檔案編號：G10/24/8C

立法會參考資料摘要

國際貨幣基金組織
二零二一年金融體系評估計劃

引言

本文件載述國際貨幣基金組織(基金組織)根據金融體系評估計劃(評估計劃)[1]對香港金融體系所作最新評估的結果。

二零二一年金融體系評估計劃

2. 基金組織已完成對香港在評估計劃下的新一輪評估，內容包括全面審視香港金融體系所面對的系統性風險，以及就香港金融界別以下範疇進行詳細技術性評估:(a)宏觀審慎監管政策及系統性風險監察；(b)各金融業的微觀審慎規管及監管；(c)金融市場基建；(d)金融安全網及危機管理安排；以及(e)金融科技及金融創新。除了對香港金融體系進行全面研究外，評估計劃代表團於二零一九年九月到訪香港，其後因 2019 冠狀病毒病疫情於二零二一年二月和三月改以網上形式進行第二輪訪談，與有關當局和市場參與者討論和交換意見。基金組織對香港所作評估及加強金融體系的建議，載於《金融體系穩定評估報告》。報告已於二零二一年五月二十一日提交基金組織執行董事會會議討論，並獲得通過。基金組織於二零二一年六月九日發表《金融體系穩定評估報告》。

1 評估計劃是基金組織和世界銀行的一項聯合計劃，旨在通過全面和深入審視參與經濟體的金融體系，評估其金融系統的穩健性、規管及監管架構的質量，以及其管理和解決金融危機的能力。香港被界定為四十七個具有系統重要性的經濟體之一，須進行評估計劃下的強制評估。香港上一次的評估計劃在二零一四年完成。

3.　　《金融體系穩定評估報告》載於**附件**，當中提出的主要觀察和建議載於下文各段。

整體評估

4.　　代表團再次肯定香港作為主要國際金融中心的地位，其重要性見諸於以下事實：香港銀行體系的資產相當於本地生產總值約 9.5 倍；人壽保險業規模位居全球前列，二零一九年保費與本地生產總值比率為約 18%；香港擁有全球最大股票交易所之一，市值達 6.1 萬億美元；香港作為全球資產及財富管理中心，二零一九年的管理資產額相當於本地生產總值的 10 倍；香港也是亞洲區內最大的外匯掉期市場。

5.　　代表團讚揚香港具備穩健的金融體系、健全的規管和監管架構，以及有效的宏觀經濟和審慎政策，提供了重要緩衝，足以應對當前經濟放緩的環境和未來的衝擊。在龐大外匯儲備支持下，聯繫匯率制度仍然是維持香港金融穩定的基石。在金融健全方面，代表團指出香港在打擊洗錢和恐怖分子資金籌集方面建立了穩健的制度，並在這基礎上穩步完善機制。代表團亦肯定政府和監管機構過去多年持續提升香港金融基建和增強香港競爭力所作出的努力。

有關系統性風險的觀察

6.　　代表團認為，香港作為一個與內地具廣泛聯繫的細小開放型經濟體，容易受到三個主要的宏觀金融不穩定因素影響，分別是內地經濟放緩、高地產估值，以及環球市場波動和本地風險情緒變動。基於這些不穩定因素，代表團針對銀行、投資基金，以及家庭和企業界別的抵禦能力進行了一系列壓力測試。整體而言，代表團認為即使在極端情況下，即上述各項不穩定因素所帶來的風險[2] 同時發生，以及 2019 冠狀病毒病疫情持續不斷，香港的金融體系仍然維持穩健強韌。

[2] 這些風險包括加速去全球化和保護主義抬頭、全球風險溢價急劇上升、中美緊張局勢升級，以及地產市場急劇調整和需求下降。

7.	受惠於銀行業的高資本緩衝和衝擊發生前取得的盈利，代表團認為香港銀行體系即使在極端情況下面對宏觀金融衝擊仍能保持穩健，尤其是所有銀行繼續維持在最低監管資本要求之上，而銀行的流動性狀況在疫情期間表現依然良好。儘管部分境外分行因較依賴無抵押的銀行同業拆借資金和無法利用本地存款基礎，而較易受到流動性壓力的影響，但本地銀行仍然具備充足流動資產以應對現金流出的壓力。

8.	投資基金方面，代表團指出大規模贖回衝擊引發的投資基金沽售潮，不太可能對資產價格造成重大影響。與國際投資基金相比，香港註冊成立的投資基金有更高的現金緩衝，並且能更好地抵禦極端贖回衝擊。以外幣計價的股票基金、規模較小的基金、固定收益基金，以及面向較高風險資產市場的基金，似乎較容易受到流動性壓力的影響。

9.	家庭和企業界別方面，代表團指出雖然香港家庭債務增長迅速，但總體上仍在可控範圍內。在極端情況下，低及中收入家庭的償債比率過高的話，或會面對債務困擾。非金融類企業，尤其是有大量內地業務的地產企業，其風險債務及違約風險在嚴峻的情況下亦可能顯著增加。

10.	代表團亦探討了更廣泛的氣候變化議題，並指出香港經濟無可避免也會面對氣候變化帶來的挑戰。代表團歡迎當局就應對氣候變化風險所作出的努力，包括計劃於二零二五年前實施與氣候有關的強制性財務披露要求，採用將由國際可持續金融平台制訂的共通綠色分類目錄，以及推動為金融體系進行以氣候為重點的壓力測試。

有關金融體系的觀察

<u>宏觀審慎監管政策及系統性風險監察</u>

11.	代表團讚揚香港有關宏觀審慎監管政策的監察體制行之有效、運作良好、具有清晰的法律框架，並在分別由財政司司長和財經事務及庫務局局長主持的金融監管機構議會和金融市場穩定委員會下，建立了緊密的跨機構協調和有效的溝通

機制。鑑於宏觀審慎政策在維持香港金融穩定方面擔當重要角色，尤其能有效應對住宅價格上升和加強銀行業緩衝資本，代表團認為當局目前處理住宅及商用物業的系統性風險和逆周期緩衝資本的政策立場依然合適。

各金融業的微觀審慎規管及監管

12. 代表團認為，當局的金融體系微觀審慎監察政策與時並進而穩健。具體而言：

(a) 銀行業方面，不論是整體上或針對代表團所關注的跨境聯繫和樓市風險，香港金融管理局（金管局）對銀行業的監管及規管持續穩健。代表團注意到香港已有效落實《巴塞爾協定三》規管架構以及本地與跨境合作安排，並加強了規管銀行的住宅按揭貸款業務；

(b) 證券業方面，自二零一四年上一次評估計劃以來，現有的交易系統規管及監管架構已得到加強。當局提升了對中介機構提供自動交易服務的監管，而證券及期貨事務監察委員會（證監會）亦就認可交易所及結算所進行定期現場審查；以及

(c) 保險業方面，代表團察悉在保險業監管局（保監局）成立後，保險業的規管及監管已獲顯著加強。保監局的規管權力已擴大至涵蓋保險公司和保險中介人，並擔任相關保險公司的處置機制當局。保監局依據明確的法定目標行事，並與政府保持緊密合作。

金融市場基建

13. 代表團認為，香港期貨結算有限公司（結算公司）恪守金融市場基礎設施監管原則的國際標準，並在穩妥、連貫和透明的法律基礎上履行其職能。為盡量減低信貸及流動性風險，結算公司設立健全的風險管理架構，包括採用嚴格的壓力測試方法和取得合資格的流動性資源。結算公司亦設有明確的規則和程序處理和管理參與者的違約情況、建立風險管理架構處理

運作風險，以及訂立業務應變機制應對可能造成運作受阻的重大風險。

金融安全網及危機管理安排

14. 代表團認為，隨着二零一七年制訂的《金融機構（處置機制）條例》（《處置條例》）（第 628 章）設立了全面的處置機制，危機管理架構已得到顯著提升，在跨界別涵蓋方面尤其可取。政府和三個金融監管機構（即金管局、證監會和保監局）在根據《處置條例》實施針對個別機構的處置計劃方面起了良好的開端。

金融科技及金融創新

15. 代表團指出，香港金融科技業迅速發展，政府、監管機構和各持份者亦積極推動香港成為亞洲區內的金融科技樞紐。代表團認為香港具備優秀條件，可利用其金融服務方面的傳統優勢，推動各項金融科技措施。政府已採取積極主動的方式支援金融科技發展，包括鼓勵創新和競爭，並促進普及金融。監管機構已因應業界發展和風險形勢的變化，完善和推出各項監管規定。

16. 基金組織代表團根據其觀察，提出多項提升我們金融體系的建議。不少建議反映了當局持續進行的完善監管措施，其餘的已獲當局接納在中短期內實施。

具體的建議及我們的回應

17. 政府歡迎基金組織再次確認香港作為國際金融中心的地位，不但具有健全的規管及監管框架、有效的宏觀經濟和審慎政策，同時擁有穩健的金融體系，具備足夠緩衝抵禦衝擊。這印證政府一直以來致力於維護金融體系穩定和健全的決心。

18. 我們也感謝基金組織為確保我們金融體系持續穩健而提出的建議。就代表團的建議當局採取了相關措施回應，並會按適當情況加強香港的金融架構。主要建議和我們的回應如下：

(a) 宏觀審慎監管政策及系統性風險監察 - 代表團認為，在金融監管機構議會和金融市場穩定委員會的領導下，香港的宏觀審慎架構組織健全，但仍有空間進一步提升，以加強系統風險評估和公眾溝通。代表團建議收集有關銀行面對非銀行內地機構的風險；銀行業（包括投資基金）、家庭債務和公司貸款以外的跨境風險；以及跨界別（尤其是非銀行金融機構）債權方面的更全面和更細緻數據，從而加強系統性風險監察架構。把非銀行金融機構，尤其是從事按揭貸款的機構，納入宏觀審慎規管範圍，亦有助加強有關架構。具體來說，適當地加強定期監察從非銀行貸方（例如地產發展商和非接受存款公司）向家庭提供的貸款和收集相關數據，能避免宏觀審慎政策出現漏洞。

目前由財政司司長和財經事務及庫務局局長直接監督的高層次跨界別金融監管機構議會和金融市場穩定委員會，已能讓政府與金融監管機構和相關部門有效監察和討論涉及跨界別規管或系統性影響的議題。我們感謝代表團的意見，同時注意到非銀行類金融界別，包括非銀行貸款，目前已在監察範圍內。政府和金融監管機構會考慮進一步措施，加強對金融系統性風險的監察，並根據已識別的系統性風險，考慮有否需要將非銀行金融機構納入宏觀審慎規管範圍；

(b) 銀行業監管 - 代表團建議加強監察在香港設有外資銀行分行和附屬機構的銀行集團，包括持續監察銀行集團對內地非銀行類客戶的集中風險承擔。代表團亦認為儘管金管局享有實際運作上的獨立性，但建議更新《銀行業條例》（第 155 章），以

確保金管局在法律上的運作獨立性。

事實上，金管局的系統性風險監察工作一直涵蓋境外銀行分行，而境外銀行分行須遵守與本地銀行相近的監管標準。金管局會繼續密切監察銀行的內地相關風險承擔。《銀行業條例》賦予行政長官發出指示的備用權力有其必要性，反映《基本法》下政府負有最終責任制訂貨幣及金融政策，以及監管金融市場；

(c) 保險業監管 - 代表團注意到，目前只有全球具系統重要性的保險公司才被納入《處置條例》的涵蓋範圍，因此建議保監局對其他保險公司進行評估，以了解應否對該等保險公司進行全面的處置方案規劃。對於由保險與其他金融界別之間潛在相互聯繫而產生的任何系統性風險，保監局應加以識別和評估。

保監局現正建立一個宏觀審慎的監察框架，其中包括處置的整體方法和作為處置機制當局的管治架構、評估保險公司系統重要性的方法，以決定是否將相關保險公司納入《處置條例》的涵蓋範圍，以及一套持續進行監察和風險分析的工具。該框架預計將於二零二一年年底建立完成；

(d) 證券業監管 - 代表團建議證監會優先處理場外股份交易的相關工作，並探討方式，以便至少收集由非交易所成員所進行而目前未有匯報作市場監察之用的場外交易資料。

為了加強對非交易所成員場外交易的監察，證監會最近就香港交易及結算所有限公司（香港交易所）為上市股份引入場外證券交易匯報制度的建議徵詢公眾意見。證監會參考諮詢所得意見後，會敲定匯報制度的實施細節；

(e) 金融市場基建 - 代表團認為，雖然結算公司現時的混合組織架構[3] 行之有效，但對結算公司董事會的角色和問責帶來不確定性。代表團建議，結算公司應訂立設有獨立董事會的專屬管治架構，包含非執行董事會成員和獨立的風險管理委員會，並具備下放的關鍵職能。

當局表示，香港過去亦曾採取分散管治職能的做法，但事實證明這對香港市場而言並不合適。與此同時，香港交易所已就其整體風險管理和相關的管治結構進行獨立檢討，並會在徵詢證監會意見後落實有關建議，以加強其整體風險管理；

(f) 金融安全網及危機管理安排 - 基於存款保障制度應成為香港整體金融處置制度的一部分的考慮，代表團建議擴大香港存款保障委員會（存保會）的職責範圍，使存保會能夠分擔部分處置費用。代表團亦建議擴大存款保障計劃下的存戶優先待遇安排，使其與處置制度下的政策一致，並檢視存款保障計劃基金的規模和徵費的靈活性。

我們認為，香港的存款保障計劃主要擔當支付的角色，其首要目標是在銀行倒閉時保護消費者，而在「大得不能倒」的情況下相關銀行的處置方案會根據《處置條例》的制度另外得到處理。設立存款保障計劃基金的目的，在於在支付情況下承擔差額損失和財務成本，不應為大規模地處置大型而複雜的金融機構所需成本作出貢獻。至於為所有存款引入存戶優先待遇的做法，我們認為由於處置和破產的性質不盡相同，加上存款保障計劃並非香港處置機制的一部分，因此劃一債權人在處置和破產的待遇，做法並不合適；以及

[3] 結算公司的管治架構是香港交易所控股公司的一部分。結算公司擁有混合管治架構，包括具有本身資本和董事會的獨立法律實體，而所有關鍵職能（包括風險管理和內部審計）均在香港交易所集團的層面上建立，涵蓋了整個集團的活動，包括交易、結算、交收、中央存管、數據收集等。

(g) 金融科技及金融創新 - 代表團建議當局應着手擬訂金融業界和科技服務提供者之間的網絡相互依存關係，以協助識別潛在系統性風險、找出風險轉移渠道、制訂監管方式，以及讓金融業界的關鍵參與者採用通用工具和計劃。代表團亦建議當局繼續監察虛擬資產交易活動，並識別對金融系統帶來的潛在風險。

雖然一些監管要求會因應金融科技的業務模式而有所調整，但一般來說，通過金融科技提供的金融服務仍須遵守適用於持牌金融機構的同一套監管要求。金管局、證監會和保監局的監管沙盒相互協調運作，為跨界別金融科技產品的試驗提供「一點通」切入，以確保監管的一致性。當局會借鑑境外監管機構的經驗，探討擬訂金融業網絡之間相互依存關係的可行性。我們亦會繼續監察虛擬資產活動，並推進在《打擊洗錢及恐怖分子資金籌集條例》（第 615 章）下規管虛擬資產服務提供者的立法建議。

宣傳安排

19. 我們會配合基金組織發表《金融體系穩定評估報告》，於二零二一年六月九日發布新聞稿。

查詢

20. 如有查詢，可聯絡財經事務及庫務局首席助理秘書長(財經事務)張誼女士(電話：2810 2067)。

財經事務及庫務局
2021 年 6 月 9 日

附件

INTERNATIONAL MONETARY FUND

PEOPLE'S REPUBLIC OF CHINA—HONG KONG SPECIAL ADMINISTRATIVE REGION

FINANCIAL SYSTEM STABILITY ASSESSMENT

April 29, 2021

KEY ISSUES

Findings: The main macro-financial risks relate to extensive linkages to Mainland China, stretched real estate valuations, and exposure to shifts in global market and domestic risk sentiment, compounded by escalating U.S.-China tensions. Stress tests show that the financial system is resilient to severe macro-financial shocks, but there are pockets of vulnerabilities in foreign bank branches, investment funds, households, and nonfinancial corporates. Hong Kong SAR's financial sector is also exposed to physical and transition risks from climate change.

Recommendations: The macroprudential framework is well structured and the current policy stances on real estate and countercyclical capital buffers are appropriate, but there is room to further strengthen the macroprudential framework by enhancing systemic risk assessment and communication. The micro-prudential oversight of banks, insurance companies, investment funds, and securities markets has been further strengthened since the 2014 FSAP. The FSAP recommends enhancing oversight over banking groups with both foreign branches and local subsidiaries in Hong Kong SAR; heightening monitoring of liquidity risk for banks operating with multiple group entities; bringing nonbank mortgage lending within the regulatory framework; and solidifying the new framework for cross-sectoral resolution and safety nets. A more proactive cross-sectoral approach should be adopted in Fintech as it pervades across activities, and climate risk should become part of the authorities' systemic risk analysis. The FSAP repeats its previous recommendation of providing de jure operational independence to the Monetary Authority.

Approved By
James Morsink (MCM) and Kenneth Kang (APD)

Prepared By
Monetary and Capital Markets Department

This report is based on the work of the Financial Sector Assessment Program (FSAP) mission that visited Hong Kong Special Administrative Region in September 2019 and a virtual mission in February-March 2021.

- The FSAP team was led by Ananthakrishnan Prasad (MCM) and included Nico Valckx (RES) as Deputy Mission Chief, Mark Adams, Hee Kyong Chon, Cristina Cuervo, Andrea Deghi, Frank Hespeler, Tumer Kapan, Elias Kazarian, Romain Lafarguette, Hui Miao and Alla Myrvoda (all MCM); Fei Han (APD); Stefan W. Schmitz and Ian Tower (External Experts). Elizabeth M. Mahoney, Stephanie Ng, and Manuel Perez-Archila provided research assistance and Kateryna Botsu provided administrative assistance.

- The mission met the Financial Secretary, Secretary for Financial Services and the Treasury, Permanent Secretary for Financial Services and the Treasury (Financial Services), Chief Executive of the Hong Kong Monetary Authority (HKMA), Chief Executive Officer of the Securities and Futures Commission, Chief Executive Officer of the Insurance Authority, Chief Executive of HKEX group, other high ranking public officials, senior representatives of local and foreign banks, insurance companies, and industry associations.

- FSAPs assess the stability of the financial system as a whole and not that of individual institutions. They are intended to help countries identify key sources of systemic risk in the financial sector and implement policies to enhance its resilience to shocks and contagion. Certain categories of risk affecting financial institutions, such as operational or legal risk, or risk related to fraud, are not covered in FSAPs.

- Hong Kong Special Administrative Region is deemed by the Fund to have a systemically important financial sector according to Mandatory Financial Stability Assessments Under the Financial Sector Assessment Program – Update (11/18/2013), and the stability assessment under this FSAP is part of bilateral surveillance under Article IV of the Fund's Articles of Agreement.

- This report was prepared by Ananthakrishnan Prasad and Nico Valckx, with contributions from the members of the FSAP team.

CONTENTS

FIGURES

TABLES

APPENDICES

Glossary

AML/CFT	Anti-Money Laundering/Combating the Financing of Terrorism
ATS	Automated Trading System
BELR	Banking (Exposure Limits) Rules
BIS	Bank for International Settlements
BO	Banking Ordinance
BuDA	Bottom-up Default Analysis
CCyB	Countercyclical Capital Buffers
CET 1	Common Equity Tier 1 Capital
CoAg	Cooperation Agreement
CCPs	Central Counterparties
CFR	Council of Financial Regulators
CMG	Crisis Management Group
CRE	Commercial Real Estate
DPB	Deposit Protection Board
D-SIB	Domestic Systemically Important Bank
ELA	Emergency Liquidity Assistance
FATF	Financial Action Task Force
FIRO	Financial Institutions Resolution Ordinance
FMI	Financial Market Infrastructure
FS	Financial Secretary
FSC	Financial Stability Council
FSAP	Financial Sector Assessment Program
FSI	Financial Soundness Indicators
FSSA	Financial System Stability Assessment
FSTB	Financial Services and the Treasury Bureau
FX	Foreign Exchange
GDP	Gross Domestic Product
G-SIB	Global Systemically Important Bank
HIBOR	Hong Kong Interbank Offered Rate
HKCC	HKFE Clearing Corporation Ltd.
HKD	Hong Kong dollar
HKMA	Hong Kong Monetary Authority
HKSAR	Hong Kong SAR
HONIA	Hong Kong Overnight Index Average
IA	Insurance Authority
IOSCO	International Organization of Securities Commission
IRB	Internal ratings-based
LCR	Liquidity Coverage Ratio
LERS	Linked Exchange Rate System
LIBOR	London Interbank Offered Rate
LTV	Loan-to-Value

MaPP	Macroprudential Policies
ML/TF	Money Laundering/Terrorist Financing
MOU	Memorandum of Understanding
MPMs	Macroprudential Policy Measures
NDFCs	Non-Deposit Taking Finance Companies
NFC	Non-Financial Corporate
NPL	Non-performing Loan
NSFR	Net Stable Funding Ratio
PFMI	Principles for Financial Market Infrastructures
RAM	Risk Assessment Matrix
RMB	Renminbi
RR	Reserve Requirement
SFC	Securities and Futures Commission
STeM	Stress Testing Matrix
THB	Transport and Housing Bureau
USD	US dollar

EXECUTIVE SUMMARY

Hong Kong SAR is a small and open economy, and a major international financial center with extensive linkages to Mainland China. Over the past two years, Hong Kong SAR experienced unprecedented negative GDP growth, severely impacted by domestic social incidents, US-China tensions, and the global COVID-19 pandemic.

Sound macroeconomic and prudential policies have provided Hong Kong SAR with important buffers to cope with the current slowdown and future shocks. The banking sector remains well capitalized, profitable, and nonperforming loan ratios remain low. Hong Kong SAR's exchange rate mechanism, the Linked Exchange Rate System (LERS), has continued to support financial stability, and is underpinned by large foreign exchange reserves.

The main macro-financial vulnerabilities relate to Hong Kong SAR's extensive linkages to Mainland China, stretched real estate valuations, and exposure to shifts in global market and domestic risk sentiment. Risks to the financial system can manifest from a prolonged COVID-19 pandemic, a further slowdown in Mainland China, a sharp rise in global risk-premia compounded by escalating US-China tensions, and a sharp housing market correction. In a severe scenario, the four risks described above could materialize at the same time and amplify each other's effects.

Stress tests indicate banking system's resilience to severe macro-financial shocks, thanks to the initial high capital buffers and pre-shock profitability. Under a severely adverse solvency stress test scenario combining the above four risk factors, banks' average common equity tier 1 capital (CET 1) ratio decreases by 4.5 percentage points from 15.9 percent in 2019 to 11.5 percent in 2022—remaining well above regulatory requirements. Assessment of concentration risk, based on an assumption of default of the five largest exposures in each bank in the sample, indicates a decline in the average CET1 ratio by close to 6.5 percentage points. The banking system is also resilient to liquidity stress, however, some of the foreign branches are more vulnerable to liquidity shocks, largely due to their higher reliance on unsecured interbank funding and their inability to tap the local deposit base. Non-financial corporate debt-at-risk and default risk could increase significantly under an adverse scenario, particularly in the Mainland China real estate sector. Low- to median-income households' mortgage debt service appears vulnerable to income and interest rate shocks.

To help ensure the continued robustness of the financial system, the FSAP recommends enhancing oversight over banking groups that have both foreign branches and local subsidiaries in Hong Kong SAR; heightening monitoring of liquidity risk at the group and entity level for banks that operate with multiple group entities, and stress testing banks' large exposures separately from their total loan books; ensuring that internal risk models used to determine the capital charge for Mainland China real estate borrowers with low credit ratings are sufficiently forward looking; and monitoring households debt repayment capacity at a disaggregated level.

The institutional framework for macroprudential policies (MaPP) is functioning well, and the current policy stances on real estate and countercyclical capital buffers (CCyB) are

appropriate. Nonetheless, there is scope for strengthening systemic risk monitoring, improving data collection, enhancing communication through a comprehensive and dedicated financial stability report, and bringing non-bank mortgage lending within the regulatory ambit.

The microprudential policy oversight over the financial system is modernized and strong. Banking supervision and regulation remain strong, both overall and with respect to cross-border linkages and housing risks. The FSAP reiterates the 2014 FSAP's recommendation to provide *de jure* operational independence to the Hong Kong Monetary Authority (HKMA), and to adopt a framework to ensure that its prudential mandate is not compromised by development initiatives. The establishment of the Insurance Authority has greatly strengthened insurance regulation and the supervision of both insurers and intermediaries. In securities markets, the current regulatory and supervisory framework for trading systems has been strengthened since the 2014 FSAP, as well as supervisory coordination with the Mainland.

Crisis management arrangements have been significantly strengthened by the introduction of a comprehensive resolution regime under the Financial Institutions Resolution Ordinance (FIRO) in 2017. The HKMA and other resolution authorities have also made a strong start at implementing institution-specific resolution plans under the FIRO, although more work is needed. The authorities should update aspects of the depositor protection regime - including the scope of depositor preference, the mandate of the Deposit Protection Board (DPB), and reviewing the size of the DPB Deposit Protection Scheme (DPS) fund and its usability in resolution - to ensure full consistency with the FIRO and underpin deposit confidence.

The FSAP's assessment of the systemically important clearing corporation concluded that while Hong Kong Futures Exchange (HKFE) Clearing Corporation Limited (HKCC) has a sound legal basis and comprehensive risk management framework, the governance structure and the risk management can be further enhanced, an independent review of which has since been commenced by the authorities.

Hong Kong SAR authorities play an active role in promoting Hong Kong SAR as a fintech hub in Asia. Continued coordinated efforts among regulators would guide a more consistent and cross-sectoral approach among others in the areas of harmonizing frameworks for cyber-/IT-related reporting, artificial intelligence and RegTech adoption, and cyber mapping.

Climate change poses financial stability risks in both the short run and the longer run. The FSAP welcomes the authorities' plan towards mandatory disclosures, Common Ground Taxonomy, and risk assessments.

Hong Kong SAR's competitiveness, as a major international financial center has depended on its sound rules and regulations, which have been adapted to international standards and best practices. The Hong Kong SAR authorities should continue to preserve the rule of law and strengthen the high-quality regulatory framework, so that solid foundation for competitiveness in its financial sector is preserved.

Table 1. Hong Kong SAR: Key Recommendations

Recommendations	Time
Strengthening Systemic Risk Monitoring	
Continue to monitor Authorized Institutions' concentrated exposures to non-bank Mainland China entities, particularly of banking groups with foreign bank branches and subsidiaries. [HKMA]	C
Reassess the need for amending the regulatory perimeter to monitor NDFCs and leakages to macroprudential policy. [Hong Kong SAR Authorities]	MT
Ensure sufficiently forward-looking internal risk models for capital charge for Mainland China real estate borrowers with low credit ratings. [HKMA]	C
Integrate all bank liquidity stress tests, streamline reporting, and enhance monitoring of liquidity position of foreign branches that appear more vulnerable. [HKMA]	MT
Integrate monitoring and stress testing of investment funds' liquidity in the supervisory framework and increase granularity of data collation. [SFC]	MT
Monitor non-mortgage household debt; ensure consistency of risk guidelines among regulators on investment credit to high-net-worth individuals. [HKMA/SFC]	ST
Macroprudential Policy Framework	
Strengthen the systemic risk monitoring and data collection framework; Continue leveraging analytical expertise of the HKMA/other regulators in CFR/FSC. [FSTB/HKMA/ SFC/IA]	ST
Enhance data collection of intersectoral claims with a focus on claims of the NBFIs to better gauge the importance of intersectoral linkages. [FSTB/HKMA/ SFC/IA]	ST
Financial Sector Supervision	
Update legislation to reflect HKMA's de facto operational independence in the law; in the interim, consider specifying circumstances where Chief Executive may give directions to Monetary Authority. [Government]	MT
Implement group-wide supervision and risk-based capital requirements as planned. [IA]	ST
Assess systemic risk of individual insurers (potential FIRO designation), and cross-sector risks. [IA]	MT
Enhance surveillance and monitoring of OTC trades. [SFC]	MT
Expand enforcement powers over recognized exchange companies and clearing houses, and Part III Automated Trading System providers. [SFC]	MT
Strengthen the current governance of the HKCC by setting up a proper HKCC board, an independent risk management committee, and decentralized key functions. [HKEX]	ST
Crisis Management and Financial Safety Nets	
Update the deposit protection scheme, including expanding the scope of depositor preference, extending the mandate of the DPB to allow it to contribute to resolution costs, and reviewing the size of the DPS fund and flexibility of levies. [FSTB/HKMA]	MT
Fintech and Financial Innovation	
Promote consistency and facilitate information sharing across financial sectors with respect to cyber risk supervision; review and compare incident reporting frameworks across sectors and apply best practices to other sectors. [HKMA/SFC/IA]	ST
Consider undertaking exercise to map network interdependencies. [HKMA/SFC/IA]	MT
Strengthen systematic data collection of entities to enhance monitoring of holdings of virtual assets (VA); monitor VA trading activities continuously; increase investor education. [HKMA/SFC/IA]	ST/C

Note: C - continuous; ST - is 1–3 years; MT - medium-term is 3–5 years.

BACKGROUND

1. **Hong Kong SAR's economic recession deepened in the first half of 2020 amid the COVID-19 outbreak, but is now recovering.** In 2019, economic activity weakened due to both external and domestic factors, with GDP contracting by 1.2 percent (Figure 12). GDP continued to decline by another 6.1 percent in 2020, aggravated by the impact of the COVID-19 pandemic. Hong Kong SAR's unemployment rate rose from 3.3 percent at end-2019 to 6.6 percent at end-2020. However, growth has started to recover since the second half of 2020 and an economic rebound in 2021 and 2022 is projected with growth expected to rise to 4.3 percent in 2021 as the authorities took a multi-pronged approach to support the economy and maintain financial stability during the pandemic (Figure 1).

Figure 1. Hong Kong SAR: Multi-Pronged Approach to Financial Stability and Support the Economy

Easing cash-flow pressure	Releasing buffers
• Provided direct cash transfers to households • Provided relief grants and loans to hard-hit sectors[1] • Introduced Pre-approved Principal Payment Holiday Scheme for eligible small-to-mid-sized enterprises (SME) • Enhanced the SME Financing Guarantee Scheme, including through special loan guarantee for unemployed and self-employed individuals • Encouraged banks to make good use of their lending headroom	• Reduced the Countercyclical Capital Buffer ratio of banks by 1.5 percentage points • Lowered the regulatory reserve requirements on banks by half[2] • Raised the applicable loan-to-value ratio caps for mortgage loans on non-residential properties by 10 percentage points • Relaxed the eligibility criteria for HKMC-sponsored mortgage insurance program • Strengthened market surveillance and contingency planning • Maintained close dialogues with the industry to understand and address their concerns
Increasing market liquidity	**Maintaining market resilience and confidence**
• Reduced issuance size of Exchange Fund Bills to increase the overall Hong Kong dollar liquidity • Clarified the "Hong Kong Dollar Liquidity Facilities" framework and arranged drills for banks • Introduced the temporary "US Dollar Liquidity Facility" for Hong Kong SAR banks, using funds obtained through the U.S. Federal Reserve's temporary repurchase agreement facility	• Strengthened market surveillance and contingency planning • Maintained close dialogues with the industry to understand and address their concerns

[1] The HKMA clarified that Authorized Institutions should continue to apply the relevant expected credit loss frameworks.

[2] The regulatory reserve requirement (RR) was introduced in 2005 and modified in 2018 during the implementation of the local version of IFSR9 accounting rules, HKFRS9, to build up additional buffers on top of loss provisions, which were increased after the HKFRS9 implementation. Given the notable increases in provisions observed in 2019, HKMA deemed that the need for maintaining a regulatory reserve on top of accounting provisions had diminished and reduced the requirement by 50 percent.

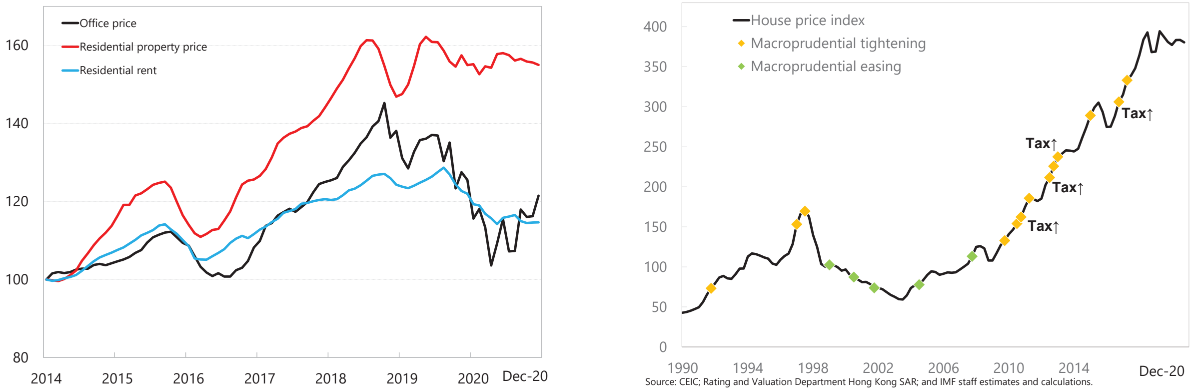
Source: HKMA.

2. **Fueled by strong demand and a chronic shortage in housing supply, real residential property prices were nearly 35 percent higher at end-2020 than in early 2014, despite some recent fall in prices in the past two years.** The HKMA tightened macroprudential policy measures (MPMs), such as limits on total debt servicing ratios and loan-to-value (LTV) ratios for mortgages, which helped contain banks' exposure to the housing boom (Figure 2). To complement these MPMs, the government increased stamp duties and introduced other taxation measures to contain speculative activity and external demand.[1] The government also adopted supply-side measures to boost housing supply (see the Hong Kong SAR's 2019 Art. IV report for more details). COVID-19 exacerbated pressures in the non-residential property market. Office prices declined by 12 percent between end-2018 and end-2020, largely attributed to the economic slowdown and adoption of work-from-home measures amidst the pandemic. In response to the slipping non-residential property market, in August 2020 the HKMA adjusted the LTV caps for mortgage loans on non-residential properties upward by 10 percentage points.[2]

Figure 2. Hong Kong SAR: Housing Market Indicators

1. Nominal property prices
(Index, January 2014=100)

2. House price index, MPMs, and Housing Tax
(Index, 1999=100)



Sources: CEIC; Haver Analytics; Rating and Valuation Department Hong Kong SAR; and IMF staff estimates and calculations.

3. **Despite the deep recession in 2020, corporate and household debt continued to grow, leading to heightened leverage and credit gaps.** Bank credit growth slowed to 7 percent (y/y) in the first three quarters of 2020 (1.2 percent in 2020), from a recent peak of 16 percent in 2017, reflecting a combination of moderation in trade finance, domestic loans, and Mainland China-related lending, which accounted for close to 40 percent of total bank lending as of September 2020. Nonfinancial corporate (NFC) debt increased significantly from 202 percent of GDP in 2014 to

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[1] Past IMF research showed that without MPMs and tax measures, house prices would have been 12.5 percent higher, and the mortgage credit-GDP ratio 15 percent higher (IMF Country Report 18/17).

[2] For general cases, the LTV cap was raised from 40 to 50 percent, as per https://www.hkma.gov.hk/eng/news-and-media/press-releases/2020/08/20200819-5/.

257 percent in 2020Q3, but debt-at-risk remained low from a historical perspective (Figure 3).[3] Household debt increased from 65 percent to 88 percent over the same period.[4] This led to a widening of the domestic credit-to-GDP gap from close to zero in 2013 to 35 percent in 2020Q3, which may point to rising asset quality risks—although the most recent increases were primarily as a result of lower GDP outturns.

4. Sound macroeconomic conditions and prudential policies have provided Hong Kong SAR with important buffers to cope with the current cyclical slowdown and future shocks.

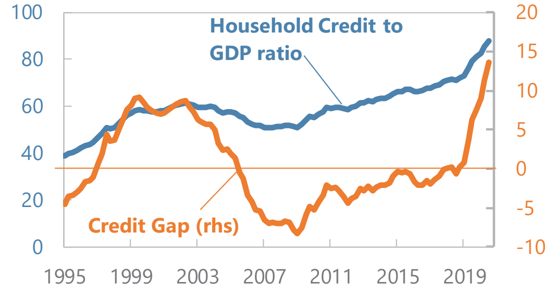
- **External.** FX reserves are around 140 percent of GDP, or 1.8 times the monetary base at end-2020. The net international investment position was around 616 percent of GDP at end-2020, one of the largest in the world.
- **Fiscal.** Adherence to a balanced budget principle (as set out in Art. 107 of the Basic Law), consistent underperformance in expenditures and overperformance in revenues allowed accumulation of fiscal reserves of about 40 percent of GDP in 2019, before falling to about 33 percent of GDP in December 2020 due to countercyclical fiscal policy measures (Table 3).
- **Banking.** The Tier 1 capital ratio of banks stood at 18.3 percent, the liquidity coverage ratio was 157 percent, and the nonperforming loans (NPL) ratio was 0.8 percent in 2020Q3. Return on assets has remained fairly stable since 2013 at around 1 percent but fell to 0.8 percent (annualized) during 2020 Q1-Q3 as a result of the deep recession and slight rise in NPLs (Figure 14 and Table 4).

[3] The ratio of non-financial corporate debt-to-GDP may overstate Hong Kong SAR firms' leverage, since it includes many multinational and non-local firms that borrow funds from Hong Kong SAR banks to finance their operations outside Hong Kong SAR.

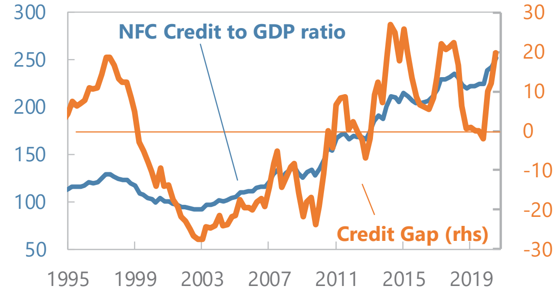
[4] In addition to borrowing from banks, households have been reliant on lending from non-deposit taking finance companies (NDFC), estimated at about 5 percent of GDP in 2019. Some of this lending appears to be highly risky. Based on June 2019 figures, property developers extended mortgage loans of HKD 41bn with LTV ratios up to 90 percent—equivalent to 3 percent of outstanding residential mortgages of AIs. Other non-deposit taking finance companies and brokers also provided loans to households, secured by financial assets or property.

Figure 3. Hong Kong SAR: Household and Corporate Debt Developments

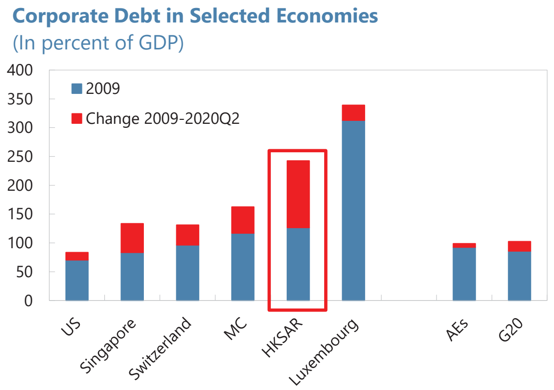
1. Household debt-to-GDP ratio and gap
(In percent)



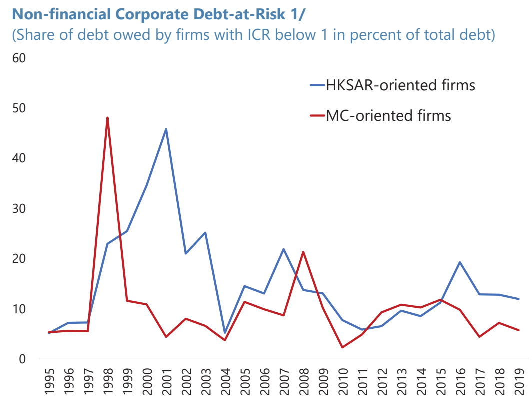
2. Non-financial corporate debt-to-GDP ratio and gap
(In percent)



3. Non-Financial corporate debt in selected economies
(In percent of GDP)



4. Non-financial Corporate Debt-at-Risk
(Share of debt owed by firms with ICR below 1 in percent of total debt)



Source: BIS; Bloomberg, L.P.; Hong Kong SAR authorities; Haver Analytics, BIS; IMF staff computations.

Note: Data refers to credit to households and NPISHs (non-profit institutions serving households) from all sectors and to credit to non-financial corporations from all sectors, respectively. Data are at market value and adjusted for breaks. Credit gaps (right-hand scale) are estimated using data from 1988Q4-2020Q3 with a Hodrick-Prescott filter (lambda=400,000).

1/ Hong Kong SAR- and Mainland China-oriented firms are identified by the firm's country of risk, a variable defined by Bloomberg based on a number of criteria (including its country of domicile, the primary stock exchange on which it is traded, the location from which the majority of its revenue comes, and its reporting currency).

5. **Since its implementation in 1983, the LERS has preserved the HKD fixed parity against the USD in the face of many shocks.** Hong Kong SAR authorities have introduced over time several refinements and technical measures to strengthen the functioning of the LERS and smooth the impact of the currency board mechanism on the domestic interest rate. The HKMA excess coverage reserves represent around 80 percent of the monetary base, which provides large buffers to manage liquidity in turbulent times.

- During the worldwide turbulence in money markets in March 2020, the HIBOR-LIBOR spread quickly stabilized after a short period of tension. HKMA swiftly responded to the initial tightening of the USD funding by introducing a temporary USD liquidity facility to Hong Kong

SAR banks by using funds obtained through the U.S. Federal Reserve's temporary repurchase agreement facility (FIMA Repo Facility).

- Since April 2020, large capital inflows in part driven by equity-related demand, including initial public offerings, resulted in an all-time high level of foreign reserves at USD 491 billion in December 2020, representing almost half of HKD M3.

Financial Sector Landscape

6. Hong Kong SAR is a major international financial center with extensive linkages to Mainland China. It has the following key features (Table 2):

- The banking system holds assets of about 950 percent of GDP and is a material contributor to profitability and total assets of several Global Systemically Important Banks (G-SIBs).

- The life insurance sector is amongst the world's largest, particularly by penetration (life premiums to GDP of about 18 percent in 2019) and in per capita terms. The sector's growth has been supported by the popularity of savings products, including sales of policies to Mainland China visitors, although these have declined from recent peaks due to COVID travel restrictions.

- Hong Kong SAR hosts the world's fifth largest stock exchange by market capitalization (USD 6.1 trillion) at end-2020. Mainland China-related companies account for around half of the listed companies in Hong Kong SAR, representing 81 percent of total capitalization. USD-denominated bond issuance in Hong Kong SAR by Mainland China firms accounted for more than 60 percent of Mainland China firms' total offshore issuances in 2020. The Stock and Bond Connect schemes establish mutual market access arrangements between Mainland China and Hong Kong SAR. Average daily turnover in Stock Connect more than doubled in 2020, with Northbound traffic (Hong Kong SAR to Mainland China) going up by 119 percent and Southbound traffic (Mainland China to Hong Kong SAR) going up by 128 percent. Average daily turnover in Bond Connect increased by 82 percent in 2020 on top of a tripling in 2019.

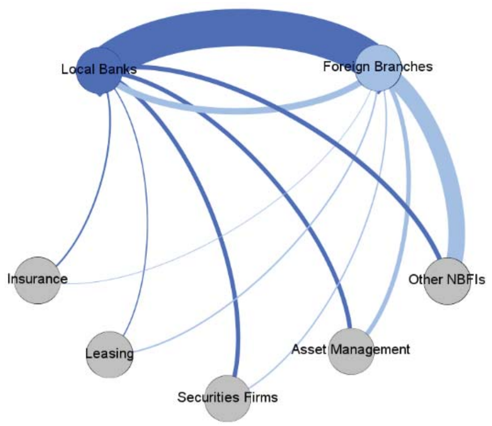
- Assets under management (AUM) amounted to 1,000 percent of GDP in 2019. A major source of funding for the asset and wealth management business is from non-Hong Kong SAR investors (64 percent of AUM in 2019), while assets managed in Hong Kong SAR made up 56 percent of AUM, reflecting the role of Hong Kong SAR as a global wealth management center. A growing part is also Mainland China-related, with 387 licensed corporations and registered institutions established by Mainland China-related groups active in Hong Kong SAR (up by 7 percent from 2018).

- Finally, Hong Kong SAR's FX swap market is the largest in Asia, reflecting its role as an international funding center.

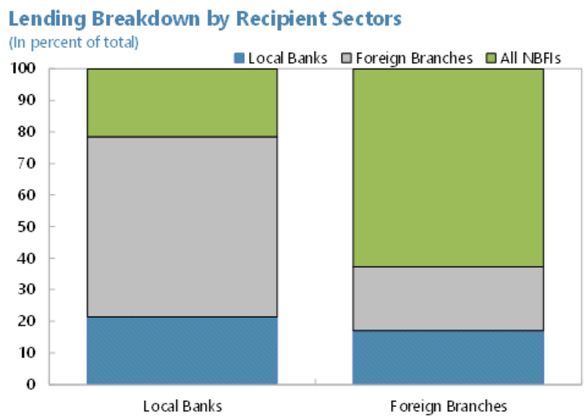
7. The banking system comprises locally incorporated banks (including subsidiaries of international banking groups) and many smaller foreign branches. These two groups have different business models. Local banks have a strong local deposit funding base and engage in financial intermediation mostly in Hong Kong SAR, but with a significant portion of Mainland China-related loans (about one-third of their loans). Approximately 30 percent of their non-bank lending are to households, with the rest to corporates. Foreign branches rely more on the interbank market to borrow from local banks, and on corporate deposits, and they lend mostly to corporates, many of which are located outside Hong Kong SAR (Figure 4). Foreign branches are not allowed to lend to retail borrowers beyond a minimal limit. About 52 percent of foreign branches' lending are Mainland China-related, compared to around one third for local banks, highlighting the banking system's significant cross-border connections to Mainland China. Despite being smaller, foreign branches account for 60 percent of total cross-border interbank claims.[5]

Figure 4. Hong Kong SAR: Financial Interconnectedness

1. Domestic Financial System Exposures of Banks



2. Intra-financial System Lending by Recipient Sectors (2018)



Source: Bank-level data, IMF staff.

Note: In Panel 1, dark blue lines represent lending from Local Banks to other financial sectors. Light blue lines represent lending from Foreign Branches to other financial sectors. The domestic connectedness analysis is based on the bank-level data submitted by a sample of the 20 largest banks (including foreign branches), ranked by assets held by their Hong Kong SAR offices. Other NBFIs include financing arms/investment vehicles that belong to group companies of corporate borrowers.

SYSTEMIC RISK ASSESSMENT

A. Key Vulnerabilities and Risks, Assessment Methods and Scenarios

8. **The key macro-financial vulnerabilities relate to Hong Kong SAR's extensive Mainland China linkages (Figure 15), stretched real estate valuations (Figure 16), and exposure to shifts in global market and domestic risk sentiment.** These vulnerabilities and the associated risks,

[5] Foreign branches account for under 39 percent of total assets of Hong Kong SAR office-only balance sheets of all banks.

discussed below, formed the basis of FSAP's risk analyses (Appendix III, Risk Assessment Matrix) and were also identified in the 2019 Art. IV report on Hong Kong SAR.

9. Based on these vulnerabilities, the FSAP identified the following key risks to financial stability:

- *A prolonged COVID-19 pandemic* could reduce both domestic and external economic activity and prevent a speedy recovery.

- *Accelerating de-globalization and heightened protectionism accompanied by a further slowdown in Mainland China* could lead to higher uncertainty, reduce trade flows through Hong Kong SAR and lead to a sharp decline in economic activity.

- *A sharp rise in global risk premia compounded by escalating US-China tensions* could tighten financial conditions in Hong Kong SAR and cause a repricing of Hong Kong SAR-specific risks, leading to capital outflows, higher funding cost for borrowers and lower asset values, including property prices.

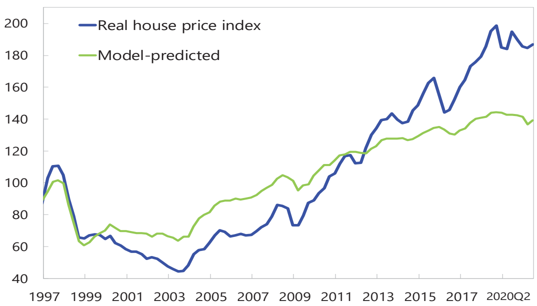
- *A sharp housing market correction and decline in demand* could lower confidence and residential investment, and constrain new bank lending leading to a larger downturn.

Looking ahead, any renewed social incidents, global economic uncertainties and US-China tensions could continue to pose potential challenges to Hong Kong SAR's standing as an international financial center.[6] These developments could also trigger a house price correction in Hong Kong SAR (Figure 5), amplifying the downturn through a feedback loop of falling house prices, weaker consumption, higher NPLs, and tightening of banks' lending standards.

[6] Under the Hong Kong Autonomy Act, 2020, adopted by the U.S. in July 2020, the U.S. can impose sanctions on individuals and entities that it determines as eroding Hong Kong SAR's autonomy as well as secondary sanctions on foreign financial institutions that conduct significant transactions with such parties.

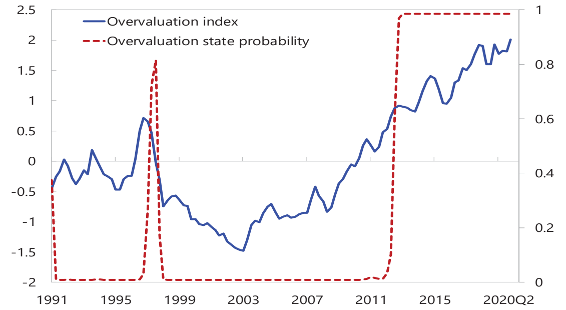
Figure 5. Hong Kong SAR: House Price Valuation and House Price at-Risk

1. Comparison of Real and Model Implied Value of House Prices
(Index)



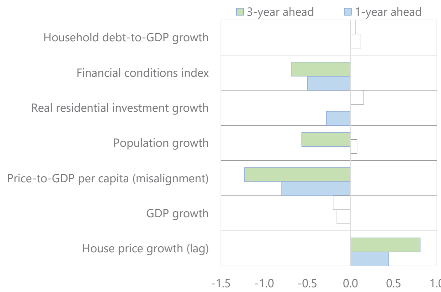
Sources: IMF staff estimates and calculations.

2. Bubble Index and Overvaluation Probability
(Z-score, primary axis; probability, secondary axis)



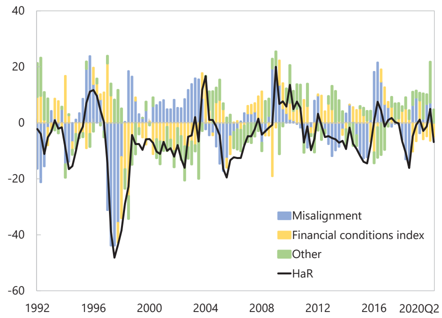
Sources: IMF staff estimates and calculations.

3. Factors affecting House Prices at Risk
(10th percentile coefficients)

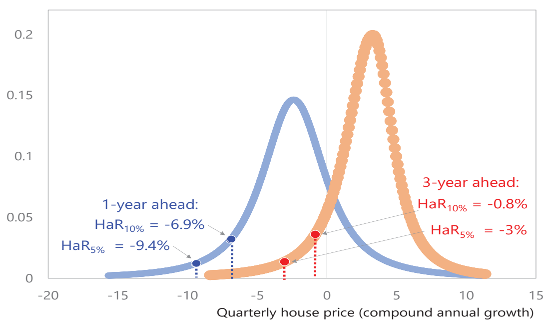


Source: IMF staff estimates and calculations.
1/ Note: Colored bars indicate that the coefficients are statistically significant at the 10 percent level or higher, whereas outlined bars indicate insignificant coefficients.

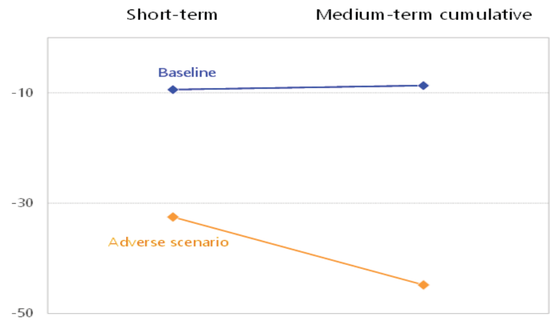
4. Contribution to 1-Year-Ahead House Price at Risk
(In percent)



5. Baseline One- and Three-Year-Ahead T-Skew Density Forecasts, 2020Q2
(Probability Density Function, PDF)



6. One-Year and Three-Year-Ahead HaR Baseline and Adverse Scenarios
(Percentage change, 5th percentile)



Source: IMF staff somputations.

Notes: Panel 1 compares real house prices to the value estimated using an AR(1) model, that captures demand and supply side factors. Panel 2 shows an overvaluation indicator constructed using factor analysis to extract common overvaluation information. Panel 5 shows the conditional probability distributions of one (blue line) and three-year-ahead (orange) house price growth based on a parametric, t-skew density, fitted on quantile regression estimates in the period 2020:Q2. Figures are annualized growth rates. Panel 6 shows the point estimates of predicted HaR for 2020:Q2 in the short-term (one-year) and the medium-term (3-year ahead) projections at the 5th percentile (compounded growth). The counterfactual ("adverse scenario") scenario is calib rated as a simultaneous standard deviation shock to the house-prices-to-GDP per capita ratio (misalignment), financial conditions index and credit to household-to-GDP ratio.

10. The FSAP mission conducted stress tests of banks and investment funds, performed corporate and household sectors vulnerabilities analyses, and assessed physical risks from climate change. The bank solvency test covers the 11 largest locally incorporated banks (93 percent of local banks' assets) using 2019 data, and liquidity tests examine12 local banks and 11 foreign branches using 2020 Q2 data.[7] In addition, loan portfolio concentration risk was examined. The solvency dataset precedes the start of the COVID-19 shock and the solvency exercise is conservative as it does not incorporate the potential positive impact of temporary policies aimed at supporting borrowers (e.g., income support to households and SMEs, loan principal payment deferrals), since the support policies are likely to prevent NPLs from increasing to the levels suggested by estimates from historical data up to 2019.

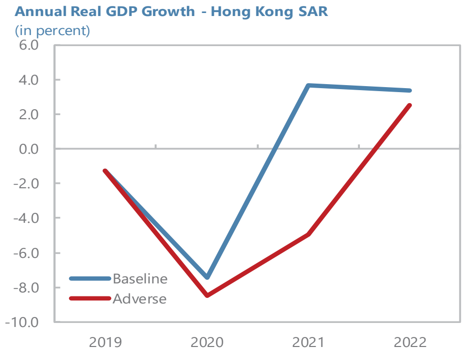
11. For liquidity stress tests, the assessment was based on December 2018 as well as June 2020 data, which allowed comparison over time. For investment funds, the redemption risk profile of the sector was examined (Appendix II, Stress Testing Matrix). Household sector tests assess mortgage repayment capacity by income groups. NFC tests assess the effects of adverse macroeconomic scenarios on their debt-servicing capacity and default risk. The mission also assessed physical risk from climate change. Furthermore, the discontinuation of LIBOR as a reference rate by end-2021 was examined, as it implies transition risk for the Hong Kong SAR banking sector.

12. The macroeconomic scenarios assume different degrees of risks. The GDP path of the adverse scenario incorporates a significant shock as it is more severe than the AFC throughout the simulation period (2020-2022). Unlike the AFC, policy rates are assumed to remain accommodative. However, financial conditions tighten significantly in the adverse scenario as corporate credit spreads rise and asset prices fall, which amplify the effect of the economic slowdown on the banking system (Figure 18). The adequacy of the stress scenario for GDP is corroborated by the Growth-at-Risk (GaR) model (Figure 6).

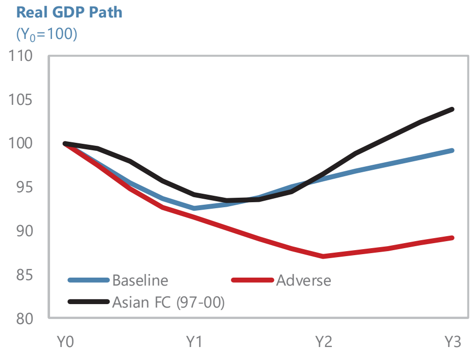
[7] Confidential bank-level supervisory data was used for these stress tests. For solvency stress tests, granular supervisory data as of 2019Q3 was supplemented with balance sheet data for Q4.

Figure 6. Hong Kong SAR: GDP Growth Scenarios in the Solvency Stress Testing Exercise

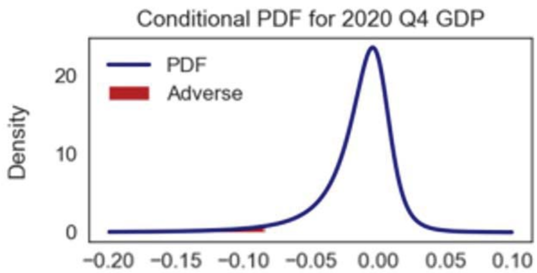
Hong Kong SAR GDP Growth in baseline and adverse scenarios.



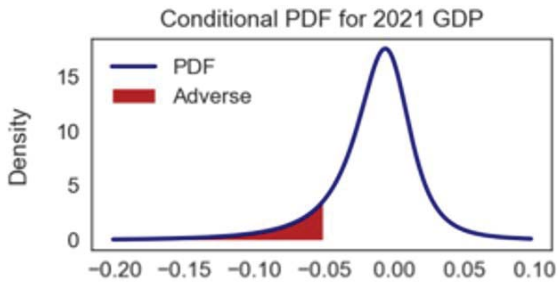
Real GDP Paths under the two scenarios and during the Asian financial crisis.



The adverse scenario GDP growth assumption in 2020 has a 3.8 percent probability in the growth-at-risk model...

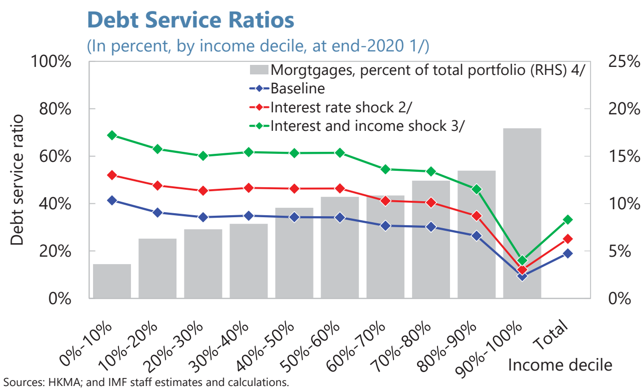


...and the assumed adverse GDP growth for 2021 is a 11.4-percentile tail event based on the model.



Source: IMF staff computations. For details on the methodology of the GaR model, see IMF WP No. 19/36.

B. Household and Corporate Sector Vulnerability Analysis



Sources: HKMA; and IMF staff estimates and calculations.
1/ In percent of gross monthly income per borrower. Portfolio includes HKD loans only. Mortgages approved on net worth basis and mortgages where borrower income is not reported are excluded. 2/ Interest rate shock defined as increase in interest rates by 300 bps. 3/ Combined interest rate and income shock. Income shock defined as decline in income by 24 percent (equivalent to 1 standard deviation of consolidated medium monthly payment figures over 1985-2020).
4/ Total mortgage portfolio represents about 48 percent of total outstanding mortgages at end-2020.

13. **Household debt has grown rapidly and remains manageable overall, but under severely adverse conditions, a large share of households may experience debt distress.** Household's bank debt consists of residential mortgage, credit card debt and other investment-related debt, and grew steadily from 51 percent of GDP in 2007 to 88 percent in 2020Q3, above the 72 percent average for advanced economies. If non-bank lending to households (e.g. consumer finance companies, property developers) is included, household debt-to-GDP ratio could be at least 3-5 percentage points higher. Bank for International Settlements (BIS) data shows that the annual increase of household debt-to-GDP ratio is among the highest in advanced

economies. However, the consecutive tightening of macroprudential policies by HKMA has kept the credit quality of household mortgage on sound footing on average. For example, the average LTV ratio and the mortgage debt service-to-income ratio of new mortgages were low, at 57 and 37 percent on average, respectively, as of December 2020. Moreover, the high saving rate and large household assets of Hong Kong SAR residents—as reflected by household net worth-to-liabilities-ratio of 11.2 in 2019, and safe assets-to-liabilities ratio of 2.88—may mitigate the risks of rising household leverage. However, the wealth distribution is likely skewed towards higher-income households. Lower and medium-income households have already high debt service ratios (DSRs) and these would increase significantly under severe stress (combining 300 basis point interest rate hike with an income shock). Hence, careful monitoring of household debt repayment capacity at a disaggregated level is warranted—something that the HKMA has recently started doing.

14. Under an adverse scenario, corporate debt-at-risk and default risk could increase significantly, particularly in the Mainland China real estate sector. The FSAP's scenario-based firm-level debt-at-risk analysis[8] found that: i) the debt-at-risk of Hong Kong SAR- and Mainland China-oriented firms in the adverse scenario would increase to levels beyond their GFC peaks (although still below their AFC peaks), with a more prominent increase in Mainland China-oriented firms, and ii) the debt-at-risk in the Mainland China-oriented real estate sector is particularly vulnerable to the adverse shocks (Figure 7). Results from the bottom-up default analysis (BuDA) confirm that the median probability of default (PD) across all firms could increase significantly in the adverse scenario although still below their AFC peaks (Figure 17), and that PDs of Mainland China-oriented real estate sector are also most vulnerable to the adverse shocks than other sectors (Figure 7), which—given the large bank exposures to the real estate sector—could potentially weigh on banks' balance sheet and lead to stress in banks and other financial institutions.

15. Offshore bond issuances by Mainland China borrowers have increased rapidly which could also pose significant credit risks. About 20 percent of the total amount issued is by Mainland China real estate developers. High-yield issuances are mostly from onshore property developers and denominated in RMB. The potential currency mismatch and refinance risks could lead to spillovers to Hong Kong SAR banks through channels including common exposure, margin finance and market-making obligations.

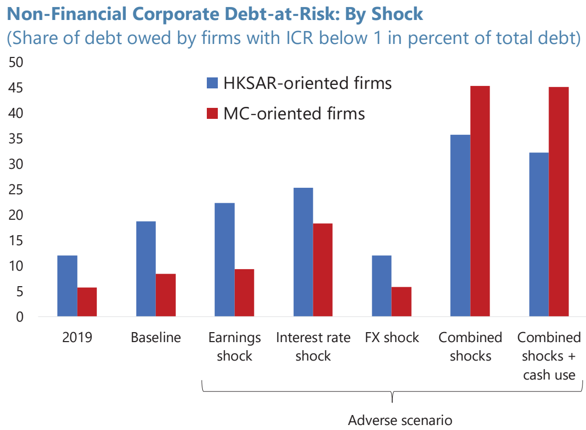
16. The FSAP recommends to the authorities continue to closely monitor the credit risks facing the potential high-risk Mainland China borrowers and to ensure that the internal risk models used to determine the capital charges for these borrowers, particularly Mainland China real estate borrowers with low credit ratings, are sufficiently forward-looking. The authorities should also

[8] Debt-at-risk is defined as the share of debt owed by firms with interest coverage ratio (defined as the ratio of earnings before interest and taxes to interest payments) below 1. Given the large presence of MC firms in Hong Kong SAR, the analyses take into account both Hong Kong SAR- and MC-oriented firms listed in Hong Kong SAR, classified according to the firm's risk exposure. The total number of firms is about 2,000, and the total debt of firms domiciled in Hong Kong SAR accounted for nearly 90 percent of Hong Kong SAR's total non-financial corporate debt in 2019 (or about 200 percent of Hong Kong SAR's GDP). The results for pre-2000 should be treated with caution as more than half of the firms do not have available financial data before 2000, which could be because they were only listed after 2000. Firm-level data of 2019 are used in the scenario-based debt-at-risk analysis.

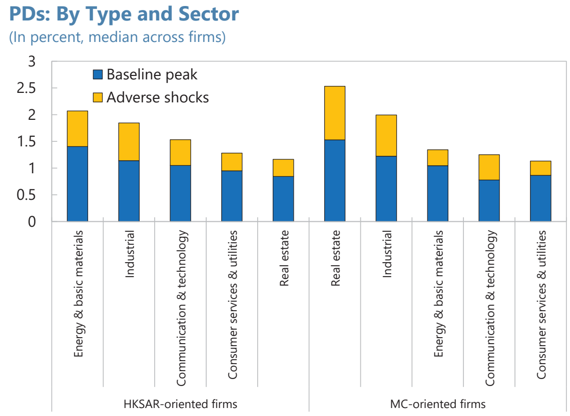
consider incorporating non-financial corporates in the stress testing framework and communicate the key findings in HKMA's Monetary and Financial Stability Reports.

Figure 7. Hong Kong SAR: Stressed Corporate Debt-at-Risk and Default Probabilities

1. Sensitivity Analysis, Debt-at-Risk
(Share of debt owed by firms with ICR below 1 in percent of total debt)



2. Non-Financial Corporates: Probability of Default
(Percent, median across all firms)



Sources: Bloomberg, L.P.; Risk Management Institute, National University of Singapore; and IMF staff calculations.

Note: The debt at risk analysis assumes all debt would be repriced after the interest rate shock. Use of cash and cash equivalents is assumed to be limited to keep quick ratios above 1 since cash and cash equivalents would also be used to pay for other non-debt-servicing short-term liabilities; this is a conservative assumption because it limits the depletion of all liquid assets. The right panel on PDs presents the results from the BuDA model. See www.nuscri.org and IMF WP No. 17/133 for more details on BuDA.

C. Bank Solvency Stress Test

17. Banks experience mild capital decline under the baseline scenario. The decline is about one percentage point in CET1 ratio during the first year of the simulation period (2020-2022). With the quick return to positive growth in the second year, capital levels stabilize but high NPL levels still weigh on balance sheets. Banks start building up capital buffers in the third year with the continued recovery in the economy. It is important to note that the realized average capital level in the banking system, with a 0.2 percentage points increase in average CET1 ratio from 2019 to 2020, was better than the decline simulated under the baseline scenario in the stress test for 2020. First, the realized 2020 GDP growth (-6.1 percent) turned out to be significantly better than the October WEO-based baseline GDP number assumed in the baseline scenario (-7.5 percent). Additionally, the FSAP's NPL assumption follows a counterfactual path and assumes there were no support measures (e.g., income support to households and SMEs, loan principal payment deferrals[9]) during 2020 and beyond. Finally, the FSAP took an overall conservative approach to NPL and risk-weighted assets (RWA) modeling under the baseline scenario shocks.

[9] Payment deferrals apply only to principal, and borrowers are required to continue to make interest payments, which allows banks and regulators to better gauge borrowers' continued payment ability during the relief period.

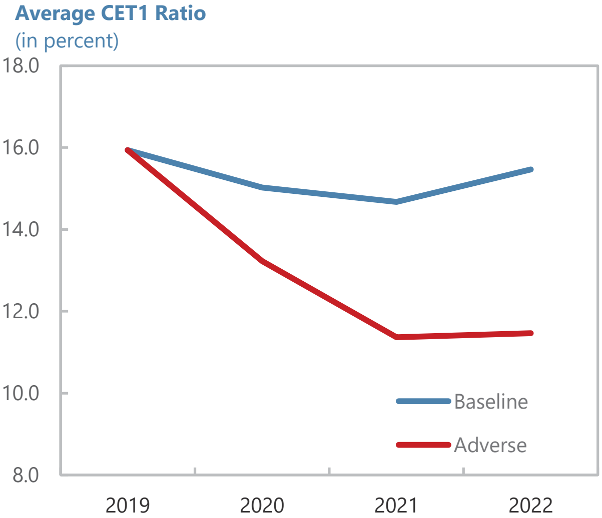
18. ST results indicate that even under the adverse scenario, Hong Kong SAR's banking system appears to be broadly resilient to severe macro-financial shocks, thanks to the initial high capital buffers and pre-shock profitability. The average CET 1 ratio of banks in the sample decreases from 15.9 percent in 2019 to 11.5 percent in 2022 (Figure 8). In the simulation, banks experience significant credit losses and their profitability declines substantially, resulting in significant reductions in their capital levels. Even with those significant declines in capital, all banks remain above the regulatory minimum of 4.5 percent CET1 ratio plus the capital conservation buffer of 2.5 percent. Banks' high initial capital buffers and profitability allow them to withstand significant amount of losses in the adverse scenario. For the IRB banks in the sample, the CET 1 ratio decreases by 4.6 percentage points, from 16.4 percent in 2019 to 11.7 percent in 2022. Banks using standardized credit risk modeling experience smaller declines in their average CET 1 ratio, from 14.4 percent in 2019 to 10.8 percent in 2022, reflecting a smaller increase in their RWA, which contributes to the smaller declines in their capital ratios (Figure 19).

19. The largest drivers of the change in capital ratios in the adverse scenario are loan loss provisions, increase in RWA, and to a lesser extent, decline in net interest margins (interest rate risk) (Figure 8). In line with the simulated deterioration in the economic environment, loan defaults increase substantially, which leads to large loan loss provisions. At the same time, the secured nature of large portions of banks' exposures, moderates the estimated loan losses, even assuming sharp property price declines. The increase in risk weights, which reflects the increase in credit risk going forward, also contributes to the decline in the capital ratios, especially for IRB banks. Standardized banks have more conservative starting risk weights,[10] limiting the estimated decline in capital ratios. The losses from mark-to-market (MTM) decline in the price of securities holdings of banks, leads to more modest declines in capital ratios. Similarly, on the interest risk side, higher funding costs leads to compression of net interest margins, but banks generally have balanced interest rate sensitivities on the asset and liability sides, which limits the overall losses from interest rate shocks.

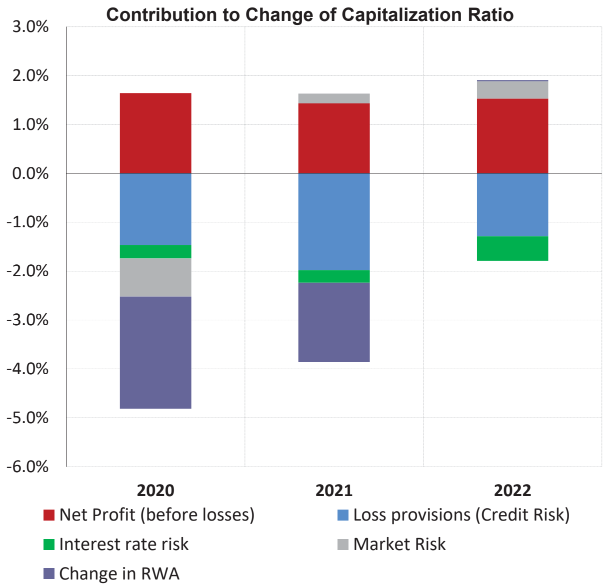
[10] For example, the average risk weights for corporate loan exposures are already above 90 percent.

Figure 8. Hong Kong SAR: Bank Solvency ST Results

CET1 ratio declines by more than 4 percentage points in the adverse scenario…



…with credit losses and increase in RWA being the largest drivers of capital declines.



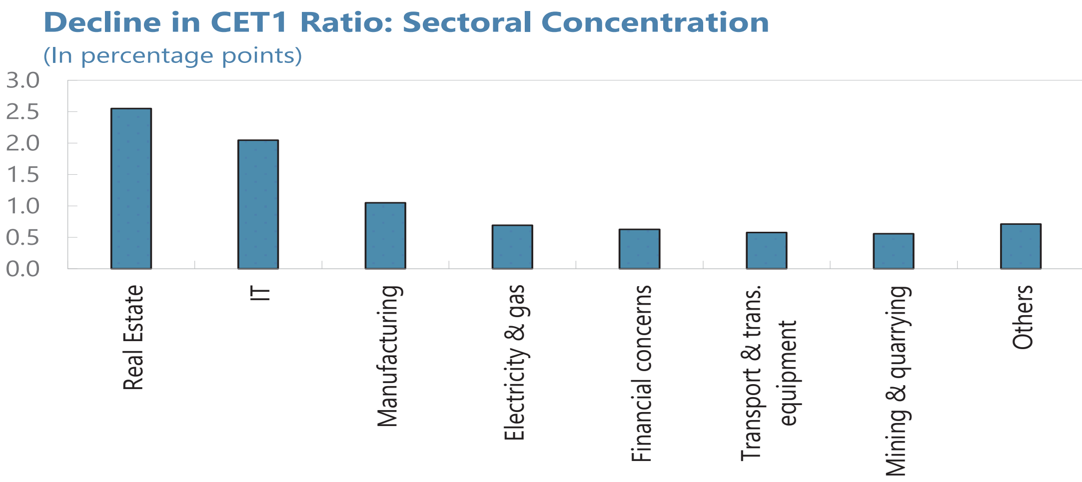
Source: IMF staff calculations.

D. Bank Loan Portfolio Concentration Risk

20. The FSAP analysis indicates that potential losses from default of concentrated exposures could be sizeable, especially in the real estate and information technology sectors. Assuming the default of the five largest NFC exposures in each bank, the average CET1 ratio decline would be sizeable, at close to 6.5 percentage points. Under an assumption of default of all real estate-related borrowers that are among the top ten large exposures of each bank, the average CET1 ratio would decline by 2.5 percentage points (Figure 9). The data indicate that large exposures to sectors that are likely to suffer more from the COVID-19 pandemic (transportation, hotels, recreational activities) correspond to a much smaller amount and their defaults would pose minimal losses for the analyzed banks. Hong Kong SAR adopted Basel Committee's large exposure framework in 2019,[11] which went effectively into effect in January 2020 (following a 6-month grace period). This new framework strengthened the requirements on banks' management of large exposures and enhanced HKMA's monitoring of these exposures. While the borrowers of the large exposures might have high credit quality, the potential for large losses in a rare default event highlights the importance of monitoring these exposures closely.

[11] Banking (Exposure Limits) Rules (BELR). See https://www.hkma.gov.hk/eng/key-functions/banking/banking-legislation-policies-and-standards-implementation/exposure-limits

Figure 9. Hong Kong SAR: Credit Concentration Analysis – Sectoral Exposures



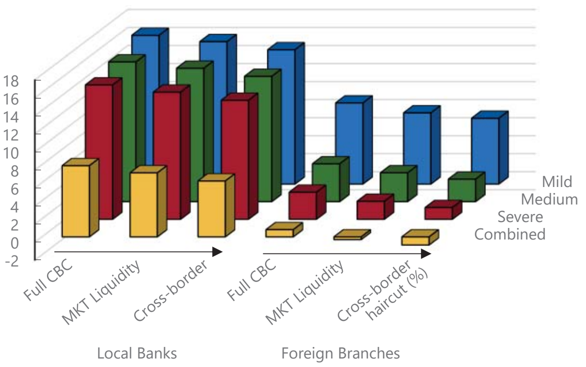
Source: IMF staff calculations.

Notes: The sensitivity analysis assessed both single-name concentration (impact of the default of the five largest NFC borrowers) and sectoral concentration (impact of the default of all borrowers from a specific sector that are among the top ten large exposures). In this analysis, the FSAP team assumed a scenario of zero recovery on the unsecured part of the exposure and full recovery of the value of available collateral.

E. Bank Liquidity Stress Test

21. The banking system is resilient to liquidity stress. The results using 2018 and 2020 as starting points were broadly similar, because the funding structure has remained similar in a global excess liquidity situation since 2016. Cashflow-based stress tests of local and foreign banks' liquidity found that local banks had enough liquid assets to cover stressed cash-outflows (Figure 20). However, liquidity stress-tests have revealed that some of the foreign branches are more vulnerable to liquidity stress, largely due to their higher reliance on unsecured interbank funding and their inability to tap the local deposit base. In managing their USD and CNH liquidity risk, banks rely on well-functioning FX swap markets, which exposes them to some tail risk. Banks' liquidity positions held up well during the pandemic. The authorities pro-

Cumulative Counterbalancing Capacity (CBC) under different stress scenarios (3-month horizon, % of total assets)



Source: IMF Staff Computations based on HKSAR banking data.
Note: Haircuts (x-axis) vary by the approach to counterbalancing capacity (CBC). Full CBC=same haircuts on all items. MKT (marketable CBC)=higher haircuts on lower quality assets. Cross-border=higher haircuts on assets in other jurisdictions.

actively communicated that the liquidity buffers are designed to be used under stress; this was complemented by several systemic liquidity measures that supported resilience.[12]

22. The excess reserves of Hong Kong SAR provide significant buffers against systemic liquidity shocks due to capital outflows. Under the most severe FSAP liquidity stress scenario of the FSAP, the excess FX reserves are enough to cover more than two times the liquidity needs of Hong Kong SAR banks. Furthermore, under an assumption of large capital outflows, the current level of HKMA's reserves and LERS mechanism would lead to only limited HKD rate increases and thus not affect adversely the solvency resilience of the banking system. The bank solvency stress test shows that banks can withstand a significant increase in HIBOR-LIBOR spreads that could be necessary to deter substantial capital flows.

F. Interconnectedness and Contagion Analysis

23. The interconnectedness patterns suggest that foreign branches could be a source of significant spillovers to other financial sectors both at home and abroad. The cross-border and domestic intra-financial system lending data suggest that foreign branches source funding from local banks and lend to NBFIs (some of which provide corporate and household loans) and to other banking systems abroad.[13] These indirect linkages between local banks and other sectors have the potential to create leakages for any regulation that aims to mitigate build-up of risks in the economy. For example, the effectiveness of a capital-based regulation aiming to mitigate risks related to bank lending to certain groups of nonfinancial corporates may be reduced, if a portion of the lending shifts from local banks to foreign branches and ultimately adds to the leverage of the corporate and household sectors. The domestic interconnectedness analysis was based on partial information on the exposures of the banking system on the other sectors. The ideal dataset would have been the who-to-whom exposures across all major sectors of the economy: banking system, NBFIs, NFCs, households, government sector, and the rest of the world. The data gaps in Hong Kong SAR could potentially limit identification of potential stability risks originating from outside the banking system.

G. Strengthening the Banking System

24. The FSAP makes several recommendations to address pockets of vulnerability in the banking system. Stress test results showed that the banking system is resilient to severe shocks. At the same time, the high degree of uncertainty around the scenarios and the future recovery paths, along with uncertainties around loan performance once the temporary support measures are lifted, warrant caution and some policy strengthening to ensure continued robustness of the financial system. First, the FSAP recommends enhancing HKMA's data collection of intersectoral claims across major sectors of the economy (banking, NBFIs, non-financial corporates, households, government,

[12] The FSAP also examined the Hong Kong SAR banking sector's readiness for the discontinuation of LIBOR as a reference rate by end-2021 and found that transition risks appear well-managed.

[13] As illustrated in Figure 4, local banks also lend to NBFIs, however, their lending is much smaller compared to that of foreign branches.

and the rest of the world) with a focus on claims of the NBFI, which would allow a better gauge of the importance of intersectoral linkages and to develop an aggregate balance sheet approach in systemic risk assessment. Second, enhanced oversight over banking groups that have both foreign branches and local subsidiaries in Hong Kong SAR would further improve the authorities' ability to monitor and mitigate risks, given their potential for contagion. Third, the FSAP recommends heightened monitoring of liquidity risk both at the group and entity level for banks that operate with multiple group entities in Hong Kong SAR to ensure that banks adhere to internal risk management practices. Fourth, the FSAP recommends that the HKMA periodically stress tests banks' large exposures separately from their total loan books, considering potential cash flows from collateral in case of default of large borrowers.

25. To further strengthen HKMA's liquidity reporting and stress testing framework, the FSAP recommends integrating all existing liquidity stress-tests into a single framework and align that with the LCR. In the medium term, the FSAP sees merit in developing alternative funding sources for banks. Since the Hong Kong SAR banking system is currently mostly funded by very short-term deposits, HKMA could take measures, including to develop the repo market, to incentivize banks to diversify funding sources and lengthen and stagger funding tenors.

H. Investment Fund Liquidity Stress Tests

26. The FSAP assessed that large sales by investment funds from large redemption shocks are unlikely to substantially affect asset prices. Investment funds domiciled in Hong Kong SAR, as opposed to those merely marketing their products there, display higher cash buffers and are therefore better protected against extreme redemption shocks. However, the weaker tails of the industry could need to resort to some asset sales with potential spillover effects across the fund industry and beyond. For example, funds with shares denominated in foreign currencies, smaller funds, and fixed-income funds, as well as funds geared towards riskier asset markets appear more prone to liquidity stress. To mitigate such risks the SFC requires fund managers to implement adequate liquidity risk management policies and procedures and to assess the liquidity profile of their funds' liabilities and assets, also through formal liquidity stress tests on a regular basis. The SFC reviews compliance during inspections. While some residual liquidity risks remain under the severe scenario of funds experiencing the worst percentile of their historical outflows, they are unlikely to affect asset prices substantively.

CLIMATE CHANGE RISK ANALYSIS

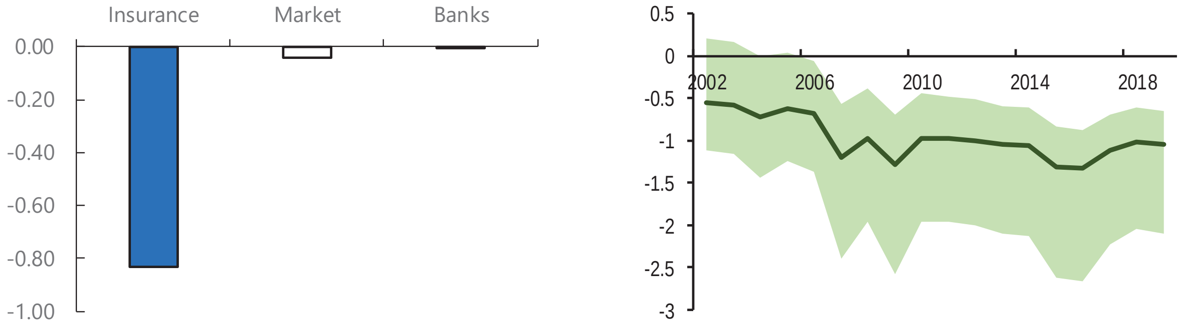
27. Global climate change poses growth and financial stability risks to Hong Kong SAR's economy and its financial sector in both the short run and the longer run, on account of physical (event risk) and transition effects (adjustments to fight climate risk) (Box 1). Recent studies, e.g., by the Intergovernmental Panel on Climate Change, indicate that climate change may have adverse effects on Hong Kong SAR's GDP growth in the longer term (up to 6.4 percent deviation from the baseline by 2048), due to higher temperatures and a rising sea level, greater health risks, declining tourism, destruction of fixed capital, and lower productivity. Using past climate disaster data, the FSAP found that Hong Kong SAR insurers' stock prices and price/book ratios are already adversely affected by physical risk (notably storms, floods and landslides), while the effect on Hong Kong SAR bank stock prices is small, as profits and capital buffers are not much affected, although this may reflect mispricing of risk (Figure 10). Indeed, over the period 1998-2019, Hong Kong SAR stocks of companies that are highly sensitive to temperature anomalies earned significantly lower returns, indicating a mispricing of climate risk. In the future, if global efforts to reduce GHG emissions fall short of envisaged benchmarks, climate risk will intensify and the adverse effects on Hong Kong SAR banks, insurers and nonfinancial firms could increase in a nonlinear way, underscoring the importance of monitoring and managing the impact of physical and transition risks on the economy and the financial sector.

28. **The authorities' efforts to address climate change risks are welcome.** These include implementation of climate-related mandatory financial disclosures by 2025, adopting common taxonomy, and promoting climate-focused scenario analysis through pilot stress testing exercises for banks and insurance companies, and the use of scenario analysis by large asset managers. The FSAP underscores the importance of incorporating climate risk in the systemic risk analysis.

Figure 10. Hong Kong SAR: Climate Change Risks in Hong Kong SAR

Natural disasters have a significant negative impact on insurers' price-book ratio, but not on other sectors.

Mispricing of temperature risk is pervasive and large for Hong Kong SAR stock-listed securities.



Sources: Datastream; EM-DAT Climatic Disasters Database; University of Delaware; IMF staff computations.

Note: The left-hand panel shows the estimated impact coefficient of climate disasters (quarterly dummy variable for tropical cyclones, flooding, and the SARS outbreak) in a price-book regression for each sector, which also includes a lagged dependent variable. The right-hand panel shows temperature mispricing results from rolling-window Fama-Macbeth regressions with the top-20 percent firms in terms of sensitivity to the temperature anomaly (deviation of current temperature from average temperature of the same month in the past 30 years) underperforming other firms around 1 percentage point each month. See Chapter 5 of the IMF's April 2020 Global Financial Stability Report for more details on methodology.

MACROPRUDENTIAL FRAMEWORK AND OVERSIGHT

A. Framework

29. **The institutional framework for MaPP is functioning well.** MaPP has played a key role in supporting financial stability in Hong Kong SAR, particularly in the context of rising house prices and

strengthening capital buffers in the banking sector. Hong Kong SAR has a sector-based regulatory structure and the responsibilities and tools for safeguarding financial stability are spread across three regulators (the HKMA, SFC, and IA). There are good inter-agency coordination and consultation mechanisms, through the Council of Financial Regulators (CFR) and Financial Stability Committee (FSC), chaired by the Financial Secretary and the Secretary for Financial Services and the Treasury, respectively. Broad coordination between the CFR and government on taxation and housing supply-side policies has also worked well. Data sharing and exchange of information among the three regulators is frequent at various working levels and is formalized by Memoranda of Understanding (MoU).

30. Nonetheless, there is room for improvement to strengthen systemic risk monitoring, improve data collection, enhance communication through a comprehensive and dedicated semi-annual financial stability report, and bring non-bank mortgage lending within the regulatory ambit.

- Because the financial system in Hong Kong SAR is becoming more complex and interconnected, the CFR/FSC secretariat should adopt a more comprehensive and systematic approach to identify and address financial systemic risk by leveraging more on the organizational framework and expertise of the HKMA and other regulators.

- Collecting more comprehensive and granular data on cross-border exposures, for example, non-bank lending to households, and developments in the high yield bond market, will improve systemic risk monitoring.[14]

- The communication of MaPP can be further enhanced by publishing periodic risk assessments and summaries of key CFR policy meetings, and dedicated reports on financial systemic risks to enhance the transparency.

- Regular surveillance and data collection from non-bank lenders (e.g., property developers and NDFCs) to households could be suitably strengthened to monitor and stem leakages in macroprudential policies.

B. Policy Stance

31. The FSAP views the current Hong Kong SAR's policy stance on systemic risks from residential and commercial real estate and on CCyB as appropriate and key to ensure banks have sufficient buffers in case of substantial housing market correction or increased household debt defaults. More specifically:

- To contain residential housing market risks and improve housing affordability, the three-pronged approach (para 2) remains appropriate (as also argued in the latest Hong Kong SAR

[14] A separate interconnectedness and contagion analysis has been conducted in the Technical Note on banking sector stress testing.

Art. IV report from 2019). This has helped contain banks' exposure to the housing boom without hampering credit intermediation to the real economy.

- Despite weak economic activity since 2019, the resiliency of house prices and mortgage growth (posing potential financial stability risks in the future) implies that existing residential housing market-related MPMs should be kept unchanged for now, while nonresidential measures can—and have been—appropriately relaxed.[15] However, because risks can migrate into the non-bank financial sector, regular surveillance over this segment would help stem leakages in macroprudential policy.

- As CRE prices have fallen, overvaluation risks decreased, and the HKMA increased LTV caps from 40 to 50 percent in general cases—which the FSAP endorses.

- CCyB was cut twice from 2.5 percent in 2019 to 1 percent in March 2020 to encourage overall bank lending, in order to support the economy.

MICROPRUDENTIAL SUPERVISION

A. Banking Supervision

32. The HKMA's banking supervision and regulation remains strong, both in absolute terms and with respect to the FSAP's focus on cross-border linkages and housing risks. HKMA continues to maintain the high standards of compliance in the 2014 Basel Core Principles assessment, driven by highly experienced supervisory staff. Updating their risk-based supervisory approach helped the HKMA optimize supervisory resources. With respect to the focal areas of this FSAP, the Basel III framework and domestic and cross-border cooperation arrangements are firmly in place and regulation of Hong Kong SAR banks' residential mortgage lending has been strengthened. Specifically:

- On housing risks, the HKMA has raised risk-weight floors on residential mortgage loans and raised risk weights for credit exposures to property developers offering high LTV mortgages, and lending to property developers was the subject of a round of thematic examinations in 2017-2018. NDFCs[16] are regulated under the Money Lenders Ordinance and licensed by the Licensing Court, instead of being regulated by the sectoral financial regulators. While the size of the NDFC industry remains small, the HKMA should continue to monitor whether macroprudential policies

[15] In view of the heightened economic uncertainty, the authorities suspended the discussion at the LegCo about the introduction of vacancy tax targeted at the property sector. The relaxation of eligibility for HKMC mortgage insurance program (e.g. mortgage with LTV up to 90 percent) has attracted more applicants and supported the demand for mortgage. The double *ad valorem* stamp duty imposed on non-residential property transactions was abolished with effect from November 26, 2020.

[16] Borrowers who have comparatively less favorable credit history may be soliciting residential mortgage and consumer loans from NDFCs, but the scale of operations of NDFC is currently modest. Lending by money lenders is estimated to at less than 1 percent of total bank loans.

have spurred household exposures to NDFCs and property developers. Adjusting the regulatory parameters may need to be considered for more timely recognition of risk.

- On cross-border linkages, the HKMA has strengthened home-host coordination and cooperation with home supervisors of international banks and with Mainland China regulators. The HKMA should continue to closely monitor concentrated exposures to non-bank Mainland China entities, especially of banking groups that have both foreign bank branches and subsidiaries in Hong Kong SAR; and the focus should be on the potential for regulatory arbitrage.

- On cross-sector linkages, the HKMA and other domestic sectoral financial regulators cooperate extensively at different levels of seniority and the traditional sectoral regulatory structure in Hong Kong SAR appears to be robust and MOUs are effective. Information sharing mechanisms could be enhanced given the growing linkages among different types of financial institutions and domestic sectoral regulators are encouraged to continue to conduct joint examinations proactively on the cross-sectoral business to promote consistency.

33. The HKMA's regulatory initiatives have kept pace with changes in the banking sector and technological advancements, but there is scope for further refinements. Key priorities include ensuring that regulations support innovation such as Smart Banking initiatives and strengthening the cyber resilience of banks. Since the last FSAP, the HKMA also strengthened its regulatory framework with emphasis on the roles and responsibilities of the Board and independent non-executive directors, for which effective implementation should be the focal point. For instance, the HKMA would need to review cases where individuals hold a large number of director/management positions in financial and non-financial entities, in terms of potential conflicts of interests and time commitment to the role. Exempted exposures from the large exposure rules[17] should be closely monitored, and limited scope onsite examination of the large foreign bank branches that have not had an onsite presence for long intervals is also recommended. In addition, the HKMA's use of independent reviews by external auditors more than doubled from 2017 to 2018. Strengthening the framework for the use of external auditors with a view to managing the associated supervisory objectivity risk is recommended. As the supervisory environment continues to become more challenging, continued attention and review is needed in regard to competing priorities and the adequacy of supervisory resources.

34. This FSAP reiterates the 2014 FSAP's recommendation to provide de jure operational independence to the HKMA (Appendix I) and review checks and balances to ensure that its prudential mandate is not undermined by developmental initiatives. Although the HKMA enjoys de facto operational autonomy, the Banking Ordinance (BO) gives the Chief Executive (CE) of Hong Kong SAR a reserve power to give directions to the Monetary Authority (MA) and the MA shall

[17] The Banking (Exposure Limits) Rules (BELR) in Hong Kong SAR provides more exemptions than detailed in the Basel Large Exposure standards. The HKMA explained that these local exemptions take into account some specific characteristics in Hong Kong SAR (e.g., the IPO process), and they are designed to minimize the risk of potential side effects on financial stability.

comply with any direction given. While such power has never been invoked and any such exercise of the power would be limited to furthering the objectives of the BO, its existence in principle may undermine the HKMA's de jure operational independence. It would be desirable for it to be removed or clarified by specifying the circumstances under which the CE of Hong Kong SAR may give directions to the MA. In addition, on-going vigilance is warranted to ensure that developmental/competitive considerations are not in conflict with the HKMA's prudential mandate. Finally, as a precondition for effective banking supervision, the distinct and unique legal status of Hong Kong SAR should be maintained by upholding transparent rules and its judicial independence as Hong Kong SAR's rule of law is directly related to public confidence in its financial sector.

B. Insurance Supervision

35. **The IA's establishment has greatly strengthened insurance regulation.** The IA is a dedicated agency, supervising both insurers (since June 2017) and intermediaries (since September 2019), with extended powers, including the resolution authority for relevant insurers, and control over staff salaries and use of its resources. More staff with industry experience (including actuaries) have been recruited. Some provisions of previous legislation that could compromise independence from government have been carried over, and the IA remains dependent on government for certain regulations and budgetary approval. However, the risks are mitigated by clear statutory objectives and close collaboration with the government. The IA needs to sustain an appropriate balance between its policyholder protection and market development objectives, as this promotes a fair, safe, and stable insurance market and contributes to financial stability.

36. **Further development of the IA, particularly in supervision, is needed to maximize its effectiveness.** The insurance sector has been relatively stable, with only one failure (a specialist motor insurer) over the past ten years, reflecting relatively low risk products (in long-term insurance, mainly participating policies with low guarantees) and effective supervision. The IA has extended regulatory powers over insurance companies as well as insurance intermediaries, and as resolution authority for relevant insurers. Completing the reform of insurance regulation—especially the implementation of full group-wide supervision and risk-based capital requirements, and intermediaries' supervision— will take several years. A priority should be the development and documentation of internal IA processes, including for supervision and enforcement (where not already complete), with appropriate publication of key features. The IA should also further develop its capacity to identify and respond to risks across the insurance sector, such as concerning the vulnerability of many long-term insurers to prolonged low interest rates (as in many other economies), the increased incidence of typhoons, and increased climate change risks more broadly.

C. Securities Markets Supervision

37. **Overall, the current regulatory and supervisory framework for trading systems has been strengthened since the previous FSAP in 2014**. Requirements for ATS, previously unevenly imposed via licensing conditions, have been consolidated into guidelines and amendments to the code of conduct of intermediaries. Supervision has also been strengthened, with the SFC now carrying out regular on-site inspections of recognized exchanges and clearing houses, in line with

the 2014 FSAP recommendations. Supervision of ATS provision by intermediaries has also been revamped, with a more intrusive and risk-based approach. The SFC has also dedicated great efforts to creating a closer work relationship with the China Securities Regulatory Commission (CSRC), by entering into a number of cooperation agreements, as well as by increasing the frequency of their formal and informal exchanges of information and meetings.

38. The SFC should continue its work to strengthen the regulatory and supervisory framework for trading systems, in particular by expanding SFC's enforcement powers in relation to recognized exchange companies and certain ATS providers, fine-tuning its market surveillance function to ensure it has access to a more comprehensive range of trading data and considering consolidating requirements for recognized exchange companies into the regulatory framework. The SFC should also ensure it continues to strengthen its cooperation with Mainland China as the ties between the two markets are likely to further intensify.

D. Financial Market Infrastructures

39. A detailed assessment of the systemically important HKCC, one of four central counterparties (CCPs) in Hong Kong SAR, against the CPSS-IOSCO principles for financial market infrastructures (PFMI) concluded that HKCC observes the PFMIs and has a sound, coherent and transparent legal basis. The credit and liquidity risks are minimized by having a robust risk management framework, including a rigorous stress testing methodology and access to qualifying liquid resources. Furthermore, the HKCC has clear rules and procedures to handle and manage a participant's default procedures. Moreover, the HKCC has established risk management framework to handle operational risk, including cyber risk, and business continuity management that addresses events posing significant risk of operational disruption.

40. However, the assessment demonstrated the need for further enhancement of the risk management framework and governance structure. The FSAP recommends : (i) establishing an independent risk management committee for HKCC's clearing activities (a review of governance by an independent consultant has since commenced) ; (ii) HKMA oversight over HKCC for liquidity and settlement risks; and (iii) consolidating the three central counterparties (CCPs) for trading[18] into a single CCP, duly considering the cost and benefit and timing, with an appropriate governance structure, an independent board, key functionalities and decision-making process. HKCC could also usefully review the need for strengthening resources to cover the default of the two largest clearing members. Another important recommendation would be for strengthening the secondary site with appropriate staffing arrangements, sufficient resources, capabilities, and functionalities, to allow swaps of operations between the primary and secondary sites during business-as-usual.

[18] The four CCPs are HKCC, Hong Kong Securities Clearing Company Limited (HKSCC) and the SEHK Options Clearing House Limited (SEOCH), for trading, and the OTC Clearing Hong Kong Limited (OTC Clear) for OTC clearing.

E. Financial Integrity

41. Hong Kong SAR has a solid regime to fight money laundering and terrorist financing (ML/TF) that is delivering good results, and is encouraged to continue to improve its anti-money laundering and combating the financing of terrorism (AML/CTF) regime. The Financial Action Task Force (FATF)'s 2019 Mutual Evaluation Report on Hong Kong SAR's AML/CTF regime found that Hong Kong SAR has a strong legal and institutional framework and the authorities generally have a good understanding of the ML/TF risks they are exposed to, as do the larger financial sector entities. The authorities have been actively prosecuting ML from domestic offenses, and are encouraged to pursue efforts to implement the recommendations of the Mutual Evaluation Report, including enhancing prosecution of the laundering of proceeds from foreign offenses, increasing risk understanding, and strengthening supervision of certain non-financial sectors (such as trust and company service providers and legal and accounting professionals). These actions will be crucial in helping to sustain Hong Kong SAR's reputation as a leading global financial center.[19]

FINTECH AND FINANCIAL INNOVATION

42. The authorities play an active role in promoting Hong Kong SAR as a fintech hub in Asia. Hong Kong SAR has a high digital penetration rate like its major regional peers (Figure 11). In 2018, Hong Kong SAR ranked fifth in digitalization of the traditional financial sector and the percentage of fintech users reached 35 percent.[20] In 2019, the consumer fintech adoption rate increased to 67 percent.[21] The number of fintech companies has grown from 230 in 2017 to 600 in 2019. This includes firms specializing in payment and remittances, compliance and regtech, big data and artificial intelligence, blockchain and cryptocurrency, and insurtech. Important milestones since 2016 include the launch of the Faster Payment System; the granting of eight virtual bank and four virtual insurer licenses; the adoption of the open API framework by banks; and the creation of a blockchain-based trade finance platform. Hong Kong SAR is well positioned to develop fintech initiatives from its traditional strengths in financial services.

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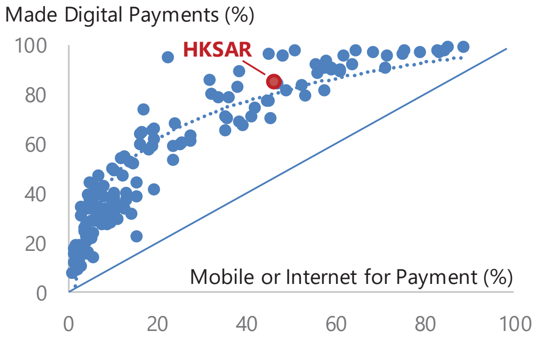
[19] The authorities recently proposed implementing the yet-to-commence "inspection arrangements for companies' register", which may limit public access to certain personal information related to directors of companies (i.e., residential address and full ID number). This could make the verification of ownership and control of legal persons by entities with AML/CFT obligations more difficult, and potentially undermine the effectiveness of AML/CFT measures.

[20] Cambridge Judge Business School, 2018 Global Fintech Hub Report, November 2018.

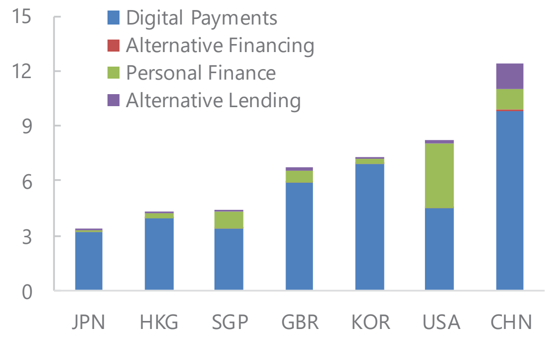
[21] Ernst & Young, Ernst and Young Global Fintech Adoption Index 2019, June 2019.

Figure 11. Hong Kong SAR: Fintech and Digital Payments in Hong Kong SAR and Major Peers

Usage of digital payments is high in Hong Kong SAR, while mobile and internet use to make/receive payments is average.



Compared to peers, Hong Kong SAR's 2019 transaction value is high for digital payments but not for other fintech means.



Source: Statista; WEO; IMF staff computations; IMF Financial Access Survey.

Notes: Digital payments Made = percentage of respondents, ages 15+, who report using mobile money, a debit or credit card, or a mobile phone to receive a payment through an account in the past 12 months. Mobile or Internet for Payment = percentage of respondents, ages 15+, who report using a mobile phone or the internet to make or receive payments, to make a purchase, or to send or receive money through their financial institution account or through the use of a mobile money service in the past 12 months. In the right-hand chart, fintech transaction value (expressed as a percentage of domestic GDP) includes digital payments, alternative financing (e.g., online crowdfunding), personal finance (e.g., robo-advisers and automated wealth services), and alternative lending (e.g., marketplace lending).

43. **The authorities are taking a proactive approach towards fintech trying to balance the need to encourage innovation, competition, and improve financial inclusion, with relevant risk mitigation measures.** HKMA has created the Fintech Facilitation Office tasked with spearheading its engagement with the industry and promoting financial innovation. Similar units have been created within the SFC and the IA. All three financial regulators have also established their own sandboxes for incumbents and startup firms to pilot operations in a controlled environment, growing from an aggregated 29 products tested in 2017 to 103 in 2019. The HKMA launched "Smart Banking" initiatives to help the banking sector embrace opportunities created by the convergence of banking and technology, and developed a RegTech promotion roadmap to foster a RegTech ecosystem. In response to industry developments and a changing risk landscape, regulators have introduced and refined range of supervisory requirements. including a voluntary framework for Virtual Asset (VA) trading platforms and guidance for intermediaries dealing with VAs. Virtual banking has steadily gained traction since its inception, stimulating competition in the banking industry. Close supervision of initial operations and comprehensive assessments on virtual banks' medium- to long-term viability will be critical before additional licenses are granted.

44. **Continued coordination among regulators would guide a more consistent and cross-sectoral approach.** Increased reliance on third-party technology service providers and a deeper engagement between fintech companies and financial institutions may necessitate a methodology to recognize interconnectedness and concentration risk in a more comprehensive manner (e.g.

mapping network interdependencies in the financial sector[22]). Frameworks for cyber/IT related incident reporting,[23] information sharing, and the implications of artificial intelligence/regtech adoption are examples that would benefit from this more holistic activities-based approach. Continued review of the regulatory perimeter of non-bank fintech companies is also warranted. Authorities are encouraged to continue closely monitoring virtual assets (VAs) including the negotiation of these instruments via trading platforms, as well as financial institutions' exposure to VAs, and to mitigate the risk of misuse by criminals.

CRISIS MANAGEMENT, RESOLUTION, AND SAFETY NETS

45. **The framework for crisis management has been strengthened following the 2014 FSAP and is now broadly adequate.** The 2017 Financial Institutions Resolution Ordinance (FIRO) created a regime which is clear, comprehensive, and closely aligned with the Financial Stability Board (FSB) Key Attributes of Effective Resolution Regimes, with a particularly strong cross-sectoral coverage. The HKMA's detailed rules and guidance issued under FIRO are also broadly in line with international good practice, despite scope for some enhancements and delays to planned consultations on additional rules during 2020. The framework for emergency liquidity assistance (ELA) in HKD has been updated, and the legal framework also allows for use of the significant Exchange Fund resources for foreign currency lending. The FSAP recommends:

- Enhancing the implementation of the resolution framework in several areas. These include resolution planning for non-DSIBs; close monitoring of Loss-Absorbing Capacity, especially where the HKMA's LAC requirements come into force earlier than group-level TLAC requirements; ex-post resolution levies; adequate resourcing of nonbank resolution authorities (particularly for CCPs); and strengthening cross-border cooperation, information sharing, and simulation exercises, in particular with Mainland China and other resolution authorities in the region.

- Providing greater clarification on governance and risk management of ELA, including on HKMA's approach to viability assessment for banks seeking to access ELA, and testing its ability to accept and value non-standard collateral.

- Updating the deposit protection regime to ensure full consistency with the resolution regime and underpin current high levels of depositor confidence, through expanding the Deposit Protection Board (DPB)'s mandate to allow it to contribute to the costs of a resolution; increasing the DPB's integration into interagency crisis coordination arrangements; expanding deposit preference, and reviewing the relatively low target level of the Deposit Protection Scheme (DPS) fund.

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[22] For details, please see https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2019/09/23/Cybersecurity-Risk-Supervision-46238.

[23] For instance, the current incident reporting timeframes are varied across the financial sector and could be aligned where appropriate.

Box 1. Climate Change Risks for the Hong Kong SAR Financial Sector

Hong Kong SAR's financial sector is exposed to both short-term and long-term climate risks. The former are mostly associated with physical risks pertaining to recurring flooding, typhoons and wildfires, while the latter are mostly related to transition risks for firms and banks due to the transition from a high to a low-carbon economy, although some physical risks may also have a longer term impact.

For now, physical risks appear generally well managed, although Hong Kong SAR stock prices indicate a mispricing of temperature risk. The impact of past climate events on GDP is generally limited and short-lived with no significant impact beyond 1 quarter when regressing sectoral stock price returns on lagged returns and climate events. Only for insurance companies, the impact appears both significant and large (Figure 10, panel 1 in main text). Over the longer term, physical risk could become more intense and widespread, also for banks and asset markets, as the frequency and intensity of climate event risks may increase globally and have a longer-lasting macro impact. In this context, there appears to be a persistent asset pricing anomaly with regard to temperature risk, suggesting that more exposed stocks carry a too low risk premium (Figure 10, panel 2 in main text). This follows from a rolling regression Fama-MacBeth type analysis of equity prices, sorting Hong Kong SAR stocks on their sensitivity to a temperature factor (quarterly data 1990 Q1-2019 Q4, computing the deviation of current from average temperature of the same month in the past 30 years). In a second stage, the top-20 percent firms in terms of sensitivity to the temperature factor appears to underperform other firms by about 1 percentage point each month.

In the longer term, Hong Kong SAR banks may be exposed to climate transition risk stemming from the sectoral composition of their loan and debt securities holdings. Industries with higher GHG emissions will face more significant pressure to make their operations less CO_2-intensive or face higher GHG taxation or activity restrictions when failing to adjust. This could result in lower firm profitability for a prolonged period and potentially higher risk premia for more polluting industries, or higher risk weights on loans or debt holdings, to influence bank lending and investment behavior. Hence, the sectoral makeup of Hong Kong SAR banks' loan and debt securities portfolios could affect their performance and resilience in the longer run.

Hong Kong SAR banks with large exposures to energy and transportation—the most polluting in terms of GHG emissions— are especially vulnerable to climate transition risk. A breakdown of Hong Kong SAR banks' 2018Q4 loans and advances by economic sector for use in Hong Kong SAR and 2017 data on GHG emissions from HK government and Exiobase can give some general insights on their climate transition vulnerabilities. This is complemented by data for the Hong Kong SAR banking sector and sectoral breakdowns of its Mainland China loan portfolios. The building and construction sector (property development and investment) for use in Hong Kong SAR and in Mainland China account for 16 percent and 14 percent of the loan portfolio and total Mainland-related lending, respectively, but the GHG-emission content is relatively low. Domestic and Mainland China exposures to manufacturing, wholesale and retail trade, transportation and agriculture and mining sectors each account for 6 percent or below of the total loan book, and electricity and gas accounts for about 2 percent. However, the latter sector's GHG emission is extremely high compared to other industries, accounting for 65 percent of Hong Kong SAR's total GHG emissions (40,700 kilotonnes CO2) in 2017.

Figure B.1.1. Hong Kong SAR Banks Sectoral Loan Composition and GHG Emissions

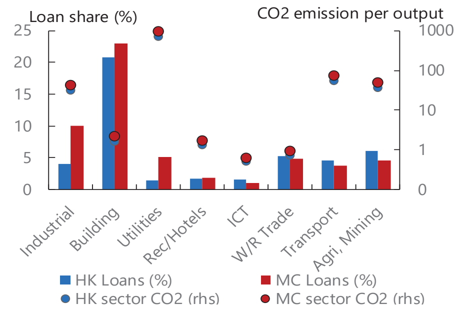
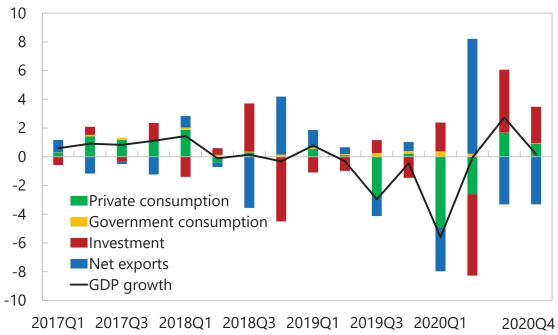


Figure 12. Hong Kong SAR: Macro Fundamentals Remained Weak Amid the Pandemic

The economic recession deepened amid the pandemic although growth started to recover in 2020Q3.

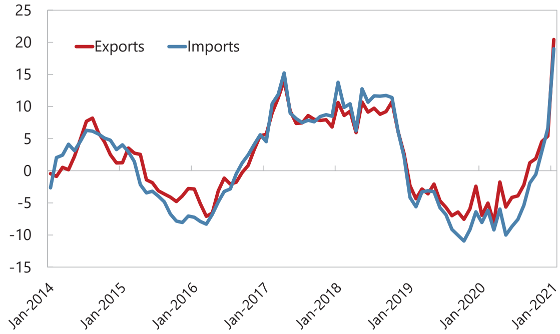
Real GDP Growth and Contributions
(Percent, quarter-on-quarter SA)



Sources: C&SD, and IMF staff calculations.

Trade flows remained weak for most of 2020 but have recovered quickly in recent months.

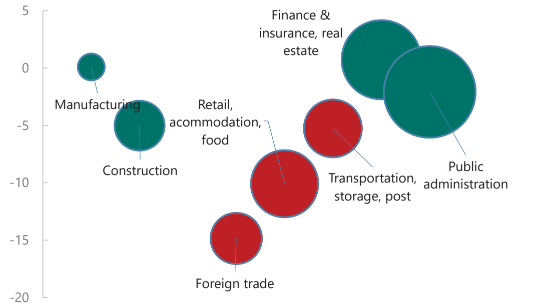
External Merchandise Trade
(Year-on-year growth, 3mma)



Sources: CEIC; and IMF staff calculations.

Layoffs have intensified amid the pandemic, particularly in trade-related and retail sectors.

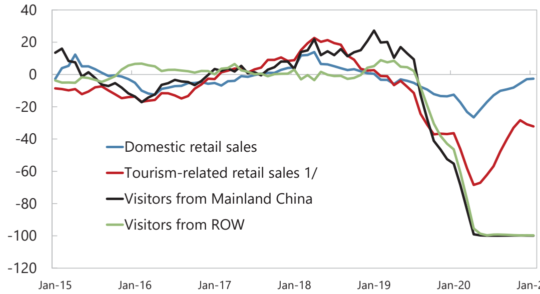
Developments in Employment by Sector
(Percent)



Value on Y axis depicts growth rate between 2019Q4 and 2020Q4. Size of the bubble depicts share in employment in 2019. Red bubbles indicate trade-related and retail sectors.
Sources: CEIC; and IMF staff calculations.

Nearly 100-percent decline in visitor arrivals, from both Mainland China and the rest of the world, exacerbated the decline in retail sales, despite some recent recovery.

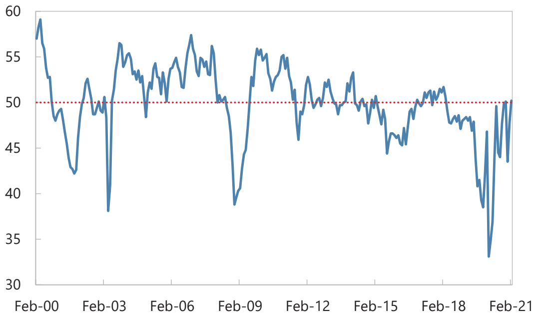
Retail Sales and Visitor Arrivals
(Year-on-year growth, percent, 3mma)



1/ Tourism-related retail sales are defined as sales of jewelry, watches and clocks; Chinese drugs and herbs; medicines and cosmetics; and sales in optical shops.
Sources: CEIC; and IMF staff calculations.

Business sentiment worsened sharply during the pandemic but has improved since 2020Q3.

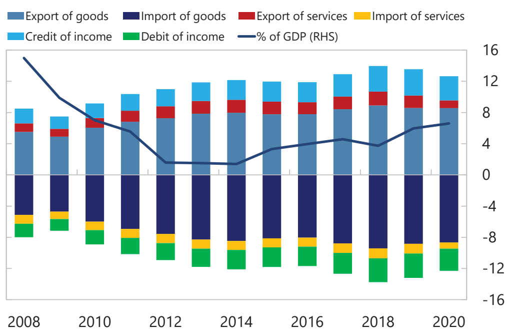
Purchasing Managers Index (SA, 50+ = Expansion)
(Index)



Sources: Bloomberg.

Current account remained in surplus in 2020, but trade flows have declined.

Current Account by Key Component
(Trillions of HKD; percent of GDP)

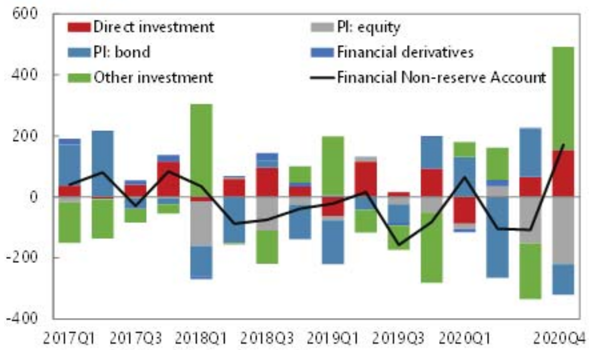


Sources: CEIC, and Fund staff calculations.

Figure 13. Hong Kong SAR: Domestic Markets Remained Stable During the Covid-19 Crisis

Direct investment and other capital inflows were behind large non-reserve financial flows in 2020…

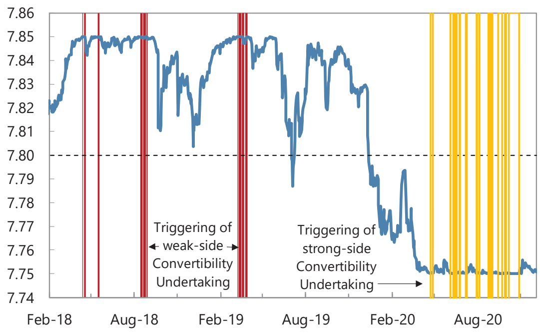
Financial Non-Reserve Account by Key Component
(Billions of HKD)



Sources: CEIC and Fund staff calculations.

…which led the HKD going from weak-side Convertibility Undertaking in 2019 to strong-side in 2020.

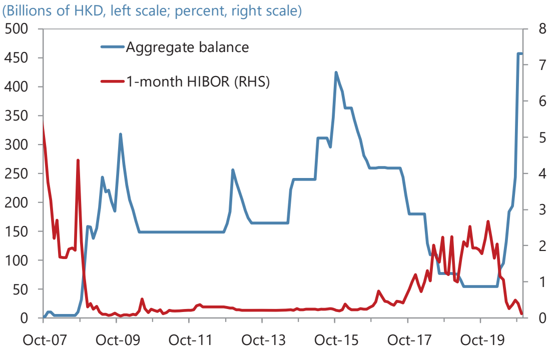
USD/HKD Spot Exchange Rate



Sources: Bloomberg.

The aggregate balance expanded, and interbank interest rates fell to near-zero…

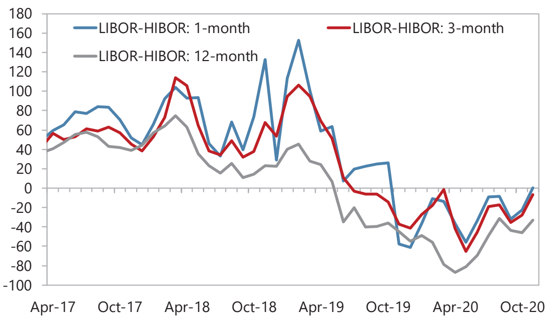
Aggregate Balance and Interbank Interest Rate
(Billions of HKD, left scale; percent, right scale)



Sources: CEIC.

…while narrowing and reversal of the LIBOR-HIBOR spread helped create upward pressure on HKD…

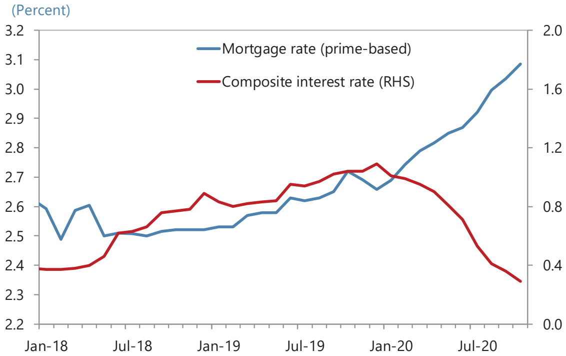
USD-HKD Interest Rate Differentials
(Basis points)



Sources: Bloomberg, CEIC.

…and variable mortgage rates followed the narrowing of the LIBOR-HIBOR spread, while funding costs fell…

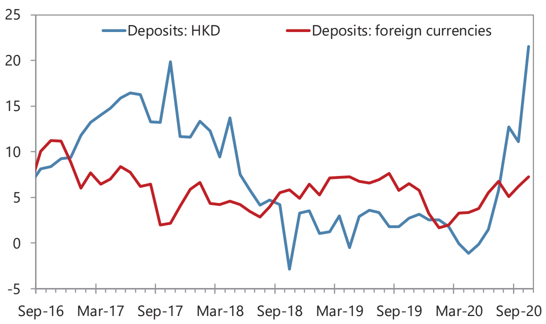
Mortgage Rate and Composite Interest Rate
(Percent)



Sources: HKMA, and CEIC.

…since funding remained ample due to continued growth in customer deposits.

Customer Deposits by Currency
(Percent, year-on-year change)



Sources: CEIC.

Note: The aggregate balance is defined by the HKMA as the sum of balances in the clearing accounts with the central bank, and is part of the monetary base. The composite interest rate is a measure of average cost of funds of banks.

Figure 14. Hong Kong SAR and Peer Economies: Financial Soundness Indicators (FSIs)

(In percent, 2019 or latest)

Sources: IMF Financial Soundness Indicators; national authorities' websites; and Haver Analytics.

Figure 15. Hong Kong SAR: Cross-Border Linkages of the Financial System

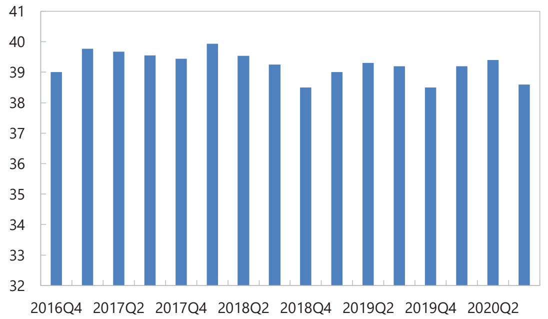
Hong Kong SAR's banking sector is highly exposed to the Mainland...

Banking Sector Exposure to the Mainland
(Percent of GDP)

1/ Non-Bank Mainland China exposure refers to the sum of Mainland-related lending and other non-bank exposure.
Sources: HKMA, and IMF staff calculations.

...with close to 40 percent of total loans being Mainland-related.

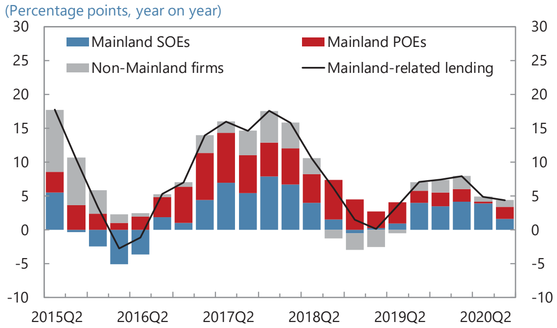
Banks' Mainland Related Lending
(Percent share of total loans)



Sources: Hong Kong SAR Authorities, and CEIC.

Mainland-related lending slowed more recently due to lower demand amid slowed growth in total credit.

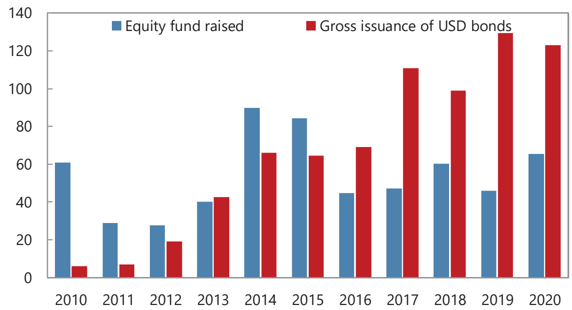
Contribution to Mainland-related Lending by Type of Borrower
(Percentage points, year on year)



Sources: CEIC, and IMF staff calculations.

Hong Kong SAR remains a major fund-raising platform for Mainland companies through capital markets.

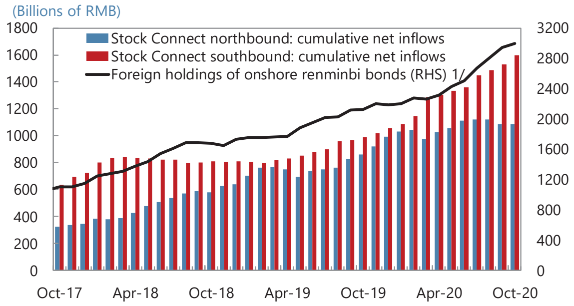
Fund Raised by Mainland Firms in Hong Kong SAR
(Billions of USD)



Note: 2020 refer to January to November figures.
Sources: HKEx, and WIND.

Hong Kong SAR's role as a gateway to Mainland China's financial markets has strengthened despite heightened uncertainty.

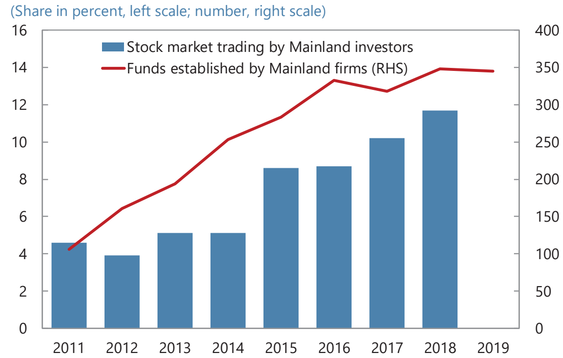
Cross-border Fund Flows between Hong Kong SAR and Mainland China
(Billions of RMB)



1/ Investment through Bond Connect, CIBM Direct and QFII/RQFII.
Sources: WIND.

Domestic financial sector also benefits from greater participation of Mainland China investors and companies.

Increasing Investment Activities by Mainland Investors
(Share in percent, left scale; number, right scale)



Sources: HKEx, and Hong Kong SAR Authorities.

Sources: CEIC; HKEx; Hong Kong SAR C&SD; Hong Kong SAR Authorities; WIND; and IMF staff calculations.

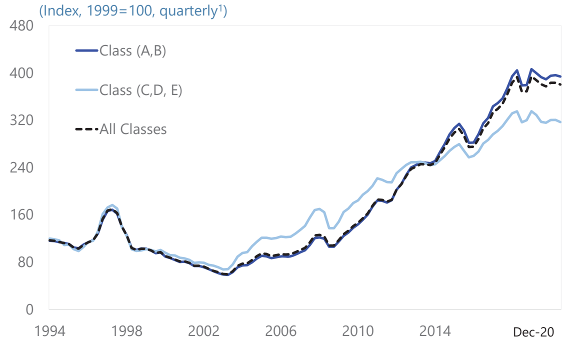
Note: Stock market trading share of Mainland investors is no longer reported in 2019 HKEX Transaction Survey.

Figure 16. Hong Kong SAR: Housing Sector Developments

Hong Kong SAR nominal house prices increased by more than 55 percent between 2014 and end-2020.

House Price Index: by Class

(Index, 1999=100, quarterly[1])

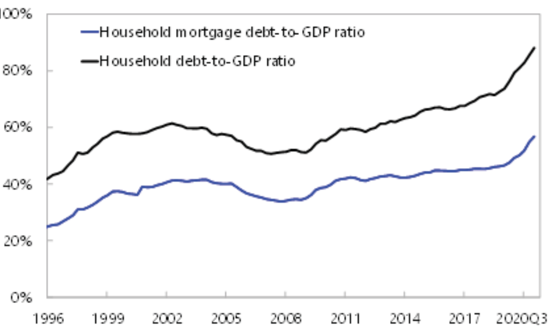


Source: CEIC; and IMF staff estimates and calculations.
[1] Simple averages of the specified classes .

Household debt has steadily increased from about 60 percent of GDP in early 2014 to 88 percent of GDP in September 2020.

Household Indebtedness Indicators

(In percent of GDP)

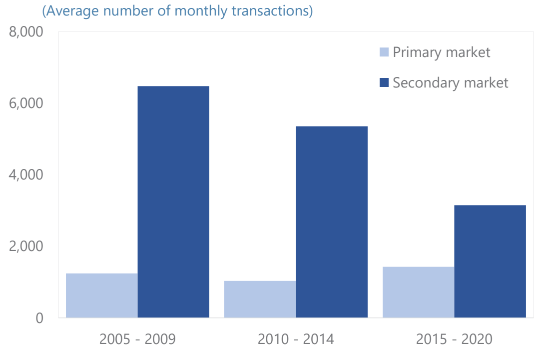


Sources: CEIC; Haver Analytics; BIS; and IMF staff estimates and calculations.

Secondary market transactions decreased markedly after the introduction of demand-side management measures.

Primary and Secondary Market Transactions

(Average number of monthly transactions)

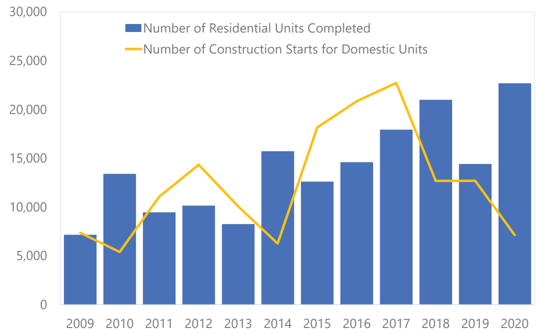


Source: CEIC; and IMF staff estimates and calculations.

Private housing completions significantly outperfomed the previous year, but construction starts fell markedly in 2020.

Housing Completions

(Units)

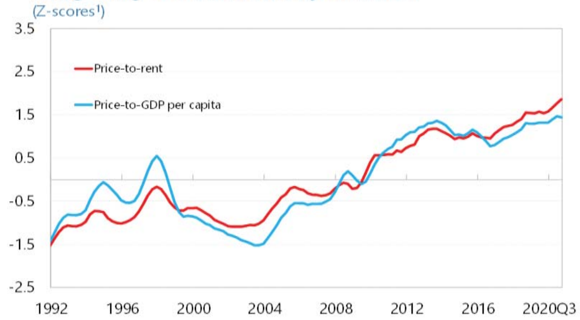


Source: CEIC; and IMF staff estimates and calculations.

While the price-to-GDP per capita and price-to-rent ratios continue to increase, ...

Hong Kong SAR Affordability Measures

(Z-scores[1])

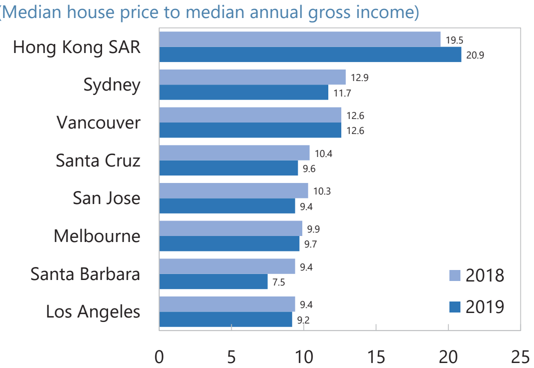


Source: CEIC; Haver Analytics; and IMF staff estimates and calculations.
[1] Z-scores of quarterly average prices for A, B, C, D, E classes for Hong Kong SAR, calculated over sample 1990 - June 2020; 4 quarter moving averages. Price-to-GDP in percent of 4 quarter moving sum of GDP.

...housing affordability has deteriorated further since 2018.

Affordability Indicators: International Housing Markets

(Median house price to median annual gross income)

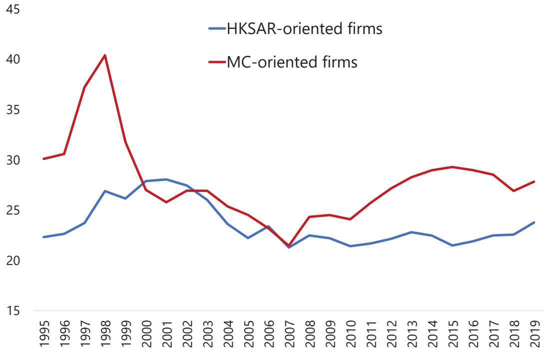


Sources: CEIC; THB; Haver; Demographia; and IMF staff estimates and calculations.

Figure 17. Hong Kong SAR: Non-Financial Corporate Sector Vulnerabilities

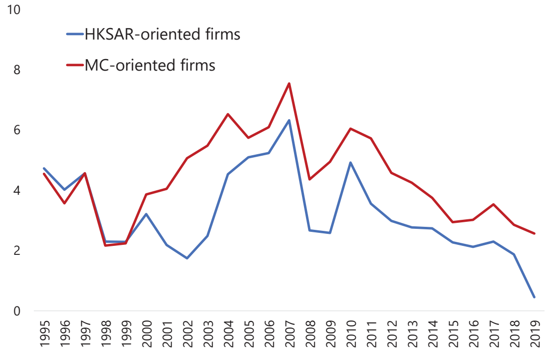
Corporate leverage increased after the GFC, ...

Non-financial Corporate Leverage: Debt-to-Asset Ratio
(Percent)



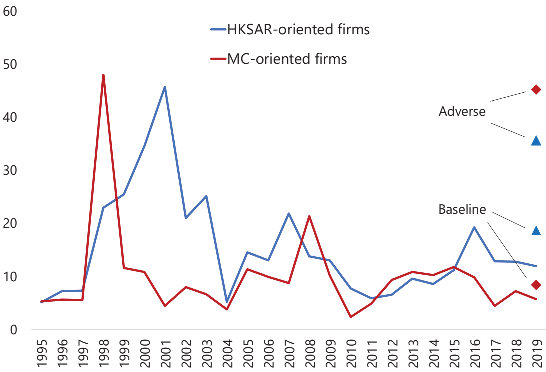
...while profitability declined.

Non-financial Corporate Profitability: Return on Assets
(Percent, median across firms)



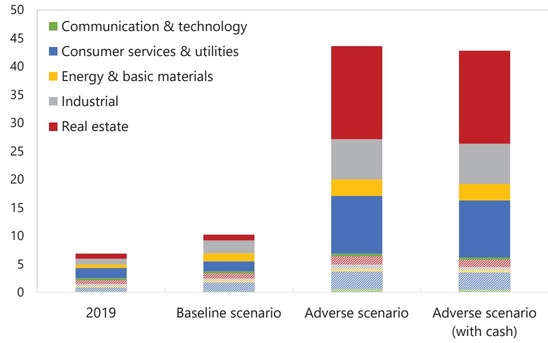
Debt-at-risk would increase significantly in both types of firms in the adverse scenario, ...

Non-financial Corporate Debt-at-Risk
(Share of debt owed by firms with ICR below 1 in percent of total debt)



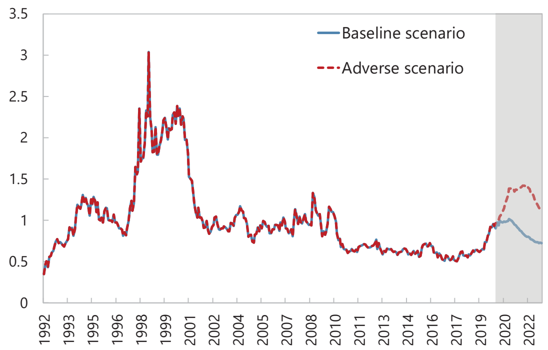
...with particularly high contributions from the Mainland China-oriented real estate sector.

Non-Financial Corporate Debt-at-Risk: Sectoral Contributions 1/
(Share of debt owed by firms with ICR below 1 in percent of total debt)



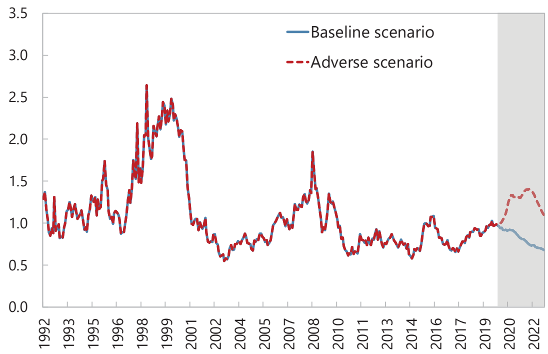
PDs in Hong Kong SAR-oriented firms would increase significantly in the adverse scenario but remain below AFC levels, ...

PDs of HKSAR-oriented Firms
(In percent; Median across firms)



...and PDs in Mainland China-oriented firms would also increase, particularly for those in the real estate sector (see Figure 9).

PDs of MC-Oriented Firms
(In percent; Median across firms)

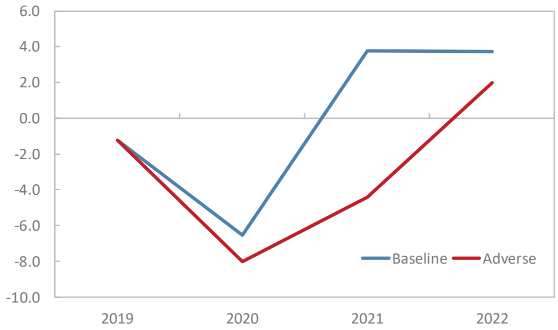


Sources: Bloomberg, L.P.; and IMF staff calculations.

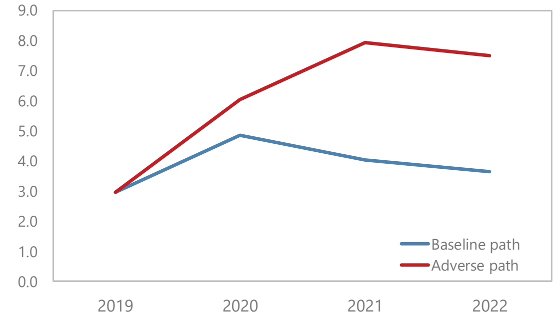
1/ The solid bars and pattern bars represent Mainland China- and Hong Kong SAR-oriented sectors, respectively.

Figure 18. Hong Kong SAR: Solvency Stress-Test Scenarios

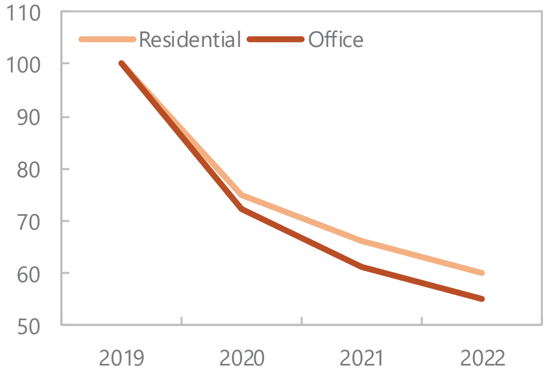
GDP starts recovering in 2021 in the baseline scenario, but falls significantly for two years in the adverse scenario.



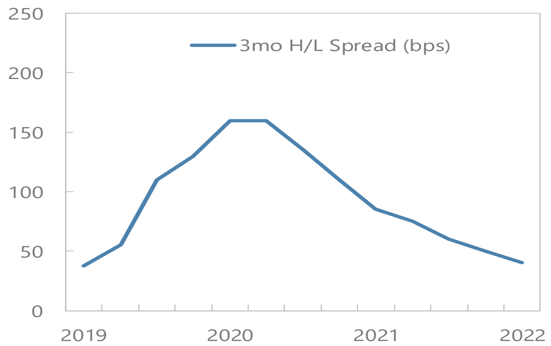
Unemployment increases significantly in the adverse scenario and remains elevated.



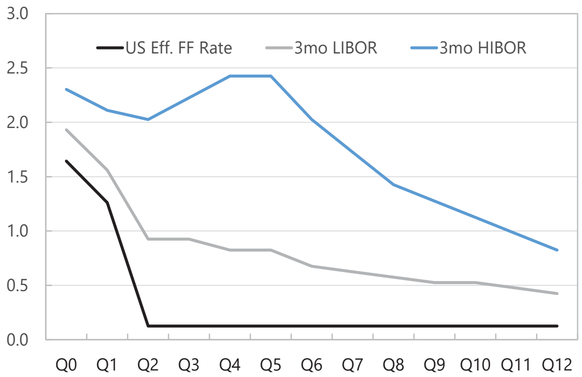
Residential and commercial property prices fall by 40 and 45 percent, respectively, in the adverse scenario.



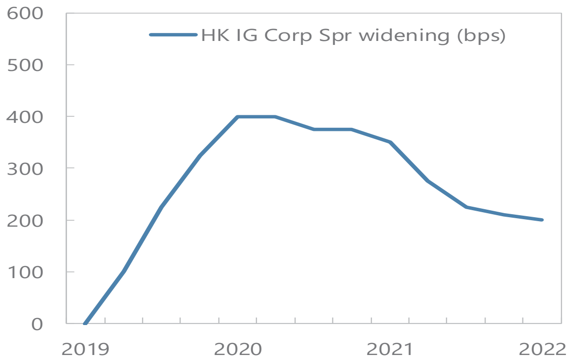
The HIBOR/LIBOR spread widens significantly in the adverse scenario as risk aversion increases.



The spread widening pushes HIBOR up in the first year, and it starts declining in the second year.



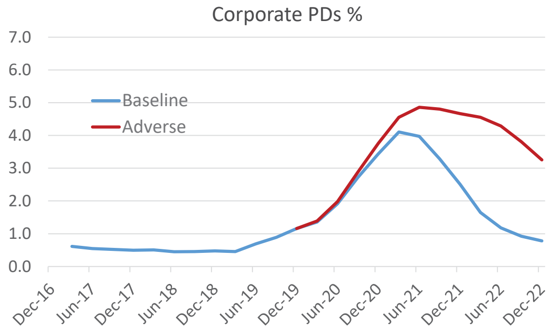
Risk aversion also pushes corporate bond spreads up significantly.



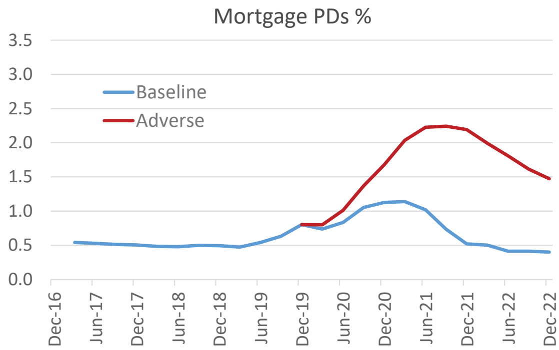
Sources: IMF staff.

Figure 19. Hong Kong SAR: Banking Sector Solvency Stress-Test Results

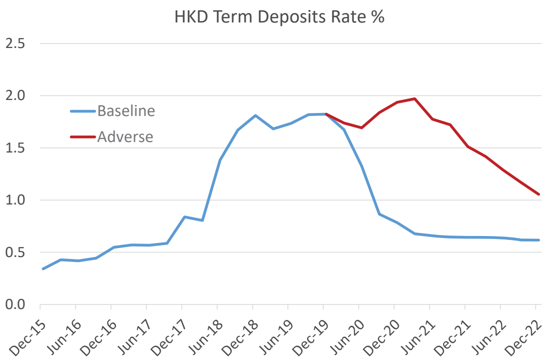
Corporate PD increases substantially, ….



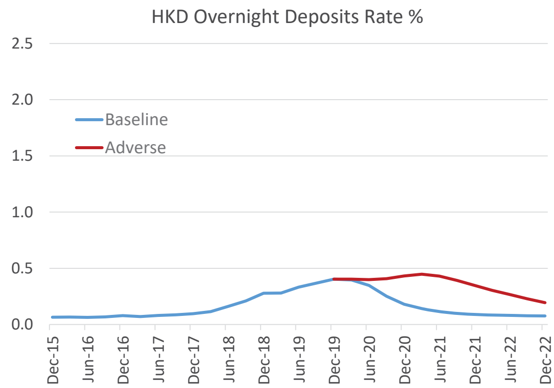
while mortgage PD increase is more muted.



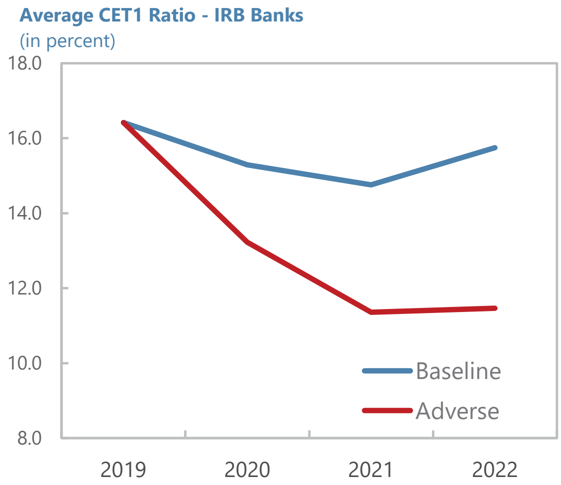
Term deposit rate reflects the interbank stress.



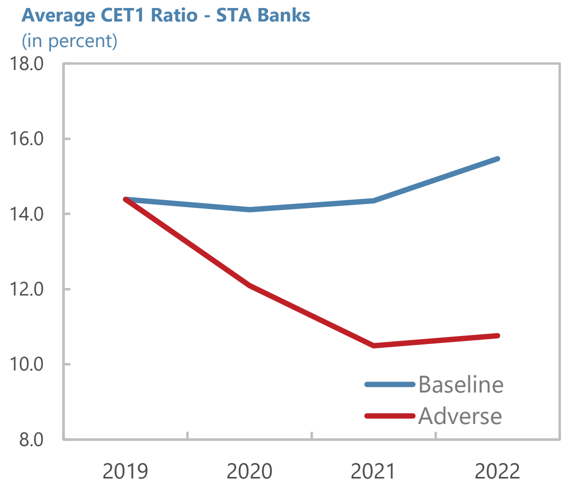
Overnight deposits are less sensitive but follow a similar pattern.



IRB banks experience larger declines in capital ratios due to sensitivity of RWAs.



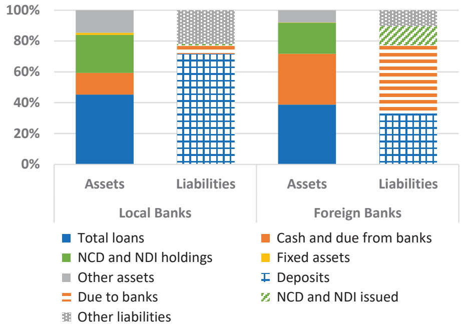
Standardized banks' capital path follows a similar pattern, but contribution of RWAs is less pronounced.



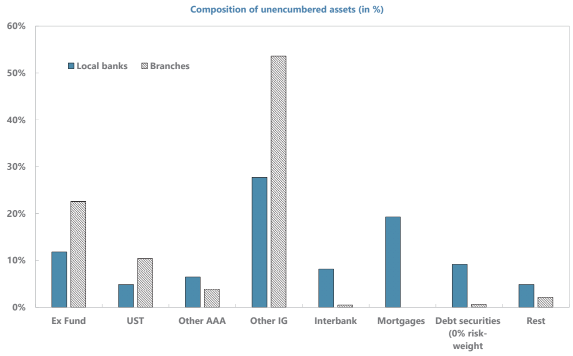
Sources: HKMA and IMF staff computations.

Figure 20. Hong Kong SAR: Bank Business Models and Banking Sector Liquidity

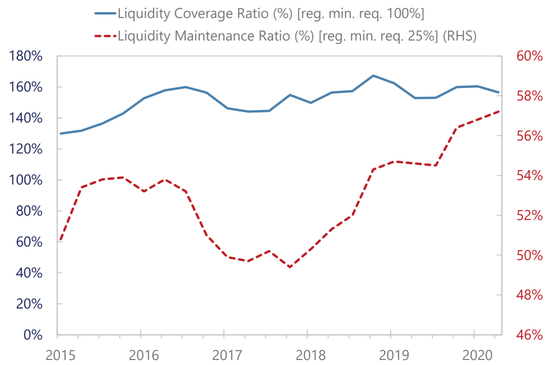
Local banks and foreign branches have very different balance sheets, reflecting different business models…



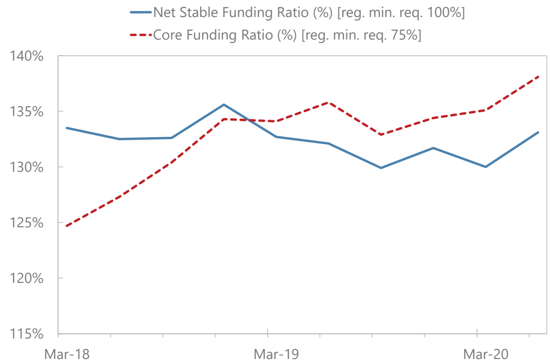
…and their unencumbered asset portfolios differ too.



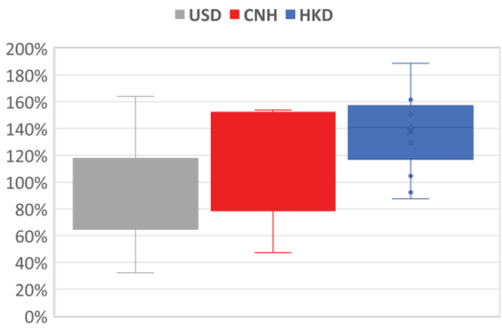
Yet, both actual LCRs and LMRs remain well above regulatory minima…



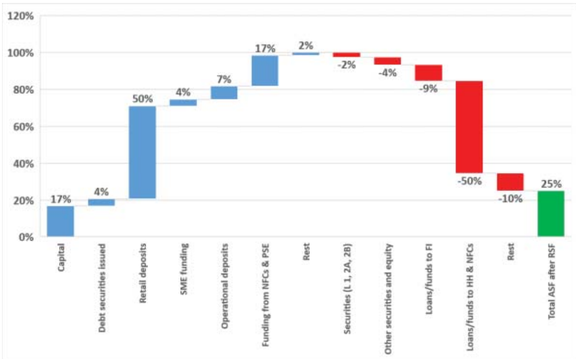
…as do the NSFR and Core Funding Ratios.



*Distribution of LCR by currency reveal a large dispersion, especially for USD exposures when inflows are capped.**



NSFR composition for the Hong Kong SAR banking system is mainly driven by retail deposits and retail loans.



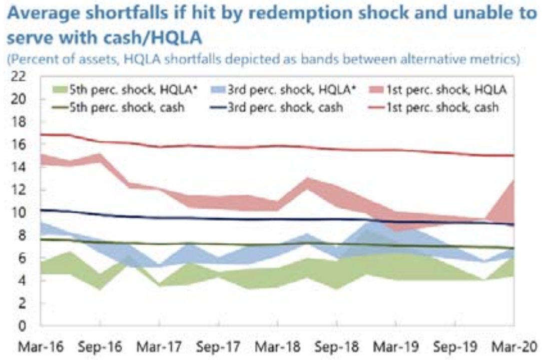
Sources: HKMA; Haver Analytics; IMF staff somputations.

Notes: NCD = negotiable certificates of deposit, NDI= Negotiable debt instruments, Exch Fund = Exchange Fund securities, UST = U.S. Treasury securities, Other AAA = other AAA securities, Other IG = other investment-grade securities, Interbank = interbank placements after deductions, RMLs= residential mortgage loans, Other = other non-central bank eligible assets. ASF/RSF = available/required stable funding. Most foreign banking branches are required to comply with requirements of the Liquidity Maintenance Ratio (LMR), and AIs of considerable business size are also required to comply with Core Funding Ratio (CFR) requirements, which is a simplified version of the NSFR. * The Net Cash Inflows formula in the LCR caps cash inflows at 75 per cent of cash outflows to ensure that banks do not only rely on inflows but also hold HQLA. Without this cap, the LCRs in CNY and USD are considerably higher since the Net Cash Outflows are considerably lower due to higher expected inflows from FX swaps.

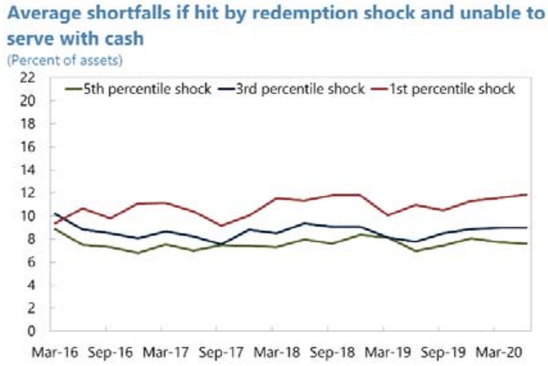
Panel 6 shows total ASF after accounting for ASF (blue bars) and RSF (red bars), which amounts to 25% (green bar), or equivalent to an NSFR of about 133% (a green bar of 0% would be the minimum for an NSFR equaling 100%).

Figure 21. Hong Kong SAR: Main Results of Fund Liquidity Stress Test

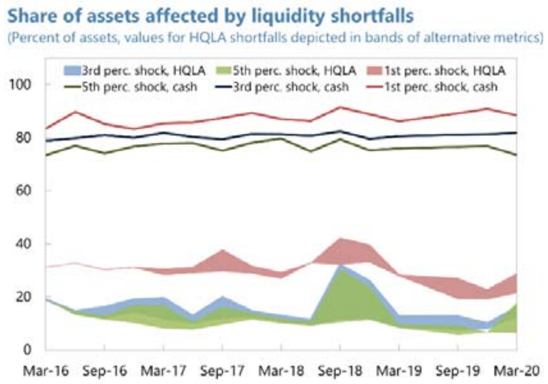
Average liquidity shortfalls measured on HQLA/cash basis are substantive for funds authorized in Hong Kong SAR…



…and the liquidity shortfalls measured on cash basis exceed those of their peers domiciled in Hong Kong SAR.



The share of funds' assets affected by liquidity shortfalls remained stable and is higher for shortfalls in cash.



Among funds domiciled in Hong Kong SAR a smaller share of assets is affected.

A tail of assets managed by Hong Kong SAR authorized funds appears particularly responsive to liquidity stress…

…with a similar pattern holding for funds domiciled in Hong Kong SAR, albeit on a lower shortfall level.

Sources: MorningStar and IMF staff salculations.

Notes: Panels 1, 3 and 5 report values for funds authorised in Hong Kong SAR, panels 2, 4 and 6 report values for their domestic peers. Panels 1, 2, 5 and 6 depict funds not being able to meet redemptions. The bands reported in panels 1 and 3 for HQLA are spanned by the alternative estimates obtained by HQLA and AQLA concepts. * =

Values for Q2 and Q3 2019 have been smoothed by interpolating as aggregate data were distorted by a few outliers. HQLA = High Quality Liquid Assets; AQLA = Adjusted High Quality Liquid Assets.

Table 2. Hong Kong SAR: Financial Sector Structure

(2020 Q3 or latest available data)

	Number of institutions	Total assets (HK$ bn)	Multiples of GDP
Banks	193	26,080	9.5
by place of incorporation:			
Local banks – domestic banks	10	7,037	2.6
Local banks – subsidiaries of foreign banks	46	8,990	3.3
Foreign bank branches	137	10,053	3.7
by business nature:			
Retail banks	34	17,012	6.2
Non-retail banks	159	9,068	3.3
Authorized Insurance Companies (2019)	163	3,872	1.4
Life	49	3,562	1.2
Non-Life	84	166	0.06
Reinsurance	17	144	0.05
Composite	13	(N.A.)	(N.A.)
		Assets under management (HK$ bn)	
Asset and wealth management business (2019)	-	28,769	10.0
by type of business activities:			
Asset management business	-	17,898	6.2
Fund advisory business	-	1,853	0.6
Private banking and private wealth management business	-	7,774	2.7
SFC-authorized Real Estate Investment Trusts (REITs)	-	289	0.1
Assets held under trusts attributable to non-licensed corporations and non-registered institutions	-	955	0.3

Source: HKMA.

Notes: Figures may not add up to totals due to rounding errors. "*Banks*" refers to "authorized institutions (AIs)" authorized under the Banking Ordinance to carry on the business of taking deposits. "*Domestic banks*" refers to AIs incorporated in Hong Kong SAR and are domestically-owned. "*Subsidiaries of foreign banks*" refers to AIs incorporated in Hong Kong SAR but are foreign-owned. "*Foreign bank branches*" refer to AIs incorporated outside Hong Kong SAR. Total assets of life insurance companies, non-life insurance companies and reinsurance companies also comprise those of the composite insurance companies. "*Private banking and private wealth management business*" excludes asset management business provided to private banking and private wealth management clients.

Table 3. Hong Kong SAR: Selected Economic and Financial Indicators, 2017-2026

(Projections based on April 2021 WEO)

				Proj.						
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
NATIONAL ACCOUNTS										
Real GDP (percent change)	3.8	2.8	-1.2	-6.1	4.3	3.8	2.8	2.8	2.9	2.9
Private consumption	5.5	5.3	-1.1	-10.1	5.5	4.7	3.5	2.9	2.9	2.9
Government consumption	2.8	4.2	5.1	7.8	3.2	2.3	2.3	2.3	2.5	2.8
Gross fixed capital formation	3.1	1.7	-12.3	-11.5	8.3	4.7	4.2	4.2	4.2	4.2
Inventories (contribution to growth)	0.5	-0.1	-0.6	2.0	-0.6	-0.5	-0.3	-0.2	-0.1	0.0
Net exports (contribution to growth)	-1.3	-1.5	2.3	0.2	-0.6	0.1	-0.2	-0.1	-0.1	-0.1
Output gap (in percent of potential)	0.1	0.1	-2.5	-6.8	-3.0	-1.4	-0.8	-0.5	-0.4	-0.3
Saving and investment (percent of GDP)										
Gross national saving	26.7	25.7	24.8	26.3	25.3	24.4	23.8	23.8	23.9	24.1
Gross domestic investment	22.1	22.0	18.9	19.8	19.8	19.4	19.4	19.6	19.9	20.1
Saving-investment balance	4.6	3.7	6.0	6.5	5.5	5.0	4.5	4.1	4.0	4.0
LABOR MARKET										
Employment (percent change)	0.9	1.2	-0.4	-5.1	1.1	1.5	1.4	0.5	0.5	0.4
Unemployment rate (percent, period average)	3.1	2.8	3.0	5.9	5.3	4.3	3.3	3.2	3.1	3.0
Real wages (percent change)	2.3	1.1	0.2	-0.2	0.3	1.0	1.3	1.3	1.3	1.3
PRICES										
Inflation (percent change)										
Consumer prices	1.5	2.4	2.9	0.3	1.4	1.9	2.4	2.4	2.4	2.4
GDP deflator	2.9	3.7	2.4	0.8	1.1	1.6	2.4	2.5	2.5	2.5
GENERAL GOVERNMENT (percent of GDP)										
Consolidated budget balance	5.6	2.4	-0.6	-10.2	-4.8	-0.1	-0.1	-0.1	-0.1	-0.1
Revenue	23.3	21.2	20.6	20.1	20.7	22.3	22.3	22.2	22.2	22.2
Expenditure	17.7	18.8	21.2	30.3	25.5	22.4	22.3	22.3	22.3	22.3
Fiscal reserves (as of March 31)	41.5	41.3	40.5	33.3	28.1	26.9	25.8	24.5	22.9	21.6
FINANCIAL										
Interest rates (percent, period-average)										
Best lending rate	5.0	5.0	5.1	5.0	...	...	...	...	...	...
Three-month HIBOR	0.9	1.8	2.1	1.1	...	...	...	...	...	...
10-year Treasury bond yield	1.6	2.1	1.5	0.7	...	...	...	...	...	...
EXTERNAL SECTOR										
Merchandise trade (percent change)										
Export value	8.0	7.3	-3.6	-0.2	6.0	4.5	3.6	3.6	3.6	3.6
Import value	8.7	8.4	-6.1	-2.0	6.5	4.8	3.8	3.8	3.8	3.8
Current account balance (percent of GDP) 1/	4.6	3.7	6.0	6.5	5.5	5.0	4.5	4.1	4.0	4.0
Exchange rate										
Market rate (HK$/US$, period average)	7.793	7.839	7.836	7.757	...	...	...	...	...	...
Real effective rate (period average, 2010=100)	115.3	113.1	117.6	116.8	...	...	...	...	...	...

Sources: BIS,CEIC; HKSAR Census and Statistics Department; and IMF staff estimates.

1/ Data published using the Balance of Payments Statistics Manual 6 (BPM6) format. BOP data for 2020 and onwards are projections in the April 2021 WEO.

Table 4. Hong Kong SAR: Financial Soundness Indicators, 2014-2020Q3

(In percent)

	2014	2015	2016	2017	2018	2019	2020Q3
Capital Adequacy							
Regulatory Capital to Risk-weighted Assets	16.8	18.3	19.2	19.1	20.3	20.7	20.3
Regulatory Tier 1 Capital to Risk-weighted Assets	13.9	15.3	16.4	16.6	17.9	18.5	18.3
Capital to Assets	9.0	9.5	9.8	9.8	9.5	9.9	9.3
Asset Quality							
Non-Performing Loans Net of Provisions to Capital	1.3	1.9	2.0	1.6	1.4	1.0	1.9
Non-Performing Loans to Total Gross Loans	0.5	0.7	0.9	0.7	0.5	0.6	0.8
Sectoral Distribution of Total Loans: Residents	69.8	69.7	70.3	69.9	69.7	70.0	70.7
Sectoral Distrib of Total Loans: Other Financial Corporations	6.1	6.7	7.6	9.8	9.5	9.4	11.6
Sectoral Distribution of Total Loans: Nonfin Corporations	56.9	55.9	55.7	53.0	52.6	52.1	51.2
Sectoral Distribution of Total Loans: Other Domestic Sectors	6.8	7.1	7.0	7.2	7.6	8.5	7.8
Sectoral Distribution of Total Loans: Nonresidents	30.2	30.3	29.7	30.1	30.3	30.0	29.3
Earnings and Profitability							
Return On Assets	1.0	1.0	1.1	1.0	1.0	1.0	0.8
Return On Equity	13.1	13.2	16.0	12.6	13.1	11.7	9.1
Interest Margin to Gross Income	51.2	46.5	42.6	51.1	56.2	57.1	50.3
Non-Interest Expenses to Gross Income	48.9	48.0	42.8	45.7	44.7	44.8	46.8
Liquidity							
Liquid Assets to Total Assets [Liquid Asset Ratio]	22.3	21.5	21.6	19.6	20.4	21.3	21.2
Liquid Assets to Short Term Liabilities 1/	47.0	164.3	180.8	182.2	187.5	176.1	174.4
Sensitivity to Market Risk							
Net Open Position In Foreign Exchange to Capital	5.3	5.9	4.1	0.5	0.0	-0.2	3.4

Sources: CEIC, Hong Kong SAR authorities, IFS, and IMF staff computations.

1/ composition of liquid assets and short-term liabilities changed in January 2015 after the implementation of a new liquidity regime in accordance with the Basel III framework.

Appendix I. Status of Key Recommendations of 2014 FSAP

Recommendations	Time	Status
Banking Sector		
Eliminate or specify the circumstances triggering the exercise of the legal authority of the Chief Executive of Hong Kong SAR to give directions to the Monetary Authority (MA), and provide for the public disclosure of the reasons for the dismissal of the MA in the Banking Ordinance (BO).	MT	Not implemented
Insurance Sector		
Establish the proposed Independent Insurance Authority (IIA).	MT	Implemented
Update the Insurance Companies Ordinance (ICO) to better reflect current international best practices, including by: (i) extending the fit and proper regime to cover Senior Management and Key Persons in Control Function; (ii) establishing a clear definition of control and pre-determined control levels; (iii) updating risk management requirements; (iv) granting authority to remove or disqualify persons on fit and proper grounds; and (v) requiring insurers to implement contingency plans.	C	Implemented
Amend the ICO to establish a regulatory regime for insurance groups.	ST	Implemented
Amend the ICO to implement a risk-based capital regime.	ST	Underway
Strengthen conduct of business requirements and direct supervision of insurance intermediaries.	ST	Implemented
Securities Market		
Strengthen secondary markets regulation by (i) expanding oversight regime of the HKEX; and (ii) further developing clear and transparent requirements for the recognition of exchanges and the authorization of automated trading services.	ST	Implemented
Strengthen auditors' oversight by (i) enhancing the independence of the auditor oversight body; (ii) strengthening the enforcement framework; and (iii) expanding the scope of oversight to all auditors of companies listed in Hong Kong SAR.	ST	Implemented
Strengthen enforcement by (i) providing the scope for the SFC to take both punitive and remedial actions in cases where breaches of the Code of Conduct do not contravene the law; and (ii) improving the existing coordination arrangements for criminal enforcement.	ST	Implemented
Financial Market Infrastructures		
Develop a clear timetable for each FMI for compliance with the PFMIs.	ST	Implemented
Develop a recovery and resolution plan for each FMI (in line with the resolution regime).	MT	Implemented
Crisis Management and Resolution		
Continue efforts to develop a comprehensive resolution regime, in line with emerging international good practices.	ST	Largely complete
Review the modalities (target size; normal premium level; surcharge premiums for replenishment) for ensuring the deposit protection fund has the appropriate resources to meet its objectives without undue reliance on the Exchange Fund.	MT	Partially complete
Note: Short-term indicates within 18 months; medium-term indicates within 18 months to 3 years.		

Appendix II. Stress Testing Matrix (STeM)

Domain		Assumptions Top-down by FSAP Team
Banking Sector: Solvency Stress Test		
1. Institutional Perimeter	Institutions included	• Largest 11 locally incorporated banks (ranked by the size of consolidated balance sheets), including five D-SIBs (the sixth D-SIB, Hang Seng Bank, is a majority owned subsidiary of HSBC Ltd and it will be included as part of the consolidated balance sheet of HSBC Ltd, instead of a stand-alone basis).
	Market share	• Close to 93 percent of total consolidated assets of all locally incorporated banks.
	Data source and starting date	• Data Source: Supervisory and publicly available data. • Baseline date: Balance sheets as of 2019Q3, credit and funding risk historical data up to 2019Q1. The FSAP team started the solvency ST exercise with 2018 bank-level balance sheet data and refreshed the balance sheets to the 2019 data during the course of the work. Due to the extraordinary COVID-19 pandemic circumstances, which imposed additional burdens on the banks, a further update of the balance sheet data to a point in 2020 was deemed impractical. The use of 2019 balance sheet data has limited effect on the solvency assessment due to the fact that there were no significant changes in the average bank capital levels between 2019 and 2020. • Scope of Consolidation: Consolidated balance sheets of locally incorporated banks.
2. Methodology	Overall framework	• IMF Balance sheet-based approach.
	Satellite models for macro-financial linkages	• Satellite models for PDs, LGDs, NPL ratio, and provisioning ratio for credit losses. • Methodology to calculate market losses from holdings of debt instruments (sovereign and other issuers). Haircuts calculated based on modified duration. • Methodology to calculate shocks to bank funding costs. • Non-interest income projected based on nominal GDP growth and expert judgment.
	Stress test horizon	• 3-years (2020-2022).
	Assumption	• Passive balance sheet assumption: (i) the balance sheet growth is identical to the overall credit growth, which is linked to nominal GDP growth; (ii) the balance sheet composition remains constant throughout the stress test horizon; (iii) banks build capital only through retained earnings; and (iv) maturing capital instruments are not renewed. • Banks can pay dividends only if net income after taxes are positive and if they are adequately capitalized. The dividend payout ratio is assumed to be 50 percent.
3. Type of analyses	Scenario analysis	• Scenario-based tests, that assess the impacts on the entire portfolio including the loans and the trading book. • Two macrofinancial scenarios agreed between HKMA and the IMF FSAP team. • The scenarios include domestic macro-financial variables (e.g., GDP, inflation, interest rates, unemployment rate, exchange rate, equity, and property prices), and global variables (US and China GDP, interest rates, and commodity prices). • Baseline scenario based on the October 2020 WEO projections and is informed by the macroeconomic indicators observed since the COVID-19 outbreak started.

Domain		Assumptions Top-down by FSAP Team
		• The Adverse Scenario is simulated using IMF's Flexible System of Global Models. • The Adverse Scenario reflects macro-financial risks in the RAM. It is driven by a combination of external and domestic shocks amplified by domestic vulnerabilities. The four major drivers of the Adverse Scenario are: - Shock 1: Prolonged COVID-19 outbreak, - Shock 2: Heightened protectionism accompanied by a further slowdown in Mainland China, - Shock 3: A sharp rise in risk premia due to an abrupt deterioration in global market sentiment compounded by escalating US-China tensions, - Shock 4: A sharp housing market correction and a decline in demand. • Under the baseline scenario, the Hong Kong SAR economy suffers a large contraction on 2020, but growth turns to positive in 2021, with the annual GDP growth rates of -7.5 percent, 3.7 percent, and 3.4 percent. • Under the adverse scenario, the Hong Kong SAR economy suffers an L-shaped growth path and an L-shaped deep recession, with the annual GDP growth rates of -8.5 percent, -4.9 percent, and 2.5 percent (cumulative GDP contraction of 13 percent over the first two years). This growth path corresponds to a 9-percentage points deviation over the first two years compared to the baseline path, which is equivalent to 1.5 standard deviations of annual growth rates calculated over 1984-2019. • The cumulative price decline reaches 40 percent for residential properties under the adverse scenario. • The 3-month HIBOR-LIBOR spread is simulated to increase to 160 basis points by the end of the first year, well above the 2019Q4 average of 37 basis points. Similarly, the LIBOR-Fed Funds rate spread increases to 70 basis points in 2020Q4 (vs. 29 in 2019Q4). At the same time, U.S. monetary policy will be eased following the COVID-19 shock, with a reduction of 150 basis points in 2020Q1, resulting in a near-zero Fed Funds rate starting in 2020Q2 and remaining at that level throughout the scenario period. This substantial decline will reduce the total increase in the HIBOR rate to 13 basis points. The HIBOR-LIBOR spread is assumed to gradually decline to 85 and 40 basis points in the second and third year of the scenario, respectively.
	Sensitivity analysis	• Sensitivity analyses will be conducted to supplement the scenario analysis. • They will evaluate impacts of three different single risk factors on the existing capital buffers: - Interest rate risk, - Spread increase for securities portfolios, - Concentration risk.
4. Risks and Buffers	Risks assessed	• Credit loss from banks' loan portfolios and bank exposures, including off-balance sheet credit exposures. • Market loss from valuation adjustments of banks' holding of debt securities and existing net open foreign exchange positions. • Losses from bonds and money market instruments (sovereign and other issuers) in the banking and trading books. • Interest rate risk in the banking book, increase in funding costs.

Domain		Assumptions
		Top-down by FSAP Team
	Buffers	• Existing capital buffers. • Internal capital generation from net income after taxes. • No new capital injection.
5. Regulatory Standards	Regulatory Standards	• National regulatory framework: • Basel III approach.
6. Reporting Format for Results	Output presentation	• System-wide capital shortfalls from macroprudential perspectives. • Number of banks and percentage of banking system assets in the system that fall below the capital hurdle. • Impact of different result drivers, including profit components, losses due to realization of different risk factors. • Hurdle rates – Baseline scenario: the sum of regulatory minimum (CET1, Tier1, and total capital), D-SIB surcharge, capital conservation buffer, and countercyclical capital buffer. – Adverse scenarios: the Basel III regulatory minimum.
Banking Sector: Liquidity Stress Test		
1. Institutional Perimeter	Institutions included	• 23 banks: 12 local banks (including all six D-SIBs) and 11 foreign branches.
	Market share	• The sample covers about 96 percent of total assets on a solo basis (that is, positions of banks' Hong Kong SAR offices plus their overseas branches).
	Data and Starting position	• Baseline date: June 30th, 2020 • Data Source: Supervisory and publicly-available data. Cash flow data and unencumbered asset data (HKMA reporting template MA(BS)23)
2. Methodology	Overall framework	• Cash-flow cum counterbalancing capacity-based liquidity stress test • Basel III-LCR ratio and HK LMR ratio. • Analyses to be carried out separately for HKD, USD, and CNH, based on availability of granular data for various tests.
3. Type of analyses	Scenario analysis	• 36 embedded scenarios: 4 degrees of severity, 3 different approaches to the counterbalancing capacity over 3 different time horizons. • This approach employs multiple embedded scenarios of increasing severity covering several horizons (7 days, 1 month, and 3 months) with varying assumptions regarding shocks to cash inflows and outflows and haircuts on liquidity buffers. The most severe scenario includes historically relatively high outflow rates (e.g. 10 percent for less stable retail deposits, 40 percent for non-operational NFC deposits, and 100 percent for FI deposits) combined with haircuts of up to 25 percent for other investment-grade securities held locally and 30 percent for those held overseas. The scenarios differ from the actual effects of the pandemic on liquidity risk, because the latter led to substantial inflows of deposits rather than outflows and public support for non-financial corporates as well as monetary policy accommodation contributed to avoiding substantial decreases of the liquidity values of assets in the counterbalancing capacity. One of the scenarios includes an assessment of the impact of a disruption of the derivatives markets (e.g., FX swaps) on USD liquidity. The calibration of shock scenarios was based on historical evidence. The analysis of the USD LCR found that banks rely on inflows in USD (i.e. from FX swaps) to match high outflows (also FX swaps) and on the well-functioning

Domain		Assumptions Top-down by FSAP Team
		of the underlying markets.
4. Risks and Buffers	Risks	• Cash-flow based LST: Retail and wholesale deposit run-off, (partial) closure of funding markets, reduction of liquidity / price declines of asset • LCR/LMR: reclassification risk
	Buffers	• Cash-flow based LST: Capacity of banks to generate liquidity from assets under stress (counterbalancing capacity) and central bank facilities • LCR/LMR: Regulatory buffers
5. Regulatory Standards	Regulatory Standards	• National regulatory framework: The LCR and NFSR (hurdle of 100 percent for both) for larger (mostly) local banks in the sample, and the LMR (hurdle of 25 percent) and the CFR (hurdle of 75 percent) for the smaller banks (largely foreign banks) in the sample. • The LCR and the LMR are subject to so-called reclassification tests which test their sensitivity with respect to the reclassification of liabilities/assets between various regulatory positions which would entail higher run-off rates and lower regulatory ratios. • The hurdle for the cashflow-based test is zero HK dollars.
6. Reporting Format for Results	Output presentation	• System-wide LCR and LMR under the reclassification scenarios • System-wide liquid cumulated counterbalancing capacity (CCBC in % of total assets), the number of banks with a CCBC below zero, and their CCBC (in % of TA) under the cashflow-based stress scenarios.
Investment Fund Sector: Liquidity Stress Scenario		
1. Institutional Perimeter	Entities included	• 3097 mutual investment funds marketing fund shares in Hong Kong SAR (as of June 2020 with assets of $1.5 trillion or 95 percent of the assets of funds authorized in Hong Kong SAR) and 512 funds registered in Hong Kong SAR (as of June 2020 with assets of USD73 billion or 47 percent of the assets of funds authorized in Hong Kong SAR) at some time between 2000 and 2020. The mutual fund sector in Hong Kong SAR constitutes only a part of the broader asset management industry represented in Table 1 in text, which includes beyond mutual funds also discretionary mandates, hedge funds and other types of service providers.
	Data	• Data is sourced from Morningstar, comprising monthly data on net flows, fund size, portfolio composition and shares of rating grades in debt portfolio.
	Time Horizon	• The data horizon is January 2000 to March 2020, allowing an effective analysis from January 2006 to March 2020; results are reported for end of Q1 2020 (Q4 2019 for the domestic industry).
2. Methodology	Overall framework	• Liquidity stress scenario: computing liquidity needs as gaps between entity specific redemption scenarios and liquidity buffers • Price impact analysis: Amihud ratio-based price sensitivity analysis for broad asset classes based on aggregate sales needs of the respective investment fund sectors
	Scenarios	• Fund specific redemption shock scenarios of equivalent to the worst (respectively, third and fifth worst) percentile of net flows ever experienced
3. Risks and Buffers	Risks	• Redemption risks; Asset liquidation risks; Price impact risks
	Buffers:	• Narrow liquidity buffers: cash and cash equivalents • Broad liquidity buffer: HQLA liquidity buffers
4. Reporting	Output	• Average and aggregate liquidity shortfalls of industry

Domain		Assumptions
		Top-down by FSAP Team
Format for Results	presentation	• Respective maximum sales needs in broad asset classes • Price impact: Price impact table • Identification of share of particular vulnerable funds
Financial System: Interconnectedness Analysis		
1. Institutional Perimeter	Institutions Included	• Interbank network: Largest 20 banks ranked according to their HK office basis assets (9 locally incorporated banks and 11 foreign branches). • Intra-financial sector network: Banks and major nonbank financial sectors. • Cross-border bank network: the banking systems of all major counterparty economies.
	Data and Starting position	• Data source: Supervisory data, market data, and BIS international banking statistics. • Starting position: 2019 year-end data. • Data granularity: – Interbank and common exposure: institution-level. – Intra-financial sector: major financial sub-sectors. – Cross-border: banking system and institution-level.
2. Methodology	Overall framework	• Interbank: Balance sheet-based interbank model by Espinosa-Vega and Solé (2010). • Common exposure: balance sheet approach. • Cross-border network: Espinosa-Vega and Solé (2010). • Market price-based spillover model by Diebold and Yilmaz (2014).
3. Risks and Buffers	Risks	• Credit and funding losses related to interbank exposures, intra-financial exposures, and cross-border banking exposures. • Default of large common borrowers in the banking system.
	Buffers	• Interbank network: banks' own capital and liquidity buffers. • Cross-border bank network: capital buffers of the banking system.
4. Reporting Format for Results	Output presentation	• Interbank network: a network chart, index of vulnerabilities. • Common exposure: system-wide capital shortfalls. • Cross-border network: index of vulnerabilities and contagion, and spillover charts. • Evolution and direction of spillovers.

Appendix III. Risk Assessment Matrix

Source of Risk	Transmission Channels	Likelihood	Impact
Global Risks			
Unexpected shift in the Covid-19 pandemic	**Prolonged pandemic**: The disease proves harder to eradicate (e.g., due to new virus strains, short effectiveness of vaccines, or widespread unwillingness to take them), requiring costly containment efforts and prompting persistent behavioral changes rendering many activities unviable.	Medium	Medium
Accelerating de-globalization	Despite renewed efforts to reach multilateral solutions to existing tensions, geopolitical competition leads to further fragmentation. Reshoring and less trade reduce potential growth.	Medium	High
A sharp rise in global risk premia exposes financial and fiscal vulnerabilities	A reassessment of market fundamentals (e.g., in response to adverse Covid-19 developments) triggers a widespread risk-off event. Risk asset prices fall sharply and volatility spikes, leading to significant losses in major non-bank financial institutions. Higher risk premia generate financing difficulties for leveraged firms (including those operating in unviable activities) and households, and a wave of bankruptcies erode banks' capital buffers.	Medium	High
Domestic Risks			
A further slowdown in Mainland China	A further slowdown in Mainland China would reduce trade flows and lead to a sharp decline in economic activity in Hong Kong SAR. Lower trade volumes would reduce corporate profits and investment, raise unemployment, and weaken consumption. Trade, logistics, tourism, and retail sectors would be affected most adversely. Banks would likely face higher losses on their loans to Mainland China-related and other corporate borrowers, as well as on their broader credit portfolio due to the overall decline in economic activity.	Medium	High
A sharp housing market correction and decline in demand	A sharp decline in house prices would lower confidence, weaken housing demand, lower residential investment, and constrain new bank lending as many loans are secured by property, leading to a larger downturn.	Medium	High

Notes: This table shows the shocks that will be used for the analysis of resilience of financial institutions. The Risk Assessment Matrix (RAM) shows events that could materially alter the baseline path (the scenario most likely to materialize in the view of IMF staff). The RAM reflects staff views on the source of risks and overall level of concern as of the time of discussions with the authorities. Non-mutually exclusive risks may interact and materialize jointly and amplify each other's effects.