight a specific near-term catalyst or event impacting the company or the market that is anticipated to have a short-term price impact on the equity securities of the company. Absent any specific catalyst the analyst(s) will indicate the most and least preferred stocks in the universe of stocks under consideration, explaining the basis for this short-term view. This three-month view may be different from and does not affect a stock's fundamental equity rating, which reflects a longer-term total absolute return expectation. For purposes of NASD/NYSE ratings-distribution-disclosure rules, most preferred calls correspond to

a buy recommendation and least preferred calls correspond to a sell recommendation. Any stock not assigned to a most preferred or least preferred call is considered non-relative-rated (NRR). For purposes of NASD/NYSE ratings-distribution-disclosure rules we correspond NRR to Hold in our ratings distribution table for our 3-month relative rating system. However, we reiterate that we do not consider NRR to be a recommendation.

Prior to October 8, 2011, the firm's stock recommendation system included a risk rating and an investment rating. **Risk ratings,** which took into account both price volatility and fundamental criteria, were: Low (L), Medium (M), High (H), and Speculative (S). **Investment Ratings** of Buy, Hold and Sell were a function of CIRA's expectation of total return (forecast price appreciation and dividend yield within the next 12 months) and risk rating. Additionally, analysts could have placed covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and/or trading in the company's securities (e.g. trading suspension). Stocks placed "Under Review" were monitored daily by management and as practically possible, the analyst published a note re-establishing a rating and investment thesis. For securities in developed markets (US, UK, Europe, Japan, and Australia/New Zealand), investment ratings were:Buy (1) (expected total return of 10% or more for Low-Risk stocks, 15% or more for Medium-Risk stocks, 20% or more for High-Risk stocks, and 35% or more for Speculative stocks); Hold (2) (0%-10% for Low-Risk stocks, 0%-15% for Medium-Risk stocks, 0%-20% for High-Risk stocks, and 0%-35% for Speculative stocks); and Sell (3) (negative total return). For securities in emerging markets (Asia Pacific, Emerging Europe/Middle East/Africa, and Latin America), investment ratings were:Buy (1) (expected total return of 15% or more for Low-Risk stocks, 20% or more for Medium-Risk stocks, 30% or more for High-Risk stocks, and 40% or more for Speculative stocks); Hold (2) (5%-15% for Low-Risk stocks, 10%-20% for Medium-Risk stocks, 15%-30% for High-Risk stocks, and 20%-40% for Speculative stocks); and Sell (3) (5% or less for Low-Risk stocks, 10% or less for Medium-Risk stocks, 15% or less for High-Risk stocks, and 20% or less for Speculative stocks).

Investment ratings are determined by the ranges described above at the time of initiation of coverage, a change in investment and/or risk rating, or a change in target price (subject to limited management discretion). At other times, the expected total returns may fall outside of these ranges because of market price movements and/or other short-term volatility or trading patterns. Such interim deviations from specified ranges will be permitted but will become subject to review by Research Management. Your decision to buy or sell a security should be based upon your personal investment objectives and should be made only after evaluating the stock's expected performance and risk.

NON-US RESEARCH ANALYST DISCLOSURES

Non-US research analysts who have prepared this report (i.e., all research analysts listed below other than those identified as employed by Citigroup Global Markets Inc.) are not registered/qualified as research analysts with FINRA. Such research analysts may not be associated persons of the member organization and therefore may not be subject to the NYSE Rule 472 and NASD Rule 2711 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account. The legal entities employing the authors of this report are listed below:

Citigroup Global Markets Asia	Gary Lam; Simon Ho, CFA

OTHER DISCLOSURES

This Product has been modified by the author following a discussion with one or more of the named issuers/issuers of the named securities.

For securities recommended in the Product in which the Firm is not a market maker, the Firm is a liquidity provider in the issuers' financial instruments and may act as principal in connection with such transactions. The Firm is a regular issuer of traded financial instruments linked to securities that may have been recommended in the Product. The Firm regularly trades in the securities of the issuer(s) discussed in the Product. The Firm may engage in securities transactions in a manner inconsistent with the Product and, with respect to securities covered by the Product, will buy or sell from customers on a principal basis.

Securities recommended, offered, or sold by the Firm: (i) are not insured by the Federal Deposit Insurance Corporation; (ii) are not deposits or other obligations of any insured depository institution (including Citibank); and (iii) are subject to investment risks, including the possible loss of the principal amount invested. Although information has been obtained from and is based upon sources that the Firm believes to be reliable, we do not guarantee its accuracy and it may be incomplete and condensed. Note, however, that the Firm has taken all reasonable steps to determine the accuracy and completeness of the disclosures made in the Important Disclosures section of the Product. The Firm's research department has received assistance from the subject company(ies) referred to in this Product including, but not limited to, discussions with management of the subject company(ies). Firm policy prohibits research analysts from sending draft research to subject companies. However, it should be presumed that the author of the Product has had discussions with the subject company to ensure factual accuracy prior to publication. All opinions, projections and estimates constitute the judgment of the author as of the date of the Product and these, plus any other information contained in the Product, are subject to change without notice. Prices and availability of financial instruments also are subject to change without notice. Notwithstanding other departments within the Firm advising the companies discussed in this Product, information obtained in such role is not used in the preparation of the Product. Although Citi Investment Research & Analysis (CIRA) does not set a predetermined frequency for publication, if the Product is a fundamental research report, it is the intention of CIRA to provide research coverage of the/those issuer(s) mentioned therein, including in response to news affecting this issuer, subject to applicable quiet periods and capacity constraints. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security. Any decision to purchase securities mentioned in the Product must take into account existing public information on such security or any registered prospectus.

Investing in non-U.S. securities, including ADRs, may entail certain risks. The securities of non-U.S. issuers may not be registered with, nor be subject to the reporting requirements of the U.S. Securities and Exchange Commission. There may be limited information available on foreign securities. Foreign companies are generally not subject to uniform audit and reporting standards, practices and requirements comparable to those in the U.S. Securities of some foreign companies may be less liquid and their prices more volatile than securities of comparable U.S. companies. In addition, exchange rate movements may have an adverse effect on the value of an investment in a foreign stock and its corresponding dividend payment for U.S. investors. Net dividends to ADR investors are estimated, using withholding tax rates conventions, deemed accurate, but investors are urged to consult their tax advisor for exact dividend computations. Investors who have received the Product from the Firm may be prohibited in certain states or other jurisdictions from purchasing securities mentioned in the Product from the Firm. Please ask your Financial Consultant for additional details. Citigroup Global Markets Inc. takes responsibility for the Product in the United States. Any orders by US investors resulting from the information contained in the Product may be placed only through Citigroup Global Markets Inc.

Important Disclosures for Morgan Stanley Smith Barney LLC Customers: Morgan Stanley & Co. LLC (Morgan Stanley) research reports may be available about the companies that are the subject of this Citi Investment Research & Analysis (CIRA) research report. Ask your Financial Advisor or use smithbarney.com to view any available Morgan Stanley research reports in addition to CIRA research reports.
Important disclosure regarding the relationship between the companies that are the subject of this CIRA research report and Morgan Stanley Smith Barney LLC and its affiliates are available at the Morgan Stanley Smith Barney disclosure website at www.morganstanleysmithbarney.com/researchdisclosures.
For Morgan Stanley and Citigroup Global Markets, Inc. specific disclosures, you may refer to www.morganstanley.com/researchdisclosures and https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.
This CIRA research report has been reviewed and approved on behalf of Morgan Stanley Smith Barney LLC. This review and approval was conducted by the same person who reviewed this research report on behalf of CIRA. This could create a conflict of interest.

The Citigroup legal entity that takes responsibility for the production of the Product is the legal entity which the first named author is employed by. The Product is made available in **Australia** through Citigroup Global Markets Australia Pty Ltd. (ABN 64 003 114 832 and AFSL No. 240992), participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in Australia to Private Banking wholesale clients through Citigroup Pty Limited (ABN 88 004 325 080 and AFSL 238098). Citigroup Pty Limited provides all financial product advice to Australian Private Banking wholesale clients through bankers and relationship managers. If there is any doubt about the suitability of investments held in Citigroup Private Bank accounts, investors should contact the Citigroup Private Bank in Australia. Citigroup companies may compensate affiliates and their representatives for providing products and services to clients. The Product is made available in **Brazil** by Citigroup Global Markets Brasil - CCTVM SA, which is regulated by CVM - Comissão de Valores Mobiliários, BACEN - Brazilian Central Bank, APIMEC - Associação dos Analistas e Profissionais de Investimento do Mercado de Capitais and ANBID - Associação Nacional dos Bancos de Investimento. Av. Paulista, 1111 - 11º andar - CEP. 01311920 - São Paulo - SP. If the Product is being made available in certain provinces of **Canada** by Citigroup Global Markets (Canada) Inc. ("CGM Canada"), CGM Canada has approved the Product. Citigroup Place, 123 Front Street West, Suite 1100, Toronto, Ontario M5J 2M3. This product is available in **Chile** through Banchile Corredores de Bolsa S.A., an indirect subsidiary of Citigroup Inc., which is regulated by the Superintendencia de Valores y Seguros. Agustinas 975, piso 2, Santiago, Chile. The Product is made available in **France** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 1-5 Rue Paul Cézanne, 8ème, Paris, France. The Product is distributed in **Germany** by Citigroup Global Markets Deutschland AG ("CGMD"), which is regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin). CGMD, Reuterweg 16, 60323 Frankfurt am Main. Research which relates to "securities" (as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong)) is issued in **Hong Kong** by, or on behalf of, Citigroup Global Markets Asia Limited which takes full responsibility for its content. Citigroup Global Markets Asia Ltd. is regulated by Hong Kong Securities and Futures Commission. If the Research is made available through Citibank, N.A., Hong Kong Branch, for its clients in Citi Private Bank, it is made available by Citibank N.A., Citibank Tower, Citibank Plaza, 3 Garden Road, Hong Kong. Citibank N.A. is regulated by the Hong Kong Monetary Authority. Please contact your Private Banker in Citibank N.A., Hong Kong, Branch if you have any queries on or any matters arising from or in connection with this document. The Product is made available in **India** by Citigroup Global Markets India Private Limited, which is regulated by Securities and Exchange Board of India. Bakhtawar, Nariman Point, Mumbai 400-021. The Product is made available in **Indonesia** through PT Citigroup Securities Indonesia. 5/F, Citibank Tower, Bapindo Plaza, Jl. Jend. Sudirman Kav. 54-55, Jakarta 12190. Neither this Product nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens wherever they are domiciled or to Indonesian residents except in compliance with applicable capital market laws and regulations. This Product is not an offer of securities in Indonesia. The securities referred to in this Product have not been registered with the Capital Market and Financial Institutions Supervisory Agency (BAPEPAM-LK) pursuant to relevant capital market laws and regulations, and may not be offered or sold within the territory of the Republic of Indonesia or to Indonesian citizens through a public offering or in circumstances which constitute an offer within the meaning of the Indonesian capital market laws and regulations. The Product is made available in **Israel** through Citibank NA, regulated by the Bank of Israel and the Israeli Securities Authority. Citibank, N.A, Platinum Building, 21 Ha'arba'ah St, Tel Aviv, Israel. The Product is made available in **Italy** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. Via dei Mercanti, 12, Milan, 20121, Italy. The Product is made available in **Japan** by Citigroup Global Markets Japan Inc. ("CGMJ"), which is regulated by Financial Services Agency, Securities and Exchange Surveillance Commission, Japan Securities Dealers Association, Tokyo Stock Exchange and Osaka Securities Exchange. Shin-Marunouchi Building, 1-5-1 Marunouchi, Chiyoda-ku, Tokyo 100-6520 Japan. If the Product was distributed by SMBC Nikko Securities Inc. it is being so distributed under license. In the event that an error is found in an CGMJ research report, a revised version will be posted on the Firm's Citi Velocity website. If you have questions regarding Citi Velocity, please call (81 3) 6270-3019 for help. The Product is made available in **Korea** by Citigroup Global Markets Korea Securities Ltd., which is regulated by the Financial Services Commission, the Financial Supervisory Service and the Korea Financial Investment Association (KOFIA). Citibank Building, 39 Da-dong, Jung-gu, Seoul 110-180, Korea. KOFIA makes available registration information of research analysts on its website. Please visit the following website if you wish to find KOFIA registration information on research analysts of Citigroup Global Markets Korea Securities Ltd. http://dis.kofia.or.kr/fs/dis2/fundMgr/DISFundMgrAnalystPop.jsp?companyCd2=A03030&pageDiv=02. The Product is made available in **Malaysia** by Citigroup Global Markets Malaysia Sdn Bhd (Company No. 460819-D) ("CGMM") to its clients and CGMM takes responsibility for its contents. CGMM is regulated by the Securities Commission of Malaysia. Please contact CGMM at Level 43 Menara Citibank, 165 Jalan Ampang, 50450 Kuala Lumpur, Malaysia in respect of any matters arising from, or in connection with, the Product. The Product is made available in **Mexico** by Acciones y Valores Banamex, S.A. De C. V., Casa de Bolsa, Integrante del Grupo Financiero Banamex ("Accival") which is a wholly owned subsidiary of Citigroup Inc. and is regulated by Comision Nacional Bancaria y de Valores. Reforma 398, Col. Juarez, 06600 Mexico, D.F. In **New Zealand** the Product is made available to 'wholesale clients' only as defined by s5C(1) of the Financial Advisers Act 2008 ('FAA') through Citigroup Global Markets Australia Pty Ltd (ABN 64 003 114 832 and AFSL No. 240992), an overseas financial adviser as defined by the FAA, participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in **Pakistan** by Citibank N.A. Pakistan branch, which is regulated by the State Bank of Pakistan and Securities Exchange Commission, Pakistan. AWT Plaza, 1.1. Chundrigar Road, P.O. Box 4889, Karachi-74200. The Product is made available in the **Philippines** through Citicorp Financial Services and Insurance Brokerage Philippines, Inc., which is regulated by the Philippines Securities and Exchange Commission. 20th Floor Citibank Square Bldg. The Product is made available in the Philippines through Citibank NA Philippines branch, Citibank Tower, 8741 Paseo De Roxas, Makati City, Manila. Citibank NA Philippines NA is regulated by The Bangko Sentral ng Pilipinas. The Product is made available in **Poland** by Dom Maklerski Banku Handlowego SA an indirect subsidiary of Citigroup Inc., which is regulated by Komisja Nadzoru Finansowego. Dom Maklerski Banku Handlowego S.A. ul.Senatorska 16, 00-923 Warszawa. The Product is made available in the **Russian Federation** through ZAO Citibank, which is licensed to carry out banking activities in the Russian Federation in accordance with the general banking license issued by the Central Bank of the Russian Federation and brokerage activities in accordance with the license issued by the Federal

Service for Financial Markets. Neither the Product nor any information contained in the Product shall be considered as advertising the securities mentioned in this report within the territory of the Russian Federation or outside the Russian Federation. The Product does not constitute an appraisal within the meaning of the Federal Law of the Russian Federation of 29 July 1998 No. 135-FZ (as amended) On Appraisal Activities in the Russian Federation. 8-10 Gasheka Street, 125047 Moscow. The Product is made available in **Singapore** through Citigroup Global Markets Singapore Pte. Ltd. ("CGMSPL"), a capital markets services license holder, and regulated by Monetary Authority of Singapore. Please contact CGMSPL at 8 Marina View, 21st Floor Asia Square Tower 1, Singapore 018960, in respect of any matters arising from, or in connection with, the analysis of this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). The Product is made available by The Citigroup Private Bank in Singapore through Citibank, N.A., Singapore Branch, a licensed bank in Singapore that is regulated by Monetary Authority of Singapore. Please contact your Private Banker in Citibank N.A., Singapore Branch if you have any queries on or any matters arising from or in connection with this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). This report is distributed in Singapore by Citibank Singapore Ltd ("CSL") to selected Citigold/Citigold Private Clients. CSL provides no independent research or analysis of the substance or in preparation of this report. Please contact your Citigold//Citigold Private Client Relationship Manager in CSL if you have any queries on or any matters arising from or in connection with this report. This report is intended for recipients who are accredited investors as defined under the Securities and Futures Act (Cap. 289). Citigroup Global Markets (Pty) Ltd. is incorporated in the **Republic of South Africa** (company registration number 2000/025866/07) and its registered office is at 145 West Street, Sandton, 2196, Saxonwold. Citigroup Global Markets (Pty) Ltd. is regulated by JSE Securities Exchange South Africa, South African Reserve Bank and the Financial Services Board. The investments and services contained herein are not available to private customers in South Africa. The Product is made available in **Spain** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 29 Jose Ortega Y Gasset, 4th Floor, Madrid, 28006, Spain. The Product is made available in the **Republic of China** through Citigroup Global Markets Taiwan Securities Company Ltd. ("CGMTS"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan and/or through Citibank Securities (Taiwan) Company Limited ("CSTL"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan, subject to the respective license scope of each entity and the applicable laws and regulations in the Republic of China. CGMTS and CSTL are both regulated by the Securities and Futures Bureau of the Financial Supervisory Commission of Taiwan, the Republic of China. No portion of the Product may be reproduced or quoted in the Republic of China by the press or any third parties [without the written authorization of CGMTS and CSTL]. If the Product covers securities which are not allowed to be offered or traded in the Republic of China, neither the Product nor any information contained in the Product shall be considered as advertising the securities or making recommendation of the securities in the Republic of China. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security or financial products. Any decision to purchase securities or financial products mentioned in the Product must take into account existing public information on such security or the financial products or any registered prospectus. The Product is made available in **Thailand** through Citicorp Securities (Thailand) Ltd., which is regulated by the Securities and Exchange Commission of Thailand. 18/F, 22/F and 29/F, 82 North Sathorn Road, Silom, Bangrak, Bangkok 10500, Thailand. The Product is made available in **Turkey** through Citibank AS which is regulated by Capital Markets Board. Tekfen Tower, Eski Buyukdere Caddesi # 209 Kat 2B, 23294 Levent, Istanbul, Turkey. In the **U.A.E**, these materials (the "Materials") are communicated by Citigroup Global Markets Limited, DIFC branch ("CGML"), an entity registered in the Dubai International Financial Center ("DIFC") and licensed and regulated by the Dubai Financial Services Authority ("DFSA") to Professional Clients and Market Counterparties only and should not be relied upon or distributed to Retail Clients. A distribution of the different CIRA ratings distribution, in percentage terms for Investments in each sector covered is made available on request. Financial products and/or services to which the Materials relate will only be made available to Professional Clients and Market Counterparties. The Product is made available in **United Kingdom** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. This material may relate to investments or services of a person outside of the UK or to other matters which are not regulated by the FSA and further details as to where this may be the case are available upon request in respect of this material. Citigroup Centre, Canada Square, Canary Wharf, London, E14 5LB. The Product is made available in **United States** by Citigroup Global Markets Inc, which is a member of FINRA and registered with the US Securities and Exchange Commission. 388 Greenwich Street, New York, NY 10013. Unless specified to the contrary, within EU Member States, the Product is made available by Citigroup Global Markets Limited, which is regulated by Financial Services Authority.

Pursuant to Comissão de Valores Mobiliários Rule 483, Citi is required to disclose whether a Citi related company or business has a commercial relationship with the subject company. Considering that Citi operates multiple businesses in more than 100 countries around the world, it is likely that Citi has a commercial relationship with the subject company.

Many European regulators require that a firm must establish, implement and make available a policy for managing conflicts of interest arising as a result of publication or distribution of investment research. The policy applicable to CIRA's Products can be found at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.

Compensation of equity research analysts is determined by equity research management and Citigroup's senior management and is not linked to specific transactions or recommendations.

The Product may have been distributed simultaneously, in multiple formats, to the Firm's worldwide institutional and retail customers. The Product is not to be construed as providing investment services in any jurisdiction where the provision of such services would not be permitted.

Subject to the nature and contents of the Product, the investments described therein are subject to fluctuations in price and/or value and investors may get back less than originally invested. Certain high-volatility investments can be subject to sudden and large falls in value that could equal or exceed the amount invested. Certain investments contained in the Product may have tax implications for private customers whereby levels and basis of taxation may be subject to change. If in doubt, investors should seek advice from a tax adviser. The Product does not purport to identify the nature of the specific market or other risks associated with a particular transaction. Advice in the Product is general and should not be construed as personal advice given it has been prepared without taking account of the objectives, financial situation or needs of any particular investor. Accordingly, investors should, before acting on the advice, consider the appropriateness of the advice, having regard to their objectives, financial situation and needs. Prior to acquiring any financial product, it is the client's responsibility to obtain the relevant offer document for the product and consider it before making a decision as to whether to purchase the product.

With the exception of our product that is made available only to Qualified Institutional Buyers (QIBs), CIRA concurrently disseminates its research via proprietary and non-proprietary electronic distribution platforms. Periodically, individual CIRA analysts may also opt to circulate research posted on such platforms to one or more clients by email. Such email distribution is discretionary and is done only after the research has been disseminated via the aforementioned distribution channels. CIRA simultaneously distributes product that is limited to QIBs only through email distribution.

The level and types of services provided by CIRA analysts to clients may vary depending on various factors such as the client's individual preferences as to the frequency and manner of receiving communications from analysts, the client's risk profile and investment focus and perspective (e.g. market-wide, sector

specific, long term, short-term etc.), the size and scope of the overall client relationship with Citi and legal and regulatory constraints.
CIRA product may source data from dataCentral. dataCentral is a CIRA proprietary database, which includes Citi estimates, data from company reports and feeds from Reuters and Datastream.

ADDITIONAL INFORMATION IS AVAILABLE UPON REQUEST