



Supervisory Policy Manual

Approach to Implementing the Countercyclical Capital Buffer (CCyB)

Draft for
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This module should be read in conjunction with the [Introduction](#) and with the [Glossary](#), which contains an explanation of abbreviations and other terms used in this Manual. If reading on-line, click on blue underlined headings to activate hyperlinks to the relevant module.

Purpose

To explain the MA's approach towards implementing the Basel III Countercyclical Capital Buffer (CCyB) as part of the capital adequacy framework for AIs incorporated in Hong Kong.

Classification

A non-statutory guideline issued by the MA as a guidance note.

Previous guidelines superseded

This is a new guideline.

Application

To all locally incorporated AIs.

Structure

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Annex 1 – Calculating the Basel Common Reference Guide for Hong Kong

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Annex 3 – Buffer release: The Indicative CCyB Ceiling

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1. Introduction

1.1 Terminology

1.1.1 Unless otherwise specified, abbreviations and terms used in this module follow those used in the Banking (Capital) Rules (“BCR”) and in the Banking (Disclosure) Rules (“BDR”). In this module, “AI” means “locally incorporated AI” and “BO” means “Banking Ordinance” unless otherwise specified.

1.2 Background

1.2.1 As the Basel Committee has observed, one of the most destabilising elements of a financial crisis is the procyclical amplification of shocks throughout the banking system, financial markets and the broader economy. The losses incurred in the banking sector during a downturn, which has been preceded by a period of excess credit growth, can be extremely large. These losses can destabilise the banking sector and effectively spark a vicious circle, whereby problems in the financial system can contribute to a downturn in the real economy that then feeds back in to the banking sector. In an endeavour to address these issues, the Basel Committee has developed a series of measures to help ensure that the banking sector serves as a “shock absorber”, instead of a transmitter or amplifier of risk to the financial system and the broader economy. One of these measures is the Basel III Countercyclical Capital Buffer (CCyB).¹

1.2.2 The Basel III regulatory capital standards issued by the Basel Committee provide for the implementation of a CCyB beginning on 1 January 2016.² Owing to the

¹ See Basel Committee, *Basel III: A global regulatory framework for more resilient banks and banking systems*, issued by the Basel Committee in December 2010 and revised June 2011 (“Basel III document”), paras.18, 29 and 136.

² The requirements for the CCyB are contained in the Basel III document, paras.136-150, and in *Guidance for national authorities operating the countercyclical capital buffer*, issued by the Basel Committee in December 2010.



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CCyB's focus on excessive aggregate credit growth, the Basel Committee has indicated an expectation that jurisdictions will only be likely to deploy it infrequently.

- 1.2.3 The BO provides for the MA to make rules prescribing capital requirements for AIs incorporated in Hong Kong (see BO §97C(1)). In doing so, the MA may give effect to banking supervisory standards relating to capital issued by the Basel Committee, subject to such modifications as the MA sees fit in light of local circumstances (see BO §97C(3)(b)).
- 1.2.4 The MA has made the BCR under BO §97C and the BDR under BO §60A and has, by the Banking (Capital) (Amendment) Rules 2014 and the Banking (Disclosure) (Amendment) Rules 2014, incorporated provisions for the imposition of capital requirements arising from the operation of the CCyB into the BCR and for corresponding disclosures into the BDR respectively.
- 1.2.5 This module provides an overview of the CCyB framework in Hong Kong and describes the MA's approach to taking decisions with regard to the setting of the CCyB rates applicable to AIs. This module is intended to complement AIs' understanding of the BCR and BDR but should not be read as in any sense substituting or amending the text of the BCR or BDR.

2. Overview of the CCyB framework

2.1 Objectives

- 2.1.1 *The primary aim of the CCyB is to provide a measure of protection to the banking sector against the build-up of system-wide risk associated with periods of excessive aggregate credit growth.* The CCyB seeks to achieve this by ensuring that banks, and the banking sector in aggregate, accumulate additional capital during any observed "credit boom", which can be used later ("released") to absorb any losses or meet any increased capital requirements when system-wide risk crystallizes,



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probabilities of default increase, and the financial system enters a phase of stress and contraction. This should, in turn, help to maintain the flow of credit to corporates and individuals and thereby lessen the impact of the stress on the real economy after a period of exuberant credit growth.

2.1.2 *As a secondary benefit, the CCyB may also tend to lean against the build-up of excessive exuberance in the credit cycle in the first place, potentially containing credit growth to some degree and perhaps thereby helping to moderate swings in asset prices and/or the economy. However, this potential moderating effect is not the primary objective envisaged for the CCyB.*

2.2 The CCyB as an extension of the capital conservation buffer

2.2.1 The CCyB is an additional “layer” of Common Equity Tier 1 (CET1) capital which takes effect as an extension of the Basel III capital conservation buffer (CB) (see BCR §[...]). Like the CB requirement, the CCyB requirement is expressed as a percentage of an AI’s total risk-weighted amount (RWA). An AI’s CET1 capital must first be used to meet all of its minimum capital requirements (including any Pillar 2 (BO §97F) add-on), before the remainder can contribute to the extended buffer range (see BCR §[...]). This is illustrated in the “capital stack” below (assuming full phase-in of Basel III minimum ratios and buffers and that the AI is not designated as a G-SIB or D-SIB and hence not subject to any additional Higher Loss Absorbency capital requirement generally associated with such designation):

Countercyclical Capital Buffer (0% → 2.5% of RWA)	} Buffer capital
Capital Conservation Buffer (2.5% of RWA)	
Pillar 2 CET1 capital ratio add-on (if any)	} Minimum regulatory capital
Minimum CET1 capital ratio (4.5% of RWA)	



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2.2.2 As an extension of the CB, the CCyB is not regarded as a “hard” minimum capital requirement. If an AI’s CET1 capital ratio falls within the CB buffer zone (as extended by the CCyB when applicable) restrictions will be imposed on discretionary profit distributions (see BCR §[...]).

2.3 AI-specific CCyB rates

2.3.1 An AI’s “AI-specific CCyB rate” is essentially the rate (expressed as a percentage of the AI’s RWA) by which the AI’s CB is extended by CCyB requirements applicable to the AI.³

2.3.2 An AI must determine its own AI-specific CCyB rate as the weighted average of the applicable jurisdictional CCyB rates (see Sub-section 2.4 below), effective at the date for which the determination is made, in respect of the jurisdictions (including Hong Kong) where the AI has private sector credit exposures.⁴ The weight to be attributed to a given jurisdiction’s applicable CCyB rate is the ratio of the AI’s aggregate RWA_j for its private sector credit risk exposures (in both the banking book and the trading book) in that jurisdiction⁵ to the sum of such aggregate RWA_j across all jurisdictions in which the AI has private sector credit risk exposure.⁶ (See BCR §[...]).

2.4 Jurisdictional CCyB rates

2.4.1 ***The applicable jurisdictional CCyB rate.*** The *jurisdictional CCyB rate* is the CCyB rate in respect of a particular jurisdiction, including Hong Kong, (expressed as a ratio of Common Equity Tier 1 capital to risk-weighted assets as defined in the relevant regulatory

³ This corresponds to the “CCyB ratio” as defined in BCR §[...].

⁴ As defined in BCR §[...], “private sector credit exposures” exclude exposures to banks regardless of whether the latter are under public sector or private sector ownership.

⁵ See [SPM being drafted, which will be issued for industry consultation in due course] for further details on the determination of the jurisdictional allocation of private sector credit exposures.

⁶ This sum can be larger than the AI’s total private sector credit RWA to the extent that the latter may benefit from greater risk diversification.



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standards applicable in that jurisdiction) which is in effect at the date for which an AI is calculating its AI-specific CCyB rate (see BCR §[...]). However, the *applicable jurisdictional CCyB rate* for the purposes of calculating an AI's AI-specific CCyB rate (see para. 2.3.2 above) may differ from the jurisdictional CCyB rate if the MA has determined and announced the application of a higher or lower rate (in respect of a given jurisdiction outside Hong Kong) in the circumstances described in Section 4 below (see BCR §[...]).

- *The Hong Kong jurisdictional CCyB rate.* The MA's approach to determining and announcing the Hong Kong jurisdictional CCyB rate is described in Section 3 below.
- *Applicable jurisdictional CCyB rates for other jurisdictions.* The MA's approach to recognising jurisdictional CCyB rates for other jurisdictions is described in Section 4 below.

2.4.2 **Pre-announcement periods.** A different treatment applies to increases and decreases of jurisdictional CCyB rates in respect of the time period ("pre-announcement period") between their announcement and their coming into effect (see BCR §[...]):

- *CCyB rate increases:* The pre-announcement period for an increase (including an increase above 0% - i.e. buffer activation) in the *Hong Kong* jurisdictional CCyB rate will usually be 12 months, unless the MA announces a shorter period of not less than 6 months (see para. 3.5.4 below for a description of the circumstances which might lead the MA to adopt a such a shorter pre-announcement period).

Similarly, unless otherwise determined by the MA in the circumstances described in Sub-section 4.3 below, an increase in *another jurisdiction's* applicable jurisdictional CCyB rate (including from zero or when first activated) will become effective in respect of AIs in accordance with the pre-announcement period set by the relevant authority in that jurisdiction (in other words, the "applicable" jurisdictional CCyB rate will



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follow the timing of the underlying jurisdictional CCyB rate), but:

- (a) if the pre-announcement period is less than 6 months, AIs may instead adopt 6 months; or
 - (b) if the pre-announcement period is more than 12 months, AIs must instead adopt 12 months.
- *CCyB rate decreases*: A decrease in the *Hong Kong* jurisdictional CCyB rate will become effective immediately upon being announced. A decrease in *another jurisdiction's* applicable jurisdictional CCyB rate will become effective in respect of AIs as announced by the relevant authority in that jurisdiction, unless the MA determines a different effective date in respect of AIs in the circumstances described in Sub-section 4.3 below.

2.5 Reporting and disclosure requirements

2.5.1 **Quarterly reporting to the MA.** An AI is required to report to the MA its AI-specific CCyB rate and related information on a quarterly basis through Return MA(BS)3 “Capital Adequacy Ratio of an Authorized Institution Incorporated in Hong Kong” [to be modified to incorporate CCyB-related information]. The quarterly report covers both point-in-time and forward-looking information as discussed below:

Point-in-time information. This refers to data as of the report’s quarter-end date and includes the following items:

- The *AI-specific CCyB rate* calculated on the basis of the latest applicable jurisdictional CCyB rates in effect at the quarter-end date (see para. 2.3.2 above).
- The RWA_j for private sector credit exposures as of the quarter-end date, corresponding to each jurisdiction in which the AI has private sector credit exposure, used in the above calculation.



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- The *applicable jurisdictional CCyB rates*, in respect of each jurisdiction in which the AI has private sector credit exposure, used in the above calculation.

Forward-looking information. This refers to information as of the end of each of the subsequent four quarters following the report's quarter-end date and includes:

- The *AI-specific CCyB rate* calculated on the basis of (i) any applicable jurisdictional CCyB rates that are currently in effect or preannounced and are expected to be in effect on any of the subsequent four quarter-end dates (including for Hong Kong and for other jurisdictions), and (ii) the same risk-weighted amounts used for the calculation of the point-in-time AI-specific CCyB rate as of the report's quarter-end date (as described above).
- The *jurisdictional CCyB rates* in respect of each jurisdiction in which the AI has private sector credit exposure, which have been used in the above calculation (i.e. incorporating any expected pre-announced changes).

2.5.2 **Half-yearly public disclosure.** As set out in BDR §§24B and 45B, AIs are required to publicly disclose, the following information as part of their twice yearly Pillar 3 disclosure in the "Capital Disclosures Template":

- Their *AI-specific CCyB rate* calculated on the basis of the latest applicable jurisdictional CCyB rates in effect at the half-year-end date (see paras. 2.3.1 and 2.3.2 above).
- The RWA_j as of the half-year-end date, corresponding to each jurisdiction in which the AI has private sector credit exposure, used in the above calculation.
- The *applicable jurisdictional CCyB rates*, in respect of each jurisdiction in which the AI has private sector credit exposure, used in the above calculation.



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3. The MA's approach to determining and announcing the Hong Kong jurisdictional CCyB rate

This section describes the MA's approach to determining the level of the Hong Kong jurisdictional CCyB rate and the timing of its activation, increase, decrease or release. The approach takes as its starting point an "Initial Reference Calculator" that is transparently calculated and made public. The decision process then builds upon the Initial Reference Calculator by incorporating the analysis of information from a broader set of "Comprehensive Reference Indicators" and other appropriate sources. The final policy decision is then taken on the basis of informed judgement and will be publicly communicated, with a reasoned justification when the decision departs from the guide provided by the Initial Reference Calculator in either a "tightening" or "loosening" direction.

3.1 The steps in the decision process

3.1.1 **Main issues in CCyB decisions.** As noted in Sub-section 2.1 above, the primary objective of the CCyB is to make the banking sector more resilient against system-wide risk associated with excessive aggregate credit growth. Given this objective, decisions on whether to activate, increase, decrease or release the Hong Kong jurisdictional CCyB rate hinge on an assessment of: (i) the extent to which any aggregate credit growth in Hong Kong may be deemed excessive (and thus suggest CCyB build-up); (ii) the risks that may be building up across the banking system – because of credit growth and/or other factors; (iii) the fragility of the Hong Kong banking system vis à vis such risks; and (iv) the degree to which an excessive credit contraction may be underway or is likely imminent (and thus suggest CCyB release).

3.1.2 **Ongoing systemic risk monitoring: the MA's systemic "dashboard".** Making adequate and timely decisions on the CCyB (and indeed on the deployment of other macroprudential policy instruments) presupposes an ongoing monitoring and analysis of relevant current and forward-looking information on the state of, and trends in, the banking system that may bear on issues such as those mentioned in para. 3.1.1 above. The MA's



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approach in this regard is to regularly monitor and analyse the following:

- *The “Basel Common Reference Guide”.* To provide a common starting point across jurisdictions, the Basel Committee expects national authorities to calculate, regularly disclose and consider in their CCyB decisions, a non-binding common reference guide based on a methodology that measures the “credit/GDP gap” (i.e. the extent to which the aggregate private sector credit/GDP ratio exceeds its long term trend). In line with the Basel Committee guidance, the MA will calculate and publish the Basel Common Reference Guide on a quarterly basis as set out in paras. 3.2.2 and 3.6.1 below and in Annex 1. However, as the Basel Committee has noted, although this guide can help signal the need for CCyB build-up, it is likely to be too slow for timely signalling of the need for CCyB release. The MA will consider the Basel Common Reference Guide in its CCyB decisions but it will only be one of the MA’s reference points.
- *The Initial Reference Calculator.* The MA has developed for Hong Kong a methodology, referred to as the Initial Reference Calculator, based on which the MA will calculate and publish, on a quarterly basis, an indicative CCyB rate guide by combining the credit/GDP gap driving the Basel Common Reference Guide with additional indicators on local property prices and rents, the interbank risk spread and average loan quality (see further details in Sub-section 3.2 and para. 3.6.1 below and in Annexes 2 and 3). In contrast to the Basel Common Reference Guide, the Initial Reference Calculator provides a guide for both the build-up of the CCyB and the timely (partial or full) release of the CCyB in the presence of early signs of banking system stress. The MA will use the Initial Reference Calculator as a starting point for CCyB decisions. The MA will monitor (on an ongoing basis depending on each indicator’s frequency of update):



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- the current readings and (if available) forecasted short-term path of each of the four indicators ((i) credit/GDP gap, (ii) property price/rent gap, (iii) interbank rate spread and (iv) loan quality) used as inputs for the Initial Reference Calculator;
 - the resulting Initial Reference Calculator's CCyB rate guide and its components (see Sub-section 3.2 below) based on current and forecasted inputs, with and without applying the caps on buffer guides, is discussed in para. 3.2.4 below.
 - *A set of Comprehensive Reference Indicators.* The MA will also monitor and analyse on an ongoing basis a broader set of indicators that can help the MA to develop a more complete view of systemic risk by covering risk factors that may not be adequately captured by the Basel Common Reference Guide and the Initial Reference Calculator (see Sub-section 3.3 below for details).
 - *Other relevant information and analyses.* Finally, the MA will consider in its CCyB decisions any other information, be it of a quantitative or qualitative nature, that may come to light or be available at the relevant time and that may be relevant in the context of the MA's mandate of promoting the general stability and effective working of the banking system. Such information may be obtained through the MA's ongoing monitoring of events at the local, regional and global level that may carry implications for banking system risk in Hong Kong. It may also derive from focused studies or analyses of particular issues (including the assessment of potential improvements in the Initial Reference Calculator and/or in the set of Comprehensive Reference Indicators).
- 3.1.3 **Determining the “macroprudential policy stance”.** Based on the analysis of the available information as described in para. 3.1.2 above, and before considering a decision on the Hong Kong jurisdictional CCyB rate, the MA will first focus on deciding whether the broad systemic picture – including not only the current situation but also foreseeable short- to medium-term trends –



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suggests that the appropriate macroprudential policy stance, relative to that indicated by the Initial Reference Calculator, should be “neutral”, “tightening” or “loosening”. Given the quarterly calculation and publication of the Basel Common Reference Guide and of the Initial Reference Calculator, the MA will review its macroprudential policy stance on at least a quarterly basis (see further discussion in Sub-section 3.4 below).

3.1.4 ***Deciding on the Hong Kong jurisdictional CCyB rate.***

Once a macroprudential policy stance has been determined, the MA will consider and assess the available policy options (including possible combinations of CCyB rate levels with other complementary or alternative macroprudential policy instruments designed to bolster the resilience of the banking sector). Before reaching a decision, the MA may also consult any other parties as the MA may deem appropriate in order to arrive at an informed judgement based on all relevant information (see further discussion in Sub-section 3.5 below).

The public announcement of the decision will include a reasoned justification where there is any divergence from the Initial Reference Calculator (see Sub-section 3.6 below).

3.1.5 ***Performance review.*** The MA intends to undertake periodic reviews of the performance of the Initial Reference Calculator, and of the CCyB decision making process more broadly, with a view to enhancing them wherever deemed appropriate. Accordingly, this module may be updated from time to time following the usual consultation.

3.2 The MA’s Initial Reference Calculator

3.2.1 ***Determination of the Initial Reference Calculator’s CCyB rate guide.*** The Initial Reference Calculator produces quarterly an initial guide between 0% and 2.5% of total RWA (subject to the phase-in schedule discussed in para. 3.2.4 below) for the level of the Hong Kong jurisdictional CCyB rate. The Initial Reference Calculator’s CCyB rate guide will be the lower of the following two CCyB rate guides, which are constituent



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components of the Initial Reference Calculator (see Diagram 1):

- A *Composite CCyB Guide based on two “primary gap indicators”*: a credit/GDP gap and a property price/rent gap (see details in para. 3.2.2 below). This guide would signal the activation of the Hong Kong CCyB and subsequent changes in its rate in response to increasing or decreasing signs of excessive credit growth and/or property prices.
- An *Indicative CCyB Ceiling based on two “primary stress indicators”*: an interbank risk spread and a loan quality indicator (see details in para. 3.2.3 below). These indicators can provide an early signal of significant stress in the banking system that could lead to excessive credit constraint if the CCyB is not released in a timely manner. In the presence of such a signal, the Indicative CCyB Ceiling could become “binding” within the Initial Reference Calculator and indicate a buffer reduction (including the possibility of a full release).

In the absence of significant systemic stress, as and when the “credit boom” gradually deflates, the Composite CCyB Guide” should signal a gradual reduction of the CCyB rate. Since the Initial Reference Calculator selects the lower of the Composite CCyB Guide and the Indicative CCyB Ceiling, it may happen that, if the primary gap indicators driving the Composite CCyB Guide were to decrease to sufficiently low levels, they could cause the Initial Reference Calculator guide to drop even below the level that would result from the application of the Indicative CCyB Ceiling.

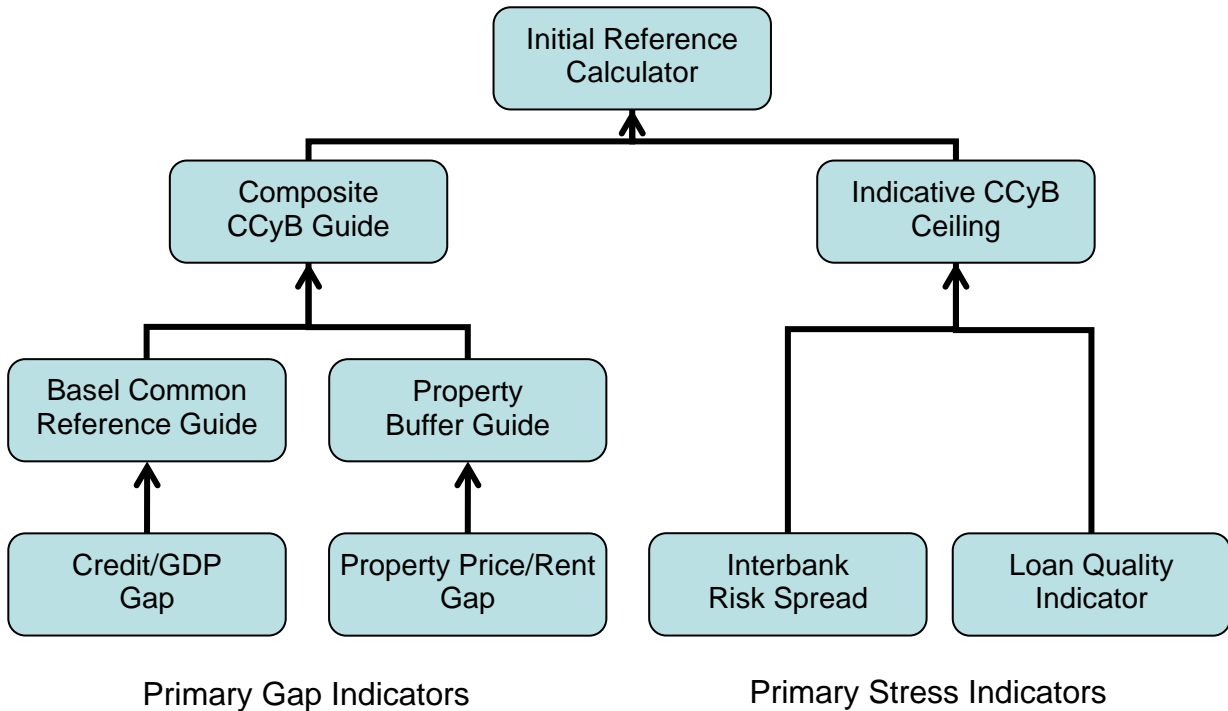


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Diagram 1: The Initial Reference Calculator (IRC)





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3.2.2 **Composite CCyB Guide based on primary gap indicators.** The Basel Committee in its “Guidance for national authorities operating the countercyclical capital buffer” and related studies published by the Bank for International Settlements (BIS) present cross-country evidence supporting both the use of the credit/GDP gap as a predictor of banking crises and the Basel III calibration of the Basel Common Reference Guide for signalling an indicative buffer level, driven by the credit/GDP gap (see Box 1).⁷ Other empirical research by BIS staff based on global data⁸ shows that the combination of sustained rapid credit growth and large increases in asset prices appears to heighten the probability of an episode of financial instability. Finally, the MA’s own analysis of local Hong Kong data suggest that combining information on property market valuation with the credit/GDP gap can improve predictive power in terms of identifying “excessive” credit growth in Hong Kong and reducing the “signal-to-noise” ratio⁹ in comparison to relying on the credit/GDP gap alone.¹⁰

The MA will calculate an indicative “Composite CCyB Guide” based on the two primary gap indicators identified (namely the credit/GDP gap and the property price/rent gap). This Composite CCyB Guide will thus combine information on the degree to which both credit growth and property market valuations are deviating from their respective long-term trends, reflecting the greater

⁷ See e.g. M. Drehmann, C. Borio, and K. Tsatsaronis, “Anchoring Countercyclical Capital Buffers: The Role of Credit Aggregates”, *BIS Working Papers* No. 355, November 2011 and A.M. Taylor, “The Great Leveraging”, *BIS Working Papers* No. 398, December 2012.

⁸ See C. Borio and P. Lowe, “Asset prices, financial and monetary stability: exploring the nexus”, *BIS Working Papers* No. 114, July 2002.

⁹ The “signal to noise” ratio in this context is the ratio of the number of episodes of banking system stress due to credit losses correctly predicted by the indicator(s) to the number of false warnings of such episodes provided by the same indicator(s) over a sample period.

¹⁰ Although endeavours have been made to test the relevance of other indicators, given the absence of systemic banking crises and the scarcity of banking system stress episodes in Hong Kong in the past few decades, local historical data have proved insufficient to enable any robust statistical identification of indicators that are significantly better suited for Hong Kong than those that have been proven to possess strong predictive power by reference to global data.



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significance of the joint occurrence of large credit/GDP and property price/rent gaps in signalling the build-up of systemic risk as compared with the credit/GDP gap alone. The Composite CCyB Guide will be calculated as 1.1 times the simple geometric mean of the following two buffer guides:¹¹

- *The Basel Common Reference Guide.* The MA will calculate the Basel Common Reference Guide (with a maximum resulting CCyB level of 2.5% of RWA) in accordance with the methodology devised by the Basel Committee for both calculating the credit/GDP gap and mapping that credit/GDP gap into an indicative jurisdictional CCyB rate guide (see summary in Box 1). The measure of credit to be used in the calculation of the credit/GDP gap for Hong Kong is the stock of total loans and advances outstanding at the Hong Offices of AIs as reported in the MA's Monthly Statistical Bulletin, excluding "other loans for use outside Hong Kong", as at the end of the quarter corresponding to the (annualized) quarterly GDP data point. A more detailed description of the calculation of the Basel Common Reference Guide for Hong Kong is included in Annex 1.
- *The Property Buffer Guide.* The Property Buffer Guide (also with a maximum level of 2.5% of RWA), as described in Box 2, is constructed and will be calculated in a similar manner to the Basel Common Reference Guide but based on the residential property price/rent gap in Hong Kong (i.e. the deviation of the ratio of the residential property price index to the rental index from the ratio's long-term trend).

¹¹ The 1.1 multiplier roughly recalibrates the statistical distribution of the Composite CCyB Guide back to the Basel Committee expectation, to address the fact that the geometric mean of the two guides, which are not perfectly correlated, will always have a smaller standard deviation than the Basel Common Reference Guide alone.



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Box 1. Basel III: The Credit/GDP Gap and the Basel Common Reference Guide

Buffer driver. As a reference point for formulating and explaining buffer decisions, the jurisdictional authority first calculates the Basel Common Reference guide. This involves three steps:

- 1) calculate the aggregate private sector credit-to-GDP ratio as a percentage;
- 2) calculate the credit/GDP gap expressed as the difference between the current ratio and its long term trend; and
- 3) map the credit/GDP gap into the indicative buffer level guide, expressed as a percentage of RWA.

As far as available data allows, aggregate private sector credit is to be measured in the broadest possible terms, from all possible sources, to the domestic non-bank private sector (including non-bank financial sector) in a jurisdiction.

To calculate the trend of the private sector credit/GDP ratio, a one-sided Hodrick-Prescott filter with a high smoothing parameter ($\lambda = 400,000$) is to be used.

Buffer level guide. The indicative buffer level guide for the jurisdiction for which the credit/GDP gap has been calculated should be determined as follows:

Credit / GDP gap	Indicative Buffer Level Guide
Less than 2% (lower threshold)	0%
More than 10% (upper threshold)	2.5%
Between 2% and 10%	Level of buffer varies linearly between 0 and 2.5% in proportion to the excess of the credit/GDP gap above the lower threshold of 2%. (If the 2.5% cap on the buffer level guide is not applied, the same formula can be used to calculate proportionately higher buffer level guides beyond 2.5% as the credit/GDP gap exceeds 10%.)

Source: Annex 1 of Basel Committee *Guidance for national authorities operating the countercyclical capital buffer*, December 2010.

See Annex 1 of this module for further details on how the MA will calculate the Basel Common Reference Guide for Hong Kong.



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Box 2 – The Property Price/Rent Gap and the Property Buffer Guide for the CCyB

Property price/rent gap. The indices used for computing the residential property price/rent ratio for Hong Kong are the private domestic property price index and the private domestic property rental index produced by the Rating and Valuation Department of the Hong Kong Government. The “property price/rent gap” is defined as the difference between the current price/rent ratio and the long-term trend of this ratio, where the difference is expressed as a percentage of the trend. To calculate the trend of the price/rent ratio, a one-sided Hodrick-Prescott filter with a high smoothing parameter ($\lambda = 400,000$) is used.

Property buffer guide. The corresponding Property Buffer Guide is calculated in a similar way to the Basel Common Reference guide (see Box 1), using the same thresholds on the basis that rental adjustment has been observed to be significantly more flexible in Hong Kong than in most other jurisdictions and, as a result, the price/rent ratio time series is not much more volatile than the credit/GDP ratio:

Property Price/Rent Gap	Property Buffer Guide
Less than 2% (lower threshold)	0%
More than 10% (upper threshold)	2.5%
Between 2% and 10%	Buffer level to vary linearly between 0% and 2.5% in proportion to the excess of the property price/rent gap above the lower threshold of 2%. (If the 2.5% cap on the buffer level guide is not applied, the same formula can be used to calculate proportionately higher buffer level guides beyond 2.5% as the credit/GDP gap exceeds 10%.)

See Annex 2 for further details.



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However, since property prices have historically tended to peak around 2 years before a crisis across countries¹², the MA will be cautious about reducing the Hong Kong jurisdictional CCyB rate when property prices turn downwards while the credit/GDP gap remains large and there are no indications of banking system stress.

A more detailed discussion of the methodology for determining the Property Buffer Guide and the Composite CCyB Guide is included in Annex 2.

3.2.3 Indicative CCyB Ceiling based on primary stress indicators. A key principle underlying the CCyB is that the buffer should be released promptly once significant stress is observed within the banking sector in order to minimise any credit constraint which might amplify the adverse effects of a financial cycle downturn. Swiftly releasing a buffer, which has been accumulated on top of credibly robust “hard” minimum capital requirements, should allow the banking system in aggregate to absorb losses that materialise, or to meet any increase in minimum capital requirements arising as a result of the stress, and thus permit the banking system to continue lending to support the economy.

In contrast to the process for the build-up of the CCyB, the Basel Committee has not provided any common reference guide for triggering the release of the CCyB. The MA considers that reliance cannot reasonably be placed upon the credit/GDP gap or the property price/rent gap as timely indicators for the release of the CCyB when the banking system encounters significant stress. Both indicators will likely be “lagging” in the sense that they may move down too late for a buffer release to be sufficiently prompt to prevent a credit contraction.

The primary stress indicators. The MA therefore will calculate an “Indicative CCyB Ceiling” to provide an

¹² See e.g. the 2011 paper by Drehmann, Borio, and Tsatsaronis cited in footnote 7 above.



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indicative signal for the swift release of the CCyB, based upon two “primary stress indicators” which the MA considers can provide an adequately early warning of potentially significant stress within the banking system:

- *Interbank risk spread.* The risk spread in the reference interbank lending rate reflects the perception, by interbank market participants, of the risk of lending to a prime bank in that market. A significant rise in this spread can be a good early indicator of banking system stress, especially during sudden, acute stress episodes. The MA will use the 3-Month HIBOR¹³ spread over the corresponding risk-free rate (measured by the 3-Month Overnight Index Swap rate) as one of the two primary indicators of stress in Hong Kong’s banking system that would drive the Indicative CCyB Ceiling.
- *Loan quality indicator.* The second primary stress indicator aims at providing a measure of the deterioration in loan quality within Hong Kong’s banking system, which should give some early signal of impending credit losses. This indicator is more relevant when systemic risks play out more gradually. The MA will use the quarter-on-quarter change in the aggregate gross classified loan ratio of retail banks (as published in the “Asset Quality of Retail Banks” statistical table in the MA’s Monthly Statistical Bulletin) for this purpose.

The Indicative CCyB Ceiling. Based on the schedule described in Table 1 below, the two primary stress indicators are used to set an indicative ceiling for the CCyB rate if they exceed their respective thresholds. As

¹³ The HIBOR (Hong Kong Interbank Offered Rates) are the rates of interest for Hong Kong Dollar deposits for the relevant period calculated by The Hong Kong Association of Banks (HKAB) each day and displayed on the website of HKAB. The fixings are made on the basis of quotations provided by currently 20 banks designated by HKAB as reference banks and are available for HKD deposit maturity ranging between overnight deposits and 12 months. The fixings are determined by averaging the middle quotes after excluding the highest three quotes and lowest three quotes received from the reference banks. (Source: HKAB website as of 31 July 2014.)



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noted in para. 3.2.1 above, if the ceiling turns out to be lower than the buffer level indicated by the Composite CCyB Guide, then the Initial Reference Calculator will be lowered, thus signalling that any extant CCyB should (absent any tightening macroprudential policy stance resulting from consideration of countervailing information from the Comprehensive Reference Indicators or other sources) be partially or fully released (see Annex 3 for a more detailed discussion of the rationale for the Indicative CCyB Ceiling).

- *The greater the severity of the stress detected by the primary stress indicators, the lower the Indicative CCyB Ceiling.* A gradual buffer release would be signalled to the extent that the readings on the primary stress indicators increase gradually as systemic stress worsens over time. But an immediate and full release of the buffer may be signalled if the stress episode has a sudden and strong onset, so that either or both of the primary stress indicators reach or overstep their respective highest threshold (bottom row in Table 1). That said, in order to avoid volatility in ceiling levels due to short-term variations in the HIBOR spread, the latter should stay above the respective threshold for more than 30 days to have any effect on the operation of the Indicative CCyB Ceiling.
- *Conversely, if both primary stress indicators are below the thresholds shown in the top row of Table 1, then there would be no ceiling (this is not shown in the table).*

Frequency of calculation. The “Indicative CCyB Ceiling” in Table 1 will normally be calculated and considered at the time of each quarterly review (see para. 3.1.3 above). But in order to cater for the prospect of economic circumstances deteriorating rapidly, the MA will retain the flexibility to review the primary stress indicators and act earlier, in relation to them, if needed in response to the severity of any stress being experienced by the banking sector.



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Table 1. Primary stress indicators and the Indicative CCyB Ceiling

Primary Stress Indicators		Indicative CCyB Ceiling	Indicative Minimum Ceiling Duration
If either: the Interbank Risk Spread (3-Month HIBOR Spread)*	Or: the Loan Quality Indicator (Quarter-on- Quarter Increase in Classified Loan Ratio)		
> 1.0%	> 0.5%	≤ 2.0%	3 Months
> 1.5%	> 1.0%	≤ 1.5%	3 Months
> 2.0%	> 1.5%	≤ 1.0%	6 Months
> 2.5%	> 2.0%	≤ 0.5%	9 Months
> 3.0%	> 2.5%	0%	12 Months

* The spread should stay above the respective threshold for more than 30 days for the trigger to operate.

Indicative minimum ceiling duration. Once part or all of the CCyB has been released in response to stress within the banking sector, in line with the Indicative CCyB Ceiling in Table 1, it would be the MA's general intention that, irrespective of any subsequent upswing in the Composite CCyB Guide or the Indicative CCyB Ceiling, no decisions to activate or increase the CCyB above the last Indicative CCyB Ceiling would then be made within a certain minimum period of time, i.e. there will be an "indicative minimum ceiling duration". This is to give AIs a degree of comfort that the effect of a buffer release will not be cancelled in short order by a swift subsequent build-up, so as not to hinder the intended effect of buffer release in terms of maintaining lending in times of stress. To help the industry form at least some expectation in this regard,



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an indicative minimum ceiling duration associated with each level of the Indicative CCyB Ceiling is included in the fourth column of Table 1. The indicative minimum ceiling duration in turn influences the future path of the Initial Reference Calculator so that there will be a general expectation that, the lower the Indicative CCyB Ceiling, the longer (up to a maximum of 12 months) would be its effect on the Initial Reference Calculator in signalling no subsequent CCyB increase above that ceiling.

Flexibility with respect to the indicative minimum ceiling duration. Whilst the indicative minimum ceiling duration is, as its name suggests, “indicative” of general intention, it will not be strictly “binding” on the MA. So the MA could take a decision to diverge from the Initial Reference Calculator (see Sub-section 3.5 below), if there were extraordinary unforeseen circumstances where the preservation of financial stability may require renewed buffer build-up at an earlier point in time. (This may, for example, be the case where a sudden wave of capital inflows sharply reverses a phase of credit contraction and threatens to overheat the economy and/or generate asset price bubbles.)

- 3.2.4. **Cap on buffer Guides and phase-in.** Once the Basel III regulatory capital standard is fully phased-in, the indicative CCyB rate guides resulting from the Basel Common Reference Guide, from the Property Buffer Guide and from the Composite CCyB Guide will be capped at 2.5% of RWA. In accordance with the Basel Committee schedule, this cap on the CCyB rate guides will be phased-in in parallel with the CB as follows (see BCR §[...]):

1 Jan. 2016	1. Jan. 2017	1. Jan. 2018	1. Jan. 2019
0.625%	1.25%	1.875%	2.5%

- 3.2.5. **Expression of the CCyB rate guides in multiples of 25 basis points.** The CCyB rate will be expressed in



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multiples of 25 basis points (without rounding up). Thus activation of the Hong Kong jurisdictional CCyB would be signalled by the Initial Reference Calculator's CCyB rate guide (as drawn from the Composite CCyB Guide but subject as discussed in para. 3.2.3 above to the operation of an Indicative CCyB Ceiling) moving from zero to a positive level of at least 25 basis points.

Similarly, the Initial Reference Calculator would signal an extant CCyB to increase or decrease in multiples of 25 basis points as driven by the expansions and contractions of the two primary gap indicators as synthesised into the Composite CCyB Guide, unless the CCyB is released (partially or in its entirety) in response to significant stress within the banking sector "triggering" the operation of the Indicative CCyB Ceiling as discussed in para. 3.2.3 above.

3.3. The Comprehensive Reference Indicators

- 3.3.1. The Comprehensive Reference Indicators which the MA will monitor on an ongoing basis (see para. 3.1.2 above) include a broad set of aggregate indicators of systemic conditions covering items as illustrated in Table 2 below, as far as data is available.
- 3.3.2. The indicators included in Table 2 and their suggested interpretation should be regarded as illustrative and not exhaustive or restrictive. The appropriate set of Comprehensive Reference Indicators may evolve over time, as further data is collected or the relevance of the indicators is reassessed based on experience. Hence, rather than fix definitely the set of Comprehensive Reference Indicators to be reviewed, the MA will make the current list available on its website.



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Table 2. Illustrative list of Comprehensive Reference Indicators

	Tending to support –	
	Tightening bias?	Loosening bias?
Aggregate / average banking indicators		
Credit growth (total / sectoral)	Fast/ Accelerating	Slow / Negative
Bank leverage (Basel III Leverage Ratio, CET1 / RWA)	High / Rising	Low
Bank maturity mismatch (Net Stable Funding Ratio, core funding ratio, loan / deposit ratio)	Large / Increasing	Small
Currency mismatch (net FX position / equity)	Large / Increasing	Small
Average risk weight (total and IRB)	Low / Falling	High / Rising
Liquidity (LCR, LMR, other Basel III metrics)		
Profitability (ROA, ROE)		
Hong Kong property sector		
Property price growth	Fast/Accelerating	Slow/Negative
(Real) mortgage interest rate	Low	High
Average DSR	Rising from low base	Decreasing from high base
Average LTV ratio	High / Rising	Low
Commercial property price / rent ratios	High / Rising	Low
Non-financial sector leverage		
Household debt / GDP ratio	High / Rising	Low
Financial leverage of listed local corporations (debt / equity, debt / EBITDA ¹⁴)	High / Rising	Low
Imputed private sector DSR ¹⁵	High / Rising	Low
Macroeconomic imbalances		
Current account deficit / GDP	High / Rising	Low / Surplus
Gross or net external liabilities / GDP	High / Rising	Low
Fiscal deficit / GDP	High / Rising	Low / Surplus
External factors (indirect impact on HK economy)		
Credit / GDP gap in globally / regionally important economies	High / Rising	Low
Property valuation indicators (price / rent, price / income, average LTV ratios, etc.) in globally / regionally important economies	High / Rising	Low

¹⁴ Earnings before interest, taxes, depreciation and amortization.

¹⁵ E.g. as defined in M. Drehmann and M. Juselius, "Do debt service costs affect macroeconomic and financial stability?" *BIS Quarterly Review*, September 2012.



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3.4. Determining the macroprudential policy stance

3.4.1. *Macro-prudential analysis.* The MA will determine, based on the broad systemic picture – including not only the current situation but also foreseeable short- to medium-term trends – provided by the analysis of the available information, whether its macroprudential policy stance should be, broadly speaking, characterized as “neutral”, “tightening” or “loosening” relative to the signal generated by the Initial Reference Calculator:

- “neutral”, meaning that no reasons have been identified to justify a deviation from the Initial Reference Calculator;
- “tightening”, meaning that there may be justification for electing to implement a higher CCyB rate than that otherwise signalled by the Initial Reference Calculator where the MA considers that, in the prevailing circumstances, such a course of action is appropriate for the purposes of bolstering or securing banking sector stability; or
- “loosening”, meaning that there may be justification for electing to implement a lower CCyB rate than that otherwise signalled by the Initial Reference Calculator or, indeed no buffer at all, despite the Initial Reference Calculator indicating a rate above 0%, where the MA considers that the prevailing circumstances are such that this course of action is appropriate for the purposes of mitigating anticipated adverse effects of banking system stress on the banking sector (including where any resulting contractionary effects on credit supply might threaten the health of the real economy).

3.4.2. *Interpreting the Comprehensive Reference Indicators.* In the context of the macroprudential analysis, the Comprehensive Reference Indicators will need to be interpreted (and selected) in terms of the light that they may shed on:



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- *the build-up of latent systemic risk* within the banking system and the economy more broadly (tending towards supporting buffer activation and buffer build-up), e.g.: credit growth; leverage in the balance sheets of banks and nonbanks in collateralized lending, in derivatives, etc.; liquidity, maturity and currency mismatches, levels of interest rate risk and exchange rate risk within banks and nonbanks; asset valuation gaps; and macroeconomic imbalances;
- *the prospects for significant deleveraging by the banking sector* due to crystallizing systemic risk (tending towards supporting buffer release), e.g.: rising delinquencies, loan loss provisions, asset impairments, model-based risk weights and banking sector losses; as well as any corresponding credit slowdown or contraction; and
- *loss of liquidity or other stresses in the financial markets* due to heightened uncertainties about counterparty solvency (limiting the scope for counteracting deleveraging through buffer release), e.g.: spiking risk spreads, collapsing “market-allowed” leverage (e.g. rising haircuts or margins on collateral) and/or funding outflows.

3.4.3. *Mapping the indicators to a policy stance.* Table 2 suggests some possible links between the Comprehensive Reference Indicators and the policy stance. However, the interpretation of the different indicators will vary depending on the phase of the credit cycle and other specific circumstances – including how other indicators in the set behave. Hence, it is not possible to establish in any reliable way an unambiguous link between an indicator and an appropriate macroprudential policy stance, and therefore any analysis supporting policy recommendations will necessarily involve the use of judgement. Annex 5 provides an illustration of how the indicators may suggest a macroprudential policy stance depending on the phase of the credit cycle.



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In both phases of the credit cycle, the “default setting” will be a neutral stance (i.e. of following the signal provided by the Initial Reference Calculator) unless strong evidence across the set of indicators, in the direction of either tightening or loosening, suggests otherwise.

The decision on the appropriate macroprudential policy stance will also be based on a consideration of the comparative risks attached to erring on one side or the other.

3.5. Deciding on the Hong Kong jurisdictional CCyB rate

3.5.1. **Guided discretion.** As discussed above, whilst the Initial Reference Calculator is intended to provide a degree of guidance to the MA and to the market, the MA will retain discretion to diverge from the Initial Reference Calculator if the MA considers that there is strong evidence to support an alternative course of action for the purpose of mitigating systemic risk or instability within the banking system in Hong Kong. In other words, discretion will be retained to cater for volatile, fast moving and hitherto unforeseen circumstances affecting the local economy, as well as any potential for the quantitative indicators incorporated within the Initial Reference Calculator to miss important systemic risk factors.

3.5.2. **Preliminary considerations.** Once a macro-prudential policy stance has been adopted, the MA will consider:

- whether evidence in support of a “tightening” or “loosening” stance is sufficiently strong as to warrant divergence from the Initial Reference Calculator (by determining a different course of action with regard to the activation, increase, decrease or release of the CCyB in Hong Kong);
- what additional tools (if any) could or should appropriately be deployed to support or complement the effects of the CCyB (see para. 3.5.6 below); and



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- whether, given the circumstances, the MA should elect not to take any action but to wait until a subsequent date upon which updated information can be reviewed to decide whether action is warranted.¹⁶

3.5.3. **Decision when adopting a “neutral” macroprudential policy stance.** If a “neutral” macroprudential policy stance is adopted, then the CCyB decision will be in line with the policy signalled by the Initial Reference Calculator as noted in para. 3.2.1 above.

3.5.4. **Decisions when adopting a “tightening” policy stance.** If a “tightening” macroprudential policy stance is adopted:

- *Case where the Initial Reference Calculator does not signal an Indicative CCyB Ceiling.* In a situation where the Initial Reference Calculator signals excessive credit growth indicating either the activation of the CCyB or a change in the level of the CCyB rate in accordance with the Composite CCyB Guide based on the “primary gap indicators”, a “tightening” stance may warrant:
 - a higher CCyB rate level (and thus a faster build-up or slower decrease), relative to the indicative level signalled by the Initial Reference Calculator¹⁷ (see below the criteria for setting a CCyB rate higher than 2.5% in extraordinary circumstances); and/or

¹⁶ In so far as they may help obtain a more complete or accurate view of relevant circumstances, the above considerations and related discussions could also lead to a revision of the previously determined macroprudential policy stance.

¹⁷ This includes the case where, as set out in BCR §[...], the MA may, following consultation with the Banking Advisory Committee, the Deposit-taking Companies Advisory Committee, The Hong Kong Association of Banks and The DTC Association, accelerate the phase-in of the Hong Kong jurisdictional CCyB rate relative to the schedule shown in para. 3.2.4 above if the MA reasonably considers that such action is warranted by the extent of any excessive credit growth in Hong Kong during the phase-in period and the MA is satisfied that such variation would have the effect of increasing authorized institutions' resilience to the risks arising from such excessive credit growth.



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- a pre-announcement period for the CCyB rate increase shorter than 12 months (but not shorter than 6 months).
- *Setting a CCyB rate higher than 2.5% in extraordinary circumstances.* As set out in BCR §[...], the MA may, following consultation with the Banking Advisory Committee, the Deposit-taking Companies Advisory Committee, The Hong Kong Association of Banks and The DTC Association, set the Hong Kong jurisdictional CCyB rate at a level in excess of 2.5% if (i) a Hong Kong jurisdictional CCyB rate at a level of 2.5% has been in effect for a period of not less than 6 months; (ii) the MA is satisfied on reasonable grounds that the pace of credit growth has not slowed to any material extent during that period; and (iii) the MA considers it necessary to set a Hong Kong jurisdictional CCyB ratio in excess of 2.5% to protect AIs from the expected consequences of excessive credit growth and the build-up of system-wide risk in Hong Kong. Without limiting the discretion provided by BCR §[...], the MA intends to use the following guidelines in determining whether conditions (ii) and (iii) above are fulfilled, before considering whether the use of that discretion is necessary:
 - The quarterly year-on-year rate of growth of the aggregate credit measure¹⁸ used to calculate the credit/GDP gap (see Annex 1) has not decreased by more than [20%] percent of the year-on-year growth rate as of the quarter-end date immediately before the 2.5% Hong Kong jurisdictional CCyB rate came into effect;

¹⁸ The quarterly year-on-year growth rate of the credit measure is the rate of change expressed as a percentage relative to the value of the credit measure as of the end of the corresponding quarter of the previous year.



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- The uncapped¹⁹ Basel Common Reference Guide and the uncapped Property Buffer Guide (see para. 3.2.2 above) both indicate a CCyB rate higher than 3.5% or either of them indicates a CCyB rate higher than 4.5%, after both have been above 2.5% for at least 6 months since a 2.5% Hong Kong jurisdictional CCyB rate last became effective; and
- The Comprehensive Reference Indicators unambiguously confirm the picture provided by the Guides and the need to additionally bolster AIs' resilience for the purpose of protecting AIs and the Hong Kong banking system from the expected consequences of excessive credit growth and the build-up of system-wide risk in Hong Kong. In this context, the MA will consider the pace of aggregate credit growth to be excessive if the quarterly year-on-year rate of growth of the aggregate credit measure used to calculate the credit/GDP gap still exceeds [15%].
 - *Case where the Initial Reference Calculator signals an Indicative CCyB Ceiling.* In a situation where the Initial Reference Calculator signals banking system stress indicating the reduction or release of the buffer through an Indicative CCyB Ceiling based on the "primary stress indicators" (see Table 2), a "tightening" stance may warrant:
 - a slower buffer release through a higher CCyB ceiling relative to that indicated by Table 2; or
 - a shorter minimum ceiling duration relative to that indicated by Table 2, if there were extraordinary unforeseen circumstances where the preservation of financial stability might require renewed buffer build-up at an earlier point in time; or

¹⁹ The "uncapped" Guides referred to here are the Guides calculated using the respective formula that maps the corresponding primary gap indicators to the resulting CCyB rate guide, but without subjecting the latter to an upper limit (i.e. 2.5% or its phase-in value during 2016 to 2019).



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- conceivably, if other indicators convincingly show that the banking system is in fact entering, or about to enter, a phase of excessive credit growth, even a return to CCyB build-up.

3.5.5. **Decision when adopting a “loosening” macro-prudential policy stance.** If a “loosening” macro-prudential policy stance is adopted:

- *Case where the Initial Reference Calculator does not signal an Indicative CCyB ceiling.* In a situation where the Initial Reference Calculator signals excessive credit growth indicating either the activation of the CCyB or a subsequent change in the level of the CCyB rate in accordance with the Composite CCyB Guide based on the “primary gap indicators”, a “loosening” stance may warrant:
 - a lower CCyB rate level (and thus a slower build-up or faster decrease), relative to the indicative level signalled by the Initial Reference Calculator;²⁰ or
 - conceivably if other indicators convincingly show that the banking system is in fact encountering, or is about to encounter, significant stress (in spite of the Initial Reference Calculator signalling excessive credit growth), announcing an indicative CCyB ceiling lower than the CCyB rate indicated by the Initial Reference Calculator, or at the extreme, a complete release of the active CCyB), with a corresponding indicative minimum ceiling duration, while explaining that the MA no longer views the banking system as being in a phase of excessive credit growth.
- *Case where the Initial Reference Calculator signals an Indicative CCyB Ceiling.* In a situation where the Initial Reference Calculator signals banking system stress indicating the reduction or release of the buffer

²⁰ However, the pre-announcement period for a CCyB rate increase cannot be extended beyond 12 months.



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through an Indicative CCyB Ceiling based on the “primary stress indicators” (see Table 2), a “loosening” stance may warrant:

- a swifter buffer release through a lower Indicative CCyB Ceiling relative to that indicated by Table 2 ,or at the extreme, a complete release of the CCyB; and/or,
- a longer indicative minimum ceiling duration relative to that indicated by Table 2.

3.5.6. ***Deployment of other macroprudential policy instruments.*** It should always be borne in mind that the use of the CCyB is only one of a variety of macroprudential measures which may be deployed with a view to enhancing banking sector resilience and containing systemic risk. Therefore, if the MA should elect to diverge from the Initial Reference Calculator, the MA may at the same time seek to deploy other alternative or complementary measures designed to achieve the MA’s objectives in promoting the general stability and effective working of the local banking system. Examples of such complementary measures might include caps on the loan-to-value (“LTV”) ratio and the debt servicing ratio (“DSR”) in respect of residential mortgage loans as well as sectoral risk weight floors.

3.6. Public communication regarding the Hong Kong jurisdictional CCyB rate

3.6.1. ***Publication of information relating to the Hong Kong jurisdictional CCyB rate.*** The MA will post on its website the following information in respect of the Hong Kong jurisdictional CCyB rate:

- The latest extant and pre-announced CCyB rates
- Historical (quarterly) time series of:
 - The Initial Reference Calculator’s CCyB rate guide (subject to a 2.5% cap)



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- The Basel Common Reference Guide (with and without cap)
- The Composite CCyB Guide based on the “primary gap indicators” (with and without cap)
- The Indicative CCyB Ceiling based on the “primary stress indicators”
- The “primary gap indicators” and the “primary stress indicators”
- The current list of Comprehensive Reference Indicators

- The announcements referred to in paras. 3.6.2 and 3.6.3 below

3.6.2. **Announcement of CCyB decision in line with the Initial Reference Calculator.** If a decision by the MA to activate, increase, decrease or release the Hong Kong jurisdictional CCyB rate is consistent with the Initial Reference Calculator, the MA will include in the announcement of the Hong Kong Jurisdictional CCyB rate the following information:

- The announced CCyB rate.
- In the case of any decision to activate or increase the CCyB rate, the period of time for the decision to take effect, which would normally be 12 months in cases where the buffer decision follows the Initial Reference Calculator;
- In the case of any decision to reduce the CCyB rate, any applicable Indicative CCyB Ceiling and the minimum period for which this is expected to remain effective (the “Indicative Minimum Ceiling Duration” in Table 1).
- A summary description of the analysis of the primary gap indicators and the primary stress indicators, their respective current levels and resulting Composite CCyB Guide and Indicative CCyB Ceiling, and how



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the Initial Reference Calculator leads to the CCyB decision.

- If the MA considers it useful or appropriate, a brief explanation of why the Comprehensive Reference Indicators (discussed in Sub-section 3.3 above) or other available information considered by the MA do not, in the view of the MA, warrant any divergence from the Initial Reference Calculator.

3.6.3. ***Announcement of CCyB decisions departing from the Initial Reference Calculator.*** If the MA's decision regarding the CCyB differs from that signalled by the Initial Reference Calculator, the MA will include in the announcement of the Hong Kong jurisdictional CCyB rate the following information:

- The announced CCyB rate.
- In the case of any decision to activate or increase the level of the CCyB, the period of time for the decision to take effect, which may be a period between 6 and 12 months. It would normally be 12 months unless the pace of credit growth is such as to prompt serious concerns for financial stability over the shorter-term, in which case a pre-announcement period of less than 12 months (but not less than 6 months) may be set.
- In the case of any decision to reduce the CCyB rate below the level indicated by the Initial Reference Calculator, the minimum period, if any, during which it would be the HMKA's general intention not to raise the CCyB rate above the announced level.
- A description of any additional macroprudential policy measures that are being adopted jointly with the Hong Kong jurisdictional CCyB decision currently being announced.
- The Initial Reference Calculator's CCyB rate guide and a summary description of the analysis of the primary gap indicators and the primary stress



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indicators, their respective current levels and the resulting Composite CCyB Guide and Indicative CCyB Ceiling.

- An outline of the factors (including but not limited to the analysis of the Comprehensive Reference Indicators) considered by the MA in reaching the MA's policy decision(s) and the rationale for that decision by reference to the MA's views on the appropriate macro-prudential policy stance in the circumstances.
- In the case of any decision to raise the CCyB rate above 2.5%, an analysis demonstrating that the conditions specified in BCR §[...] are fulfilled (see second bullet under para. 3.5.4 above).

3.6.4. ***The Half-Yearly Monetary and Financial Stability Report (MFSR)***. The Half-Yearly MFSR will contain a section discussing decisions relating to the Hong Kong CCyB in the broader context of the MA's analysis of financial stability issues and corresponding policies. The Half-Yearly MFSR will thus provide a background (both backward- and forward-looking) that can help the industry form expectations in respect of Hong Kong jurisdictional CCyB decisions and macroprudential policies more broadly.

3.6.5. ***Provision of information on the Hong Kong jurisdictional CCyB rate to other jurisdictions and to the BIS***. As and when the MA makes any decision to activate, increase, decrease or release the Hong Kong jurisdictional CCyB rate, the MA will promptly inform the BIS and the home supervisory authorities of AIs incorporated outside Hong Kong of the MA's decision so they can take the necessary steps to publish the Hong Kong jurisdictional CCyB rate in the case of the BIS or to ensure that their financial institutions take the Hong Kong jurisdictional CCyB rate set by the MA into account in calculating their firm-specific CCyB rates.

In addition to communicating its decisions on the Hong Kong jurisdictional CCyB rate to overseas authorities, the



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MA will communicate to such authorities the information announced by the MA in accordance with Sub-section 3.6 above, with a view to seeking such authorities' recognition of the Hong Kong jurisdictional CCyB rate and its timing in respect of the banks they supervise in line with the Basel Committee standard of jurisdictional reciprocity (see Sub-section 4.1 below).

4. The MA's approach to recognising overseas jurisdictional CCyB rates

4.1. The Basel Committee standard of jurisdictional reciprocity

4.1.1. **Purpose.** The objectives of the CCyB could be significantly undermined if, on the one hand, an AI's own specific CCyB rate did not take into account the AI's overseas exposures and, on the other hand, the Hong Kong jurisdictional CCyB rate only applied to locally-incorporated AIs whilst overseas incorporated banks were free to continue lending in, or into, Hong Kong (and hence potentially fuel any local "credit boom") without being subject to the restrictions attached to the local CCyB.

4.1.2. **Basic principles.** The MA will apply the standards for jurisdictional reciprocity set by the Basel Committee in the expectation that authorities in other jurisdictions²¹ will do the same. According to these standards:

- Home authorities should not apply to the banks they supervise a lower jurisdictional CCyB rate in respect of a foreign jurisdiction than that set by the national authority in that jurisdiction. However, this required reciprocity only extends up to a jurisdictional CCyB rate of 2.5%.

²¹ This includes mainly Basel Committee member jurisdictions, but it is also the case that most other jurisdictions around the world tend to apply Basel Committee standards.



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- Conversely, a home authority could require its banks to observe a higher jurisdictional CCyB rate in respect of a foreign jurisdiction than the jurisdictional CCyB rate set by the relevant authority in that foreign jurisdiction if it considers the level of the latter CCyB rate to be too low. This includes the case where a given jurisdiction does not operate and publish CCyB requirements; in such circumstances the Basel Committee standard provides that home authorities should be free to set their own CCyB requirements in respect of such jurisdiction.

The following sub-sections describe the MA's approach to implementing the above principles.

4.2. Recognition of other jurisdictions' CCyB rate decisions

4.2.1. ***Tacit recognition as the normal case.*** Absent extraordinary circumstances (see para. 4.2.2 and Sub-section 4.3 below) the MA is unlikely to consider himself to be in a better position than the relevant authority in an overseas jurisdiction to assess excessive credit growth with systemic implications in that jurisdiction. Therefore, absent any notification by the MA indicating otherwise, Als should adopt, for the purposes of determining the applicable jurisdictional CCyB rate in respect of a jurisdiction outside Hong Kong, the level of the jurisdictional CCyB rate and the date for its becoming effective as announced by the relevant authority of the respective jurisdiction, subject to the following (see BCR [...]):

- If the jurisdictional CCyB rate as announced by the relevant authority is above 2.5%, Als shall adopt an applicable jurisdictional CCyB rate of 2.5%;
- If the pre-announcement period in respect of any increase (including an increase from 0%) is less than 6 months, Als may instead adopt an effective date falling 6 months after the date of the announcement by the relevant authority concerned



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- If the pre-announcement period in respect of any increase (including an increase from 0%) is more than 12 months, Als must instead adopt an effective date falling not more than 12 months after the date of the announcement by the relevant authority concerned.

4.2.2. **Recognition of CCyB rates in excess of 2.5%.** As set out in BCR [...], if the jurisdictional CCyB rate as announced by the relevant authority in an overseas jurisdiction is in excess of 2.5%, the MA, may by notice in writing, given to all Als require Als to adopt the ratio announced by the relevant authority. The MA may take this route if the MA reasonably considers that a jurisdictional CCyB rate in excess of 2.5% is necessary to adequately bolster Als' resilience in view of the risks posed to Als by reason of the excessive credit growth in that jurisdiction. Without limiting the discretion provided by BCR §[...], the MA intends to apply the following criteria to guide the use of this discretion:

- The MA will need to be satisfied that analysis (provided by the relevant authority in that jurisdiction or conducted by the MA itself) of the excessive credit growth and concomitant systemic risks in that jurisdiction strongly supports such a CCyB rate; and
- The MA's assessment of Als' exposures in the relevant overseas jurisdiction supports the conclusion that failing to require Als to comply with that CCyB rate would subject Als, and ultimately the Hong Kong banking system, to significant additional risk by reason of the excessive credit growth in that jurisdiction.

In any case where the jurisdictional CCyB rate recognised by the MA is higher than 2.5%, the MA will publicly announce this decision, with the justification for it.

4.2.3. **Information on other jurisdictions' CCyB rates.** Als are primarily responsible for monitoring CCyB rates and their effective dates in the jurisdictions to which they have private sector credit exposure in order to ensure correct



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calculation of their AI-specific CCyB rates. For this purpose, AIs can use the following sources of information:

- The BIS has indicated that it will maintain a dedicated page on its website listing all extant and pre-announced CCyB rates and their effective dates in any Basel Committee member jurisdiction where the relevant national authority has reported a buffer decision to the BIS.
- The MA will publish, on its website, information on the CCyB in overseas jurisdictions that has been specifically communicated by the relevant authorities in those jurisdictions to the MA.

4.3. Application of exceptional treatment in extraordinary circumstances

4.3.1. **Applying a higher jurisdictional CCyB rate and/or shorter pre-announcement period.** The MA may by notice in writing given to all AIs require AIs to adopt in respect of an overseas jurisdiction:

1. where the jurisdictional CCyB rate as announced by the relevant authority in that jurisdiction is lower than 2.5%, a higher applicable jurisdictional CCyB rate (of not more than 2.5% of RWA) than the jurisdictional CCyB rate set by the said relevant authority (see BCR [...]);²² and/or
2. a shorter pre-announcement period (of not less than 6 months) for an announced CCyB rate increase to become effective than the period determined by the relevant authority in that jurisdiction (see BCR [...]),

where the MA reasonably considers that:

- i. the jurisdictional CCyB rate has been set by the relevant authority at a level (including where the rate is zero because no jurisdictional CCyB rate has

²² See para. 4.2.2 for the case where the MA recognises a jurisdictional CCyB rate above 2.5%.



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been set) which is insufficient to adequately bolster Als' resilience in view of the risks posed to Als by reason of the excessive credit growth being experienced in that jurisdiction; and/or

- ii. with a view to ensuring adequate resilience of authorized institutions, or the effective working of the banking system in Hong Kong, the effective date of the applicable jurisdictional CCyB rate should be different from that of the jurisdictional CCyB rate as announced by the relevant authority of the jurisdiction concerned.

Without limiting the discretion provided by BCR [...], the above might be the case e.g. if:

- A. with respect to i, the relevant authority in the respective jurisdiction has set a jurisdictional CCyB rate that is lower than that corresponding to the Basel Common Reference Guide calculated for that jurisdiction, and the MA does not see sufficient justification for the relevant authority doing so. In such a case, the MA could decide to apply an applicable jurisdictional CCyB rate in respect of the respective jurisdiction that corresponds to the Basel Committee Common Reference Guide calculated for that jurisdiction; or
- B. with respect to i and/or ii, the MA's analysis of available relevant information strongly suggests that the systemic risk affecting Als' exposures in the respective jurisdiction is higher than suggested by the indicators and/or analysis used by the relevant authority in that jurisdiction in setting its jurisdictional CCyB rate and/or the date for its becoming effective.

- 4.3.2. **Applying a longer pre-announcement period.** The MA may, in respect of an overseas jurisdiction, by notice in writing given to all Als, determine for application by Als a longer pre-announcement period (of not more than 12 months and, in the case of an applicable CCyB rate increase, not less than 6 months) for an announced applicable jurisdictional CCyB rate to become effective



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than the period determined by the relevant authority in that jurisdiction, where the MA reasonably considers that, with a view to ensuring adequate resilience of AIs, or the effective working of the banking system in Hong Kong, the effective date of the applicable jurisdictional CCyB rate should be different from that of the jurisdictional CCyB rate as announced by the relevant authority of the jurisdiction concerned (see BCR [...]).

Without limiting the discretion provided by BCR §[...], the above might be the case e.g. if:

- A. the relevant authority in the respective jurisdiction has set a date for an announced jurisdictional CCyB rate to become effective that is less than 12 months after the announcement, and the MA does not see sufficient justification for the relevant authority doing so; and/or
- B. the MA's analysis of available relevant information suggests that systemic conditions in Hong Kong (e.g. AIs' capacity to adjust without unduly impairing credit provision in Hong Kong) call for a longer pre-announcement period.



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Annex 1 – Calculating the Basel Common Reference Guide for Hong Kong

The MA will follow the Basel Committee guidance to calculate the Basel Common Reference Guide for Hong Kong. The calculation involves two steps: (i) calculating the credit/GDP gap with Hong Kong data; and (ii) mapping the credit/GDP gap into the Basel Common Reference Guide, which indicates an appropriate buffer level ranging between 0% and 2.5%.

Credit/GDP Gap (GAP_{CREDIT})

A gap indicator measures the difference between a variable and its long-term trend. The usefulness of a gap indicator is based on the historical observation that a rapid and significant deviation from the long-term trend tends to be unsustainable.

The “credit/GDP gap” is defined as the absolute difference between the credit/GDP ratio and its long-term trend at a certain point in time.

Measuring “credit”

The Basel Committee recommends a broad definition of credit that will capture all sources of debt funding to the non-financial private sector. This definition includes credit provided by the non-bank financial sector and funding raised abroad but excludes public sector debt and interbank debt.

In implementing the Basel Common Reference Guide in Hong Kong, “credit” is defined as the aggregate stock of “total loans and advances” at the Hong Kong offices of AIs (which excludes credit to banks), after deducting the item “other loans for use outside Hong Kong” as published monthly in the Monthly Statistical Bulletin on the MA website.

Trade finance loans are not excluded from the above definition although some of them are used to finance merchandise trades that do not touch Hong Kong. Even in such cases where the underlying trade does not physically touch Hong Kong, it is practically not possible to ascertain that the proceeds of a trade finance loan are indeed used outside Hong Kong. As the Basel



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Committee recommends using the broadest measure possible when in doubt, trade finance loans will not be excluded from the definition of “total loans and advances”. This contrasts with the deduction of “other loans for use outside Hong Kong”, for which the location of “use” is more clearly defined.

At this stage other forms of private credit such as direct cross-border bank lending, corporate bonds and commercial paper are not included in the private sector credit measure, because: (i) the sizes of these markets are much smaller relative to the amount of private credit intermediated by Hong Kong’s banking sector; and (ii) the MA considers that the small incremental benefit of including them is outweighed by the benefit of keeping the definition simple and stable. However, the MA will monitor non-bank sources of credit to the private sector, so as to determine whether they might become sufficiently important at some future point to be included in the definition of credit for CCyB purposes.

Measuring GDP

GDP is defined as the quarterly GDP figures, seasonally-adjusted (based on the X-12 ARIMA method, as used by the Census and Statistics Department of the Hong Kong Government) and then annualized.

Although the credit measure could be updated on a monthly basis, the quarter-end (March, June, September, December) credit figures will be matched with the corresponding quarterly GDP figures to calculate the credit/GDP ratio.

The long term trend of the credit/GDP ratio

The long-term trend of the credit/GDP ratio is identified strictly following the Basel guidance, i.e., using a one-sided Hodrick–Prescott filter with $\lambda=400,000$, which has been shown to work reasonably well across jurisdictions in timing credit cycles.

Using the credit/GDP gap, i.e., the difference of the ratio from its long-term trend, to measure excess credit growth, has the benefit of largely removing the influence of any secular financial deepening that is not associated with excessive credit growth, as the deepening should be captured by an upward-sloping trend.



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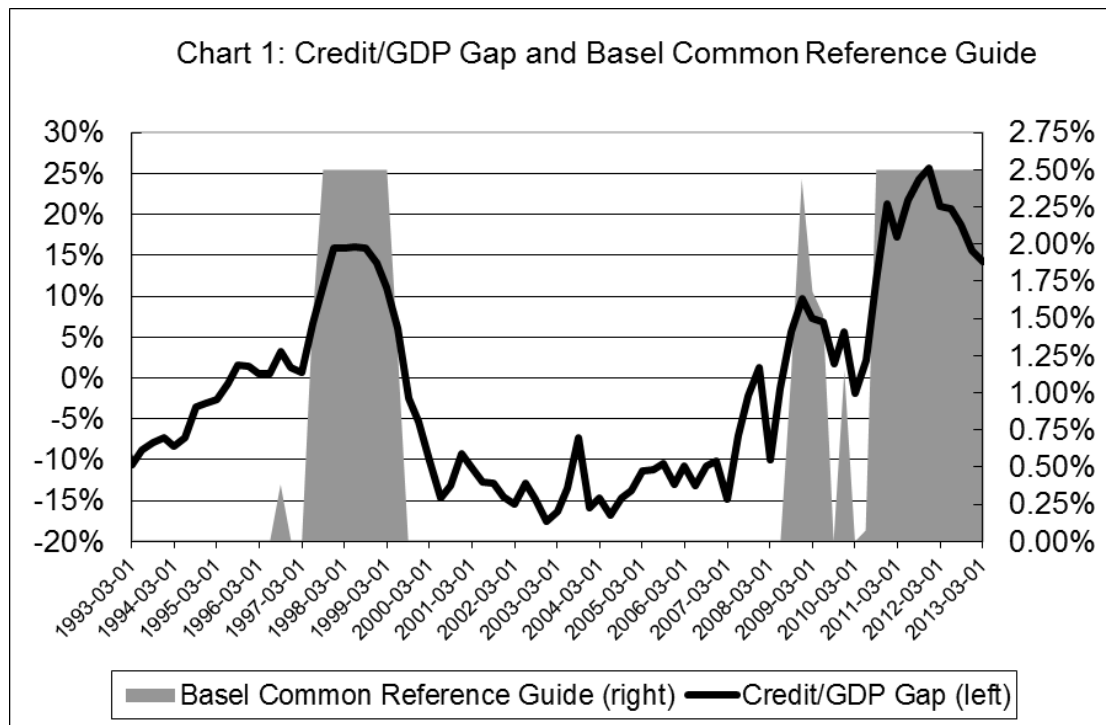
The Basel Common Reference Guide

The Basel Common Reference Guide (CCyB_{CREDIT}) is determined by the credit/GDP gap using the following formula, bounded by a minimum of 0% and a maximum of 2.5%.

$$CCyB_{CREDIT} = 0.3125 \times (GAP_{CREDIT} - 2)$$

The Basel Committee has chosen the parameters of the formula so that CCyB_{CREDIT} is 0% when GAP_{CREDIT} is 2%, CCyB_{CREDIT} is 2.5% when GAP_{CREDIT} is 10%, and CCyB_{CREDIT} increases linearly between the two thresholds.

Chart 1 below illustrates how the credit/GDP gap and the corresponding Basel Common Reference Guide would have evolved historically in Hong Kong.





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Annex 2 – Calculating the Composite CCyB Guide

Unlike the Basel Common Reference Guide (see Annex 1), which is determined solely by the credit/GDP gap, the Composite CCyB Guide developed for Hong Kong will be determined by the property price/rent gap, the credit/GDP gap, and the interaction between these two gaps. Once the Basel Common Reference Guide has been calculated as described in Annex 1, the remaining calculation involves three steps, namely (i) calculating the property price/rent gap; (ii) mapping the property price/rent gap into a Property Buffer Guide; and (iii) calculating the Composite CCyB Guide.

Property Price/Rent Gap ($GAP_{PROPERTY}$)

The “price/rent gap” is the relative difference between the residential price/rent ratio and its long-term trend, i.e. the absolute difference expressed as a percentage of the trend.²³

The price/rent ratio is defined as the ratio of the private domestic property index over the private domestic property rental index, published by the Rating and Valuation Department of the Hong Kong Government. The two index series are available on a monthly frequency, but the price/rent gap is calculated with quarter-end data points (March, June, September and December) only, consistent with the credit/GDP ratio time series.

The long-term trend of the price/rent ratio is identified based on the same method as that used for the credit/GDP ratio (see Annex 1). The same Hodrick-Prescott filter parameter of $\lambda=400,000$ is chosen because, as shown in Chart 2 below, it is observed that in Hong Kong the average length of the property price cycle is similar to that of the credit cycle, and both are substantially longer than the business cycle.

The data on prices and rents of residential properties in Hong Kong are arguably more “comparable” than in most other markets, as both are based on

²³ This approach of normalising the property price gap by the trend is followed also e.g. in M. Drehmann, C. Borio, L. Gambacorta, G. Jiménez and C. Trucharte, “Countercyclical capital buffers: exploring options”, *BIS Working Papers* No. 317, July 2010.



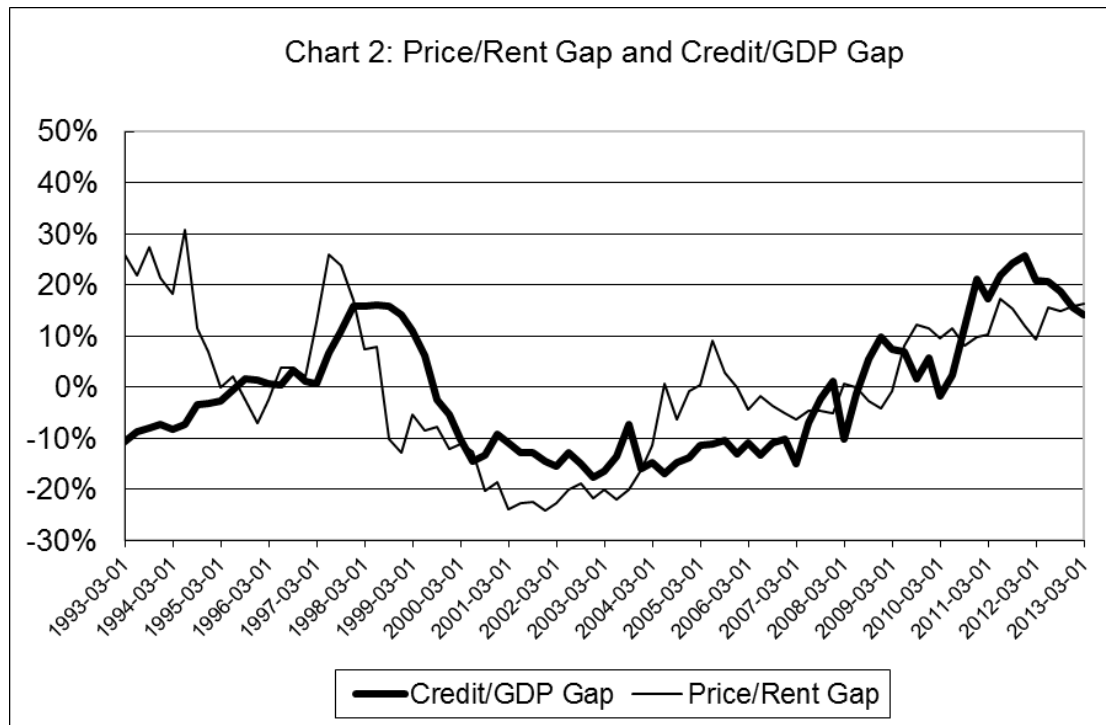
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a very liquid and relatively homogenous pool of properties mostly located in 80 or so well-known developments. In contrast, in most other jurisdictions, it is common that the rental market is concentrated in certain sectors (e.g. urban apartments, many of which may be corporate- or public-sector-owned) but limited or practically non-existent in the other sectors where most sales transactions take place (e.g., owner-occupied suburban detached houses), creating an “apples-to-oranges” comparison of average prices and average rents.

Although both prices and rents can be cyclical, they respond to different demand/supply dynamics, with prices having significantly more room for deviating from fundamentals over sustained periods. Therefore, the price/rent gap is considered to be an arguably better indicator of property price bubbles than the property price gap alone.





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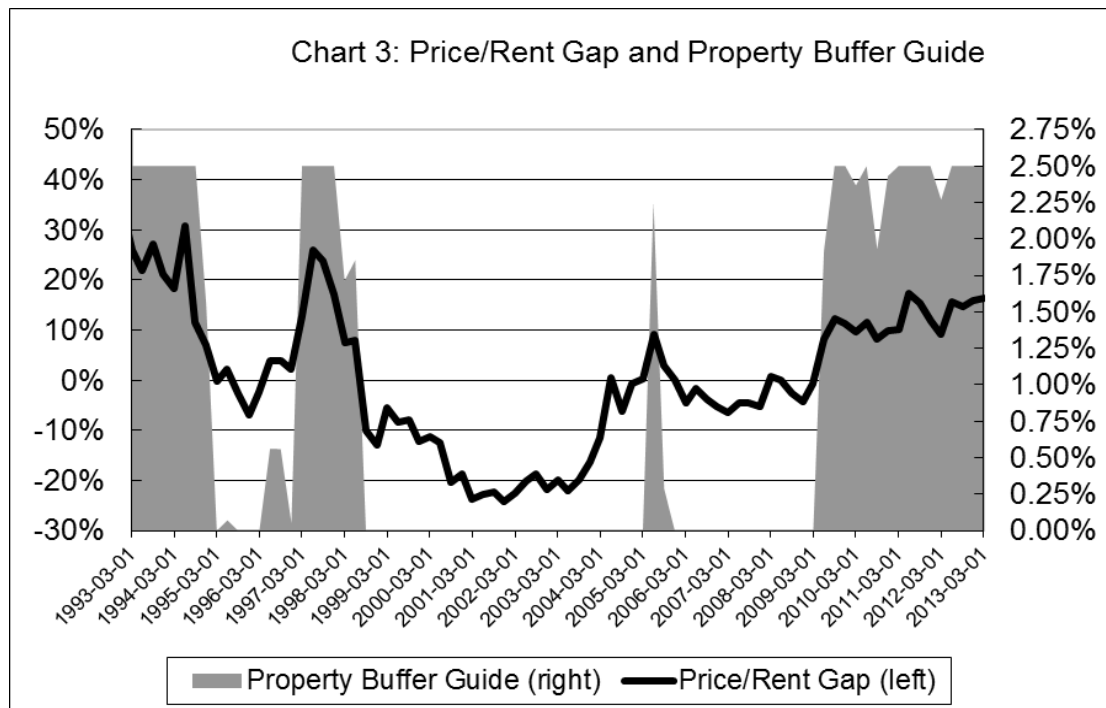
Property Buffer Guide ($GAP_{PROPERTY}$)

Similar to the Basel Common Reference Guide, the Property Buffer Guide is determined by the price/rent gap using the following formula, bounded by a minimum of 0% and a maximum of 2.5%.

$$CCyB_{PROPERTY} = 0.3125 \times (GAP_{PROPERTY} - 2)$$

The parameters of the formula are chosen such that $CCyB_{PROPERTY}$ is 0% when $GAP_{PROPERTY}$ is 2%, $CCyB_{PROPERTY}$ is 2.5% when $GAP_{PROPERTY}$ is 10%, and $CCyB_{PROPERTY}$ increases linearly between the two thresholds.

Chart 3 below illustrates how the price/rent gap and the corresponding Property Buffer Guide would have evolved historically.





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The Composite CCyB Guide ($GAP_{COMPOSITE}$)

The Composite CCyB Guide (bounded by an upper limit of 2.5%), as described by the formula below, is 1.1 times the geometric average of (i) the Basel Common Reference Guide ($CCyB_{CREDIT}$) computed according to Annex 1; and (ii) the Property Buffer Guide ($CCyB_{PROPERTY}$) computed according to this Annex.

$$CCyB_{COMPOSITE} = \text{Min} \left[2.5\%, 1.1 \times \sqrt{CCyB_{CREDIT} \times CCyB_{PROPERTY}} \right]$$

The formula is designed and calibrated in such a way that activation of the buffer will only tend to be signalled when both guides confirm each other in indicating a buffer level over 0% (i.e. activation will tend not to be signalled if only either the Basel Common Reference Guide or the Property Buffer Guide indicates a non-zero CCyB rate level). This is achieved with the use of the geometric average. Using the geometric, instead of the arithmetic, average to combine the two guides ensures that the Property Buffer Guide's influence will be reduced when the credit/GDP gap remains low, and vice versa. This design feature thus takes into account, for example, a situation in which the credit cycle might not currently be the main driver of the property price cycle, or a situation in which the credit boom is not associated with a property market boom.

As the geometric mean of two guides which are not perfectly correlated will always have a smaller standard deviation than the Basel Common Reference Guide alone, a multiplier (set at 1.1) is used to recalibrate the statistical distribution of the Composite CCyB Guide back to the original Basel Committee expectation for the Basel Common Reference Guide.

By combining information on the degree to which both credit growth and property market valuations deviate from their respective long-term trends, the Composite CCyB Guide reflects the greater significance of the joint occurrence of large credit/GDP and property price/rent gaps in signalling the build-up of systemic risk and the probability of a banking crisis as compared with the credit/GDP gap alone.²⁴ This feature makes the Composite CCyB Guide particularly useful for signalling the need for CCyB build-up during most

²⁴ See e.g. C. Borio and P. Lowe, "Asset prices, financial and monetary stability: exploring the nexus", *BIS Working Papers* No. 114, July 2002.



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of the expansive phase of the credit cycle in an economy like Hong Kong's, which has been prone to pronounced property price cycles. However, evidence across mostly developed European countries shows that property prices have historically tended to peak around 2 years before a crisis.²⁵ The MA will therefore interpret the Composite CCyB Guide with special caution when it signals the reduction of the jurisdictional CCyB rate in a situation where property prices turn downwards while the credit/GDP gap remains large and there are no indications of banking system stress.

The composite buffer formula is sufficiently flexible to be easily modified in the future to incorporate “richer” information. For example:

- i. a better understanding of the interaction between the credit cycle and the property price cycle may suggest a recalibration, e.g. by increasing the multiplier from the current value of 1.1 (which is a conservative value);
- ii. the weights used in calculating the geometric average may be adjusted based on a better understanding of the interaction between the two guides. In the current methodology, a simple average is used, i.e. the Basel Common Reference Guide and the Property Buffer Guide carry equal weights;
- iii. the inclusion of the price/rent ratios of private office, retail, and flatted factory properties and the setting of weights for these property types according to their relative importance in Hong Kong may also be considered.

²⁵ See e.g. M. Drehmann, C. Borio, and K. Tsatsaronis, “Anchoring Countercyclical Capital Buffers: The Role of Credit Aggregates,” *BIS Working Papers* No. 355, November 2011 and M. Drehmann and M. Juselius, “Evaluating early warning indicators of banking crises: Satisfying policy requirements,” *BIS Working Papers* No. 421, August 2013. However, even if property prices peak early, they tend to start falling from so high a level that it will likely take them some time before they fall deep enough for the Composite CCyB Guide (driven by both the credit/GDP gap and the property price/rent gap) to signal a significant reduction in the CCyB rate. Moreover, to the extent that in Hong Kong rents are more flexible than in most other countries, the price/rent ratio in Hong Kong will tend to fall more slowly than if rent levels were rigid. Therefore, the use of a property price/rent gap in the Property Buffer Guide (in addition to the latter's combination with the Basel Common Reference Guide driven by the credit/GDP gap in the Composite CCyB Guide) could reduce the likelihood of too early a signal for CCyB reduction.



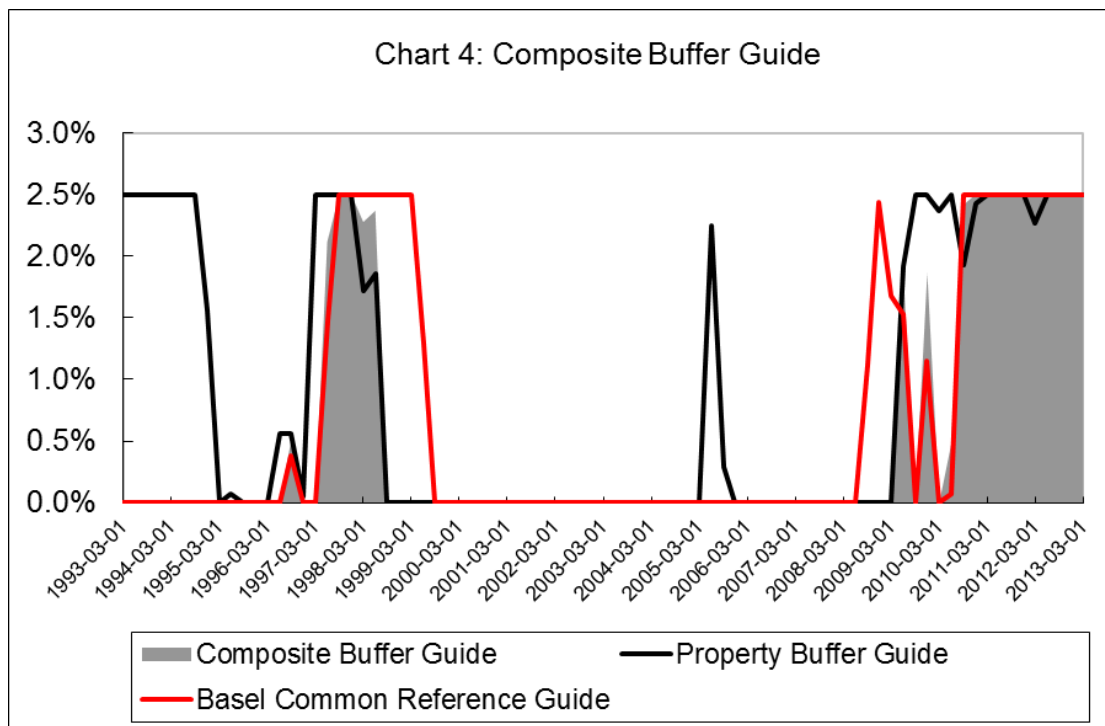
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Chart 4 below illustrates how the Basel Common Reference Guide, the Property Buffer Guide, and the Composite CCyB Guide would have evolved historically. It can be observed from the Chart that:

- i. the Basel Common Reference Guide does not always prescribe the same buffer level as the Property Buffer Guide, as the credit cycle and the property price cycle are not fully synchronized;
- ii. the Composite CCyB Guide normally prescribes buffer changes that are confirmed by signals from both guides.





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Annex 3 – Buffer Release: The Indicative CCyB Ceiling

Two primary stress indicators are used to capture signs of banking system stress:

- i. Interbank risk spread: the spread of the 3-Month HIBOR rate over the corresponding risk-free rate (the 3-Month Overnight Index Swap rate). The lowest value over a 30-day period is proposed to be used, so that only a persistent spike in the spread can potentially trigger the release. This indicator is more relevant during sudden, acute stress episodes.
- ii. Loan quality indicator: Quarter-on-quarter change (in percentage points) of the gross classified loans to total loans ratio, based on the “Asset Quality of Retail Banks” statistical table published in the MA’s Monthly Statistical Bulletin. This indicator is more relevant when systemic risks play out more gradually.

Although many other indicators (e.g., CDS spreads, impairments of mortgage securities, sovereign credit spreads, bankers’ sentiment or opinion surveys) may help capture more specific problems, the above two indicators have been chosen as primary stress indicators for the Initial Reference Calculator because:

- i. they can be seen as general symptoms expected to be associated with a wide variety of underlying banking sector problems, including those that may not have been experienced in previous crises; and
- ii. they are currently not considered to be particularly susceptible to potential for manipulation.

Either one of these two indicators alone could signal partial or full release of the buffer by activating the Indicative CCyB Ceiling according to Table 1 on page 23. When the two buffer ceilings drawn from the interbank risk spread and the loan quality indicator differ, whichever is lower would apply. The Indicative CCyB Ceiling will affect the Initial Reference Calculator only when it is lower than the Composite CCyB Guide determined by the two primary gap indicators.

To minimise the prospect of buffer level reversal within a short period of time and to reduce uncertainty in AIs’ capital planning, the Indicative CCyB Ceiling



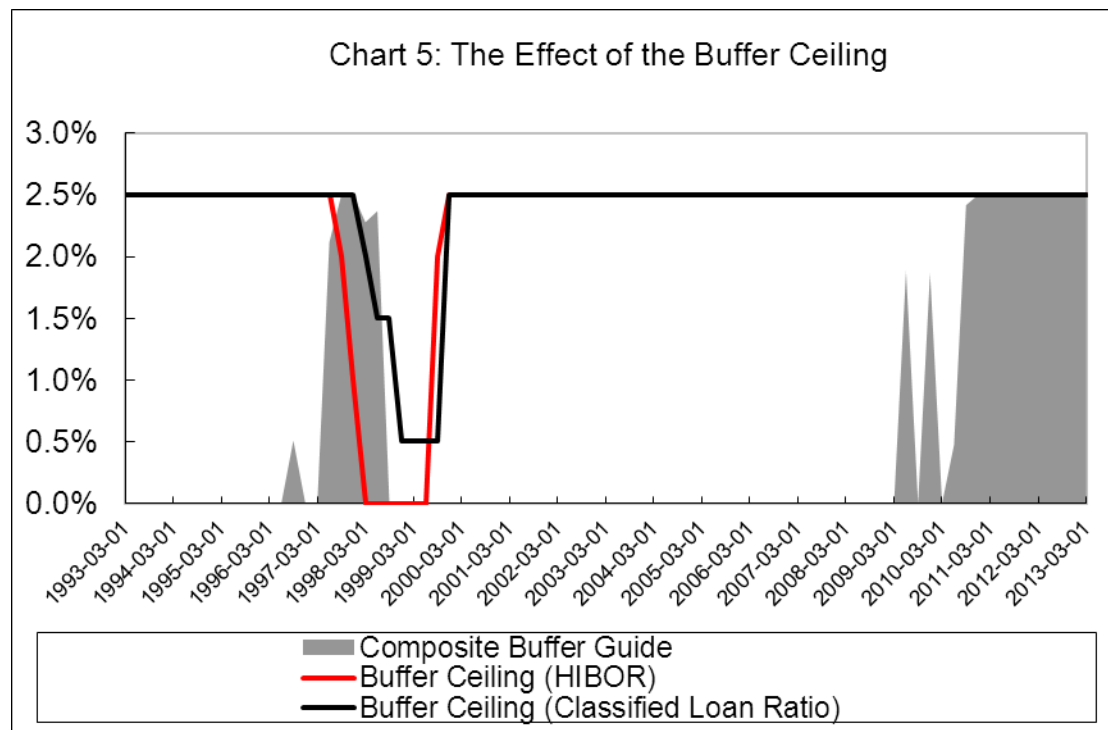
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will generally apply for a certain minimum period of time (“Indicative Minimum Ceiling Duration”). Absent any decision to diverge, the minimum period will depend on the severity of the situation according to Table 1.

Chart 5 below illustrates how the Indicative CCyB Ceiling activated by the two primary stress indicators would have evolved historically. During the Asian Financial Crisis, the HIBOR spread would have reduced the Indicative CCyB Ceiling to zero very early into the crisis, later further confirmed by the Classified Loan Ratio. During the Global Financial Crisis, the Indicative CCyB Ceiling would not have been activated, as the local market distress situation during October 2008 turned out to be short-lived, and in fact Hong Kong subsequently experienced flight-to-safety capital inflows.





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Annex 4 – Illustrative back-testing of the Initial Reference Calculator

Chart 6 below illustrates how the Initial Reference Calculator would have evolved historically from early 1993 to early 2013, influenced by the combined effect of the four primary gap or stress indicators (the credit/GDP gap, the property price/rent gap and the Basel Common Reference Guide are also shown in the chart).

After the property price boom of the early 1990's had moderated by the end of 1994, it was only shortly before the Asian Financial Crisis (AFC) erupted that Hong Kong began to show again signs of major overheating in credit and property markets (as reflected in both the credit/GDP and property price/rent gaps). Correspondingly, the Initial Reference Calculator would have started to signal a significant Hong Kong CCyB rate only in 1997, but reaching 2.5% within a short period of time. However, as the AFC led to a sustained spike in the HIBOR rate shortly after that, the Indicative CCyB Ceiling would have signalled a significant release of the buffer, cutting the CCyB rate to 1% by the end of 1997 and leading to a full release of the CCyB by early 1998 — i.e. before the hypothetically announced activation of the CCyB would have come into effect (given a 12-month pre-announcement period).

In the aftermath of the AFC and the ensuing prolonged economic recession in Hong Kong, both credit and property prices collapsed, and both the credit/GDP and property price/rent gaps stayed mostly negative through 2007. Correspondingly, the Initial Reference Calculator would not have signalled any positive Hong Kong CCyB rate throughout that period.

In 2009-2010, property prices rose again sharply as capital flowed into Hong Kong seeking a higher yield. As a result, the property price/rent gap rose beyond 10%, and this would have led the Property Buffer Guide to signal a 2.5% CCyB rate. However, during the same period, due to the weak global economic environment, the credit/GDP gap subsided from a 2008 peak, so that the Composite CCyB Guide would only have signalled two transient activations of the CCyB which would have been reversed before becoming effective.

Beginning in late 2010, both credit growth and property prices moved upwards significantly, so that both the credit/GDP gap and the property price/rent gap stayed mostly above 10% into early 2013 (the end point of the data used in



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this back-testing exercise). Consequently, the Initial Reference Calculator would have signalled a 2.5% Hong Kong CCyB rate during that period.

It should be noted that both the Asian Financial Crisis (1997-1998) and the Global Financial Crisis (2007-2009) should be considered as originating largely outside of Hong Kong. The Initial Reference Calculator based on local conditions is not designed to anticipate such external events or their severity. However, the MA recognizes that the same set of primary gap indicators (i.e., the credit/GDP gap and the price/rent gap) and the same Basel Common Reference Guide, Property Buffer Guide and Composite CCyB Guide, if constructed also for globally or regionally important economies (in particular those with strong economic and financial linkages to Hong Kong), may provide early warnings of potential external shocks and inform the MA's CCyB decisions. The MA will consider incorporating some such constructions into the set of Comprehensive Reference Indicators (see Table 2 on page 26) in so far as other countries make the relevant information available.

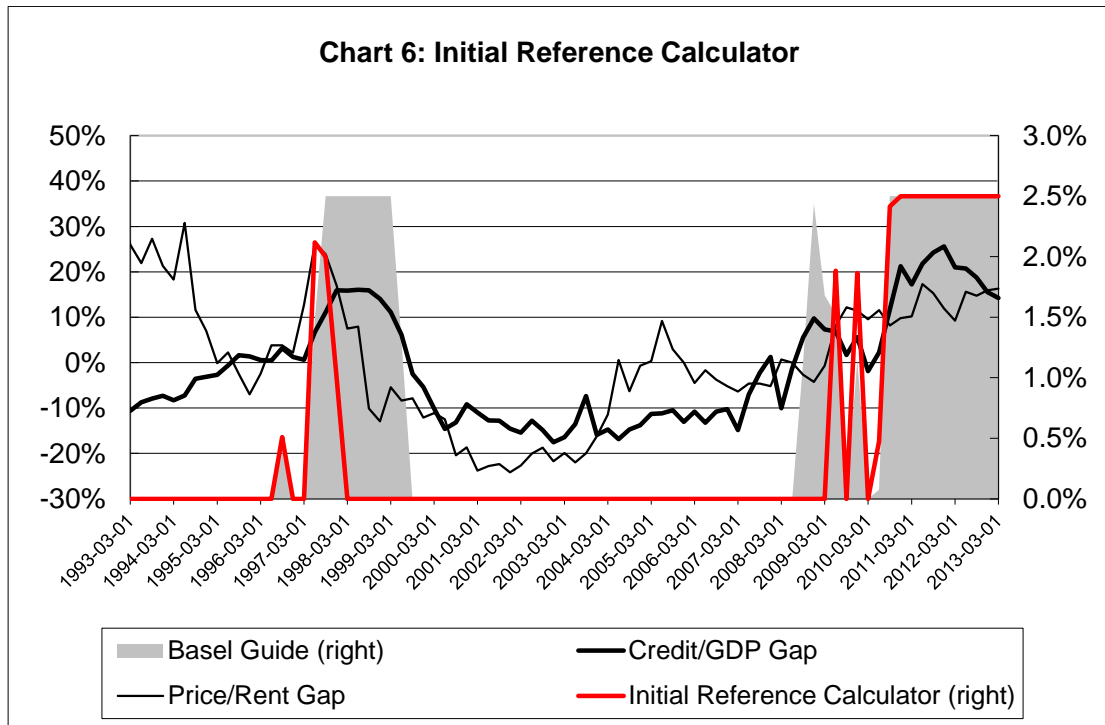
The effectiveness of the Initial Reference Calculator should not be judged solely with the benefit of hindsight, but might more appropriately be judged against policymakers' actual stance at the time. Using the latter criteria, the Initial Reference Calculator as determined by a narrow set of four pre-specified indicators seems to be reasonably consistent with the macroprudential stance of policymakers at the relevant times (as reflected for example by the actual historical changes in the LTV ratio cap).



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Annex 5 – Mapping the Comprehensive Reference Indicators to a macroprudential policy stance

The following is an illustration in general terms of how the Comprehensive Reference Indicators may suggest a macroprudential policy stance depending on the phase of the credit cycle:

Expansionary phase of the credit cycle:

- Tightening: A tightening stance may be suggested if, in addition to the observed positive credit/GDP and property price/rent gaps, the systemic risk picture is prevalently shaped by the joint presence of several of the following factors:
 - high and rising aggregate leverage and liquidity/maturity/currency mismatches within financial institutions;
 - a broad-based major compression of collateral haircuts showing high and rising leverage in collateralized lending;
 - market-based risk measures (e.g. significantly compressed credit spreads) suggesting exuberance or risk perceptions that are overly optimistic;
 - unusually low model- or ratings-based risk-weights;
 - compressed net interest margin, accompanied by indications of under-provisioning or high risk-taking;
 - high and rising aggregate leverage in non-financial sectors;
 - abnormally high valuations of major asset classes commonly used as collateral for credit;
 - mounting significant macroeconomic imbalances (e.g. fiscal or current account deficit); and
 - relatively high levels of average return on assets (ROA) in the banking system.

A key factor in interpreting the above indicators is the extent to which they (and other circumstantial evidence) may indicate mounting fragility within the banking system and the broader economy to adverse solvency and/or liquidity shocks once risks crystallize.



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- **Loosening:** The absence of the above indicators or the presence of their opposites may suggest a loosening stance relative to the Initial Reference Calculator.

Contractionary phase of the credit cycle:

- **Loosening:** A loosening stance (i.e. one supporting a faster release of an extant CCyB) may be suggested if there is relatively compelling additional evidence of a credit crunch (in addition to that shown in the primary stress indicators)—for example, the joint occurrence of several of the following:
 - a broad-based spike in collateral haircuts (signalling deleveraging in collateralized lending);
 - market-based risk measures (e.g. sharply rising credit spreads) suggesting high expected losses in the short term;²⁶
 - rising model- or ratings-based risk-weights;
 - rising loan delinquencies; and
 - rising asset write-offs or loss provisions.
- **Tightening:** A tightening stance may be suggested if there is weak additional evidence of any credit crunch.

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²⁶ However, it is recognised that the signal provided by credit spreads tends to be very “noisy” and would often have called for a release of the CCyB at the wrong time if adopted as a single primary indicator—see the 2011 paper by Drehmann, Borio and Tsatsaronis mentioned in footnote 7 above. Moreover, such market-based indicators may not be available or may be based on instruments traded in excessively thin or illiquid markets. Accordingly the signals they provide will need to be interpreted with caution.