

Promoting Development of the Offshore PBOC Bills Repo Market – Analysis and Recommendations

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As RMB internationalisation enters a new phase, new milestones are being reached in the development of the offshore RMB market, and Hong Kong's status as a major global offshore RMB financial centre continues to strengthen. At the same time, market participants now have higher expectations regarding the depth and stability of the offshore RMB market. The regular issuance of the PBOC bills in Hong Kong provides top quality RMB assets to the offshore investors while promotes a healthy development of the offshore RMB eco-system which includes an active repo market.

1. Needs and Priorities for Further Development of Offshore RMB Liquidity

The supply of funds in mature international currencies is more diversified compared to that of RMB, with many types of tools, terms and infrastructures available for improving capital utilisation efficiency, enhancing liquidity management and meeting various funding requirements. Monetary authorities also use monetary policy tools to enhance the resilience and sustainability of funding supply and to achieve monetary policy objectives.

In USD, for example, repo transactions are the main source of short-term funding: as of 2020, average daily repo transaction volumes were approximately USD2.4 trillion. The foreign exchange market is another source of short-term USD funding, with average daily global trading volumes of USD swaps standing at approximately USD2.9 trillion as of April 2019. Although interbank lending declined after the financial crisis, it still plays an important role. In the Euro market, meanwhile, bond repo and FX swap average daily trading volumes are approximately €2.5 trillion (1H 2021) and USD1.1 trillion (April 2019) respectively.

In recent years, Hong Kong has played a key role in the development of the global offshore RMB market, with RMB capital markets deepening and liquidity management tools becoming more established. Compared to the European and US markets, however, the offshore RMB market features smaller transaction volumes and still has a lot of catching up to do when it comes to the sophistication of its market structure, mechanisms and functions. While the European and US markets have three main channels of short-term funding, Hong Kong's offshore RMB market instead mainly relies on RMB-USD swap transactions in the foreign exchange market, with the interbank lending and repo markets remaining comparatively smaller.

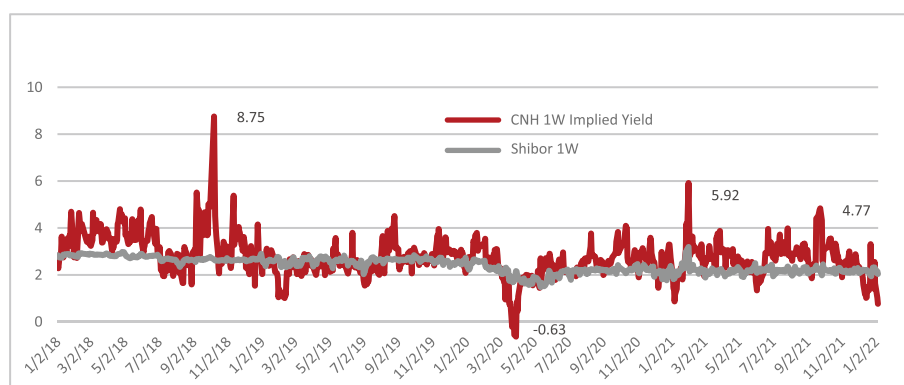
According to a survey conducted by the Bank of International Settlement, average daily transaction volumes of offshore RMB-USD swaps reached USD136.7 billion in April 2019, a 59% increase from the

USD86 billion daily average recorded in its April 2016 survey. This method of using USD as collateral to exchange RMB with other financial institutions is simple, safe and highly liquid. When financial institutions are faced with demands for short-term RMB funding, RMB-USD swaps make it easy for them to access funds from counterparties with excess RMB holdings. The CNH Implied Yield, calculated using the principle of interest rate parity, accurately reflects the cost of funding and has become the main indicator of the offshore RMB interest rate.

However, there are also some drawbacks to relying on RMB-USD swaps. First, the swap rate has a close relationship with the cost of USD: if offshore USD liquidity is insufficient, the USD interest rate will rise, which will in turn impact the RMB-USD swap point. Second, the implied yield is also affected by fluctuations in the USD/CNH spot exchange rate, which means that when CNH depreciates (or the market anticipates depreciation), the CNH Implied Yield will rise sharply. Third, since these swaps are converted from USD positions, users need to consider both opportunity cost and funding level before executing such swaps. For example, if a user has either an insufficient or excessive USD position, then the cost of an RMB-USD swap will not accurately reflect the true funding cost and liquidity of CNH. Owing to structural defects in the market for short-term CNH funding supply, liquidity in that market has remained relatively volatile in recent years for a number of reasons.

First, CNH liquidity fluctuates and is especially difficult to manage across quarters. Hong Kong’s offshore RMB deposit base has been increasing, however is relatively small, with RMB926.8 billion in deposits at the end of December 2021. CNH funding levels can fluctuate due to seasonal factors as well as large-scale cross-border RMB transfers. Furthermore, Hong Kong’s status as an offshore market makes it more sensitive to global market volatility, which increases the difficulty of managing liquidity. Since 2018, the implied yield of one-week CNH has fluctuated between 1% and 5%, sometimes exceeding 5% or even 10%. As can be seen in Figure 1, fluctuations in the CNH lending rate curve are much larger than that of CNY, indicating that the RMB market in Hong Kong is not yet sufficiently mature. In the middle of the dividend payment season, National Day, year-end, Chinese New Year holiday and other special days, many banks will try to secure enough funds in advance to cope with potential liquidity issues, and therefore become more reluctant to “lend” funds.

Figure 1: CNH 1W implied yield and Shanghai Shibor 1W interbank offered rate

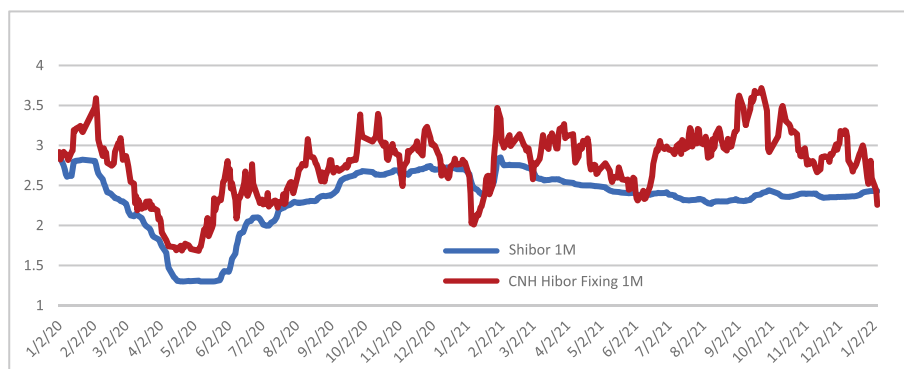


Source: Bloomberg, BOC Hong Kong Financial Research Institute

Second, short and medium-term RMB funding levels in Hong Kong are typically higher than those in China’s onshore RMB market, which adversely affects the development of CNH investment and

financing. In terms of longer tenors, the average daily yield of offshore 2-year CGB from 2018 to the present day is 2.89%, which is 17 basis points higher than that of onshore CGB for the same period. Focusing on shorter tenors, Hong Kong’s one-month fixing rate based on the Treasury Market Association CNH Hong Kong Interbank Offered Rate (TMA CNH HIBOR) averaged 2.92% in 2021, which was 48 basis points higher than Shanghai’s one-month fixing rate based on the Shanghai Interbank Offered Rate (SHIBOR). Compared with the 2020 data, the average monthly offshore and onshore RMB interest rate spread has widened by 12 basis points. Similarly, three-month tenor offshore and onshore spreads also widened in 2021.

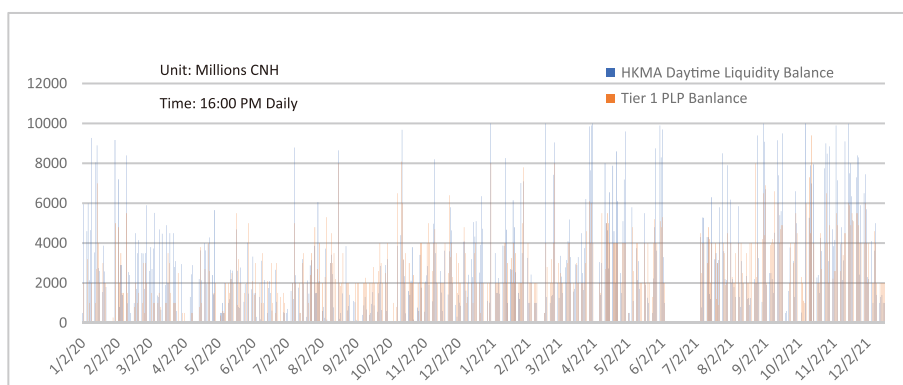
Figure 2: CNH Hibor Fixing 1M and Shivor 1M



Source: Bloomberg, BOC Hong Kong Financial Research Institute

Third, useful RMB liquidity management tools are limited and risk management remains difficult. When CNH liquidity in Hong Kong becomes tight, banks usually approach the HKMA and the clearing bank to seek an increase in the supply of funds. Indeed, the HKMA launched the RMB Liquidity Facility in 2012 and the Primary Liquidity Provider (PLPs) scheme in 2014 for this purpose. The two instruments are used frequently. Since 2020, there have been around 30 instances when the daily balance of funds utilised through the RMB Liquidity Facility has reached CNH8-10 billion by 4pm, nearly hitting the maximum limit. PLP limit applications also usually exceed CNH10 billion (see Figure 3). However, neither the HKMA nor the clearing bank is the “lender of last resort” for RMB. They can only provide a certain amount of liquidity support based on the current arrangement, which makes it difficult to maintain reasonable liquidity in the offshore market as compared to the onshore market. In addition, their ability to cope with a global financial crisis is weak.

Figure 3: HKMA Daytime Liquidity balance and Tier 1 PLP balance



Source: HKMA, BOC Hong Kong Financial Research Institute

2. Current Status of the CNH PBOC Bills Repo Market in Hong Kong

The development of the repo market in Hong Kong has been relatively slow. This is because HKD-denominated bonds and bills tend to have relatively small issue sizes, which has limited the development of the HKD repo market. In addition, the shrinking of the Dim Sum bond market after 2015, has resulted in a lack of the collateral needed for CNH repo transactions in the old days.

Since 2018, there has been a recovery of momentum in the offshore RMB market in Hong Kong, driven by a significant increase in demand for CNH-based assets in overseas markets. At the same time, however, the mismatch between liquidity supply and demand has become more prominent. Hong Kong's banking industry has actively explored new methods in an attempt to address tight CNH liquidity. The PBOC has also started issuing CNH bills in Hong Kong on a relatively large scale, which has created favourable conditions for the development of PBOC bills repo business. In early 2021, commercial banks in Hong Kong launched the CNH PBOC Bills Repo Business Market-making Mechanism, the first commercial CNH PBOC bills repo business in Hong Kong, which provides market-making and bilateral quotation services to market participants. This innovative PBOC bills repo business has become an important product in Hong Kong's offshore RMB market, as seen in the increase in the number of participating commercial banks and trading volumes over the past year.

The CNH PBOC bills repo business has the following characteristics:

(i) Marketability. CNH PBOC bills repo is a relatively spontaneous market that is driven by demand for liquidity management. It has grown and developed gradually through the free choices of financial institutions, and dozens of banks have participated in it to date. Market makers use their own RMB funding and PBOC bills to conduct repo and reverse repo, offer unsolicited quotations and provide information using Bloomberg. Available tenors include overnight, one week, two weeks, one month, two months, or three months; the value date can be T+0, T+1, T+2, etc., and trading is open from 9:00 to 17:00 every business day. Through PBOC bills repo and reverse repo services, the mechanism provides CNH liquidity, stimulates PBOC bills transactions, increases the availability of PBOC bills in the market and matches the interests of market participants, thus aligning market development with market discipline.

(ii) Indexability. The market has gradually come to focus on the repo price of PBOC bills as an alternative indicator of short-term liquidity. When market participants expect CNH funding to tighten, demand for repo transactions will increase, especially for longer tenors. In general, PBOC bill repo activity tends to be consistent with usage of the HKMA's RMB Liquidity Facility and variations in business volume from Primary Liquidity Providers (PLPs). Market participants have started to use the repo rate as a reference point for changes in liquidity. In 2021, for example, repo transaction volumes increased rapidly during the Chinese New Year holiday, at the end of the third quarter in September, and before the National Day holiday, with repo rates spontaneously rebounding to match the CNH Implied Yield in swaps. Conversely, when supply and demand for CNH short-term funding is relatively stable, repo transaction volumes decrease and repo rates fall.

(iii) Extensibility. Regarding participants in the PBOC bills repo market, British banks account for more than 40% of transaction volumes, local Hong Kong banks for around one-third, Chinese banks for

about 10%, and Southeast Asian banks for about 10%. It seems that British and local Hong Kong banks, who are relatively more experienced in offshore financial markets, are also more familiar with repo and are better placed to grasp the business opportunities. Recently, more overseas and Southeast Asian banks have shown interest, becoming more willing to cooperate with market makers to carry out repo transactions. After participating in the repo business, some banks have subsequently taken part in the primary auctions and secondary trading of PBOC bills. With other banks now in the process of seeking internal approval to set up new products, it is expected that the market will expand further in the near future. Furthermore, after taking part in PBOC bills repo business, some banks are now proposing to increase the types of assets eligible for repo transactions and add more liquidity management tools.

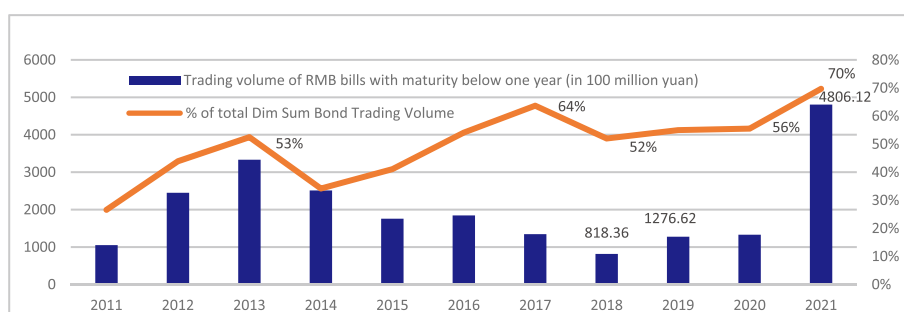
(iv) Innovation. Cooperation between market makers and market participants has stimulated innovation in both market mechanisms and compliance. For example, while the Global Master Repurchase Agreement (GMRA) has been widely adopted around the world as a tool for executing bond repo transactions, most overseas institutions had not yet incorporated CNH provisions into their legal contracts. Following negotiation between market makers and market participants, CNH provisions have been added upon the signing or re-signing of many GMRAs. Furthermore, to avoid trade and settlement confusion arising from European and US holidays, market makers have carefully considered the arrangement of holidays for PBOC bills repo transactions and settlement, adopted a clear holiday schedule according to Hong Kong and Mainland China holidays, and actively encouraged market participants to follow the new arrangements.

3. The PBOC Repo Market at the Intermediate Stage of Development

Reviewing the US and European currency markets from a historical perspective clearly shows that the development of a strong repo business is not only the inevitable result of becoming a major global currency, but is also a key process on the path towards such status. For RMB to truly become a major international currency, therefore, the current weaknesses in the RMB repo market must first be resolved. This will require careful cultivation given the offshore RMB market's current level of development. As such, development should start with the PBOC bills repo business, which is relatively more mature. Four factors are especially relevant:

(i) Short-term PBOC Bills are a key characteristic of the Hong Kong CNH Dim Sum bond market. The Hong Kong Dim Sum bond market reached its first peak around 2013-14, a period that saw highly active issuance and trading of short-term bills. In 2013, both the notional amount issued and trading volumes of short-term bills (i.e. maturity shorter than one year) accounted for more than half of the entire market. In recent years, the Dim Sum bond market has recovered, with short-term bills continuing to feature prominently. According to the HKMA, CNH bonds with a maturity shorter than one year under the custody of the Central Money Markets Unit (CMU) registered a total balance of CNH132.5 billion in 2021, an increase of 54% from 2018 levels. This makes up 50.4% of the total balance of CNH bonds, a proportion that has remained consistently above 50% over the past four years. In 2021, transaction volumes of bonds with a maturity shorter than one year reached a record of CNH480.6 billion, an increase of 4.9 times compared with the same figure for 2018. This accounted for 70% of the total volume of CNH bonds of all maturities, a proportion that has also continuously exceeded 50% over the past four years (see Figure 4). Hong Kong CNH PBOC bills have become the most actively traded Dim Sum bond, creating promising conditions for the development of the CNH bills repo market.

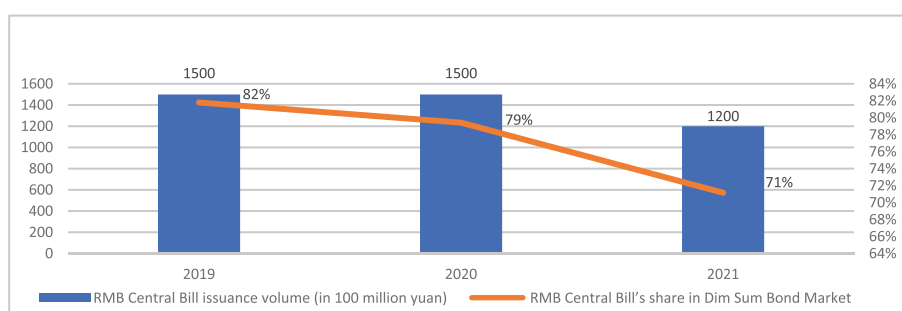
Figure 4: Trading Volume and Market Share of RMB bills in HK with maturity below one year



Source: HKMA, BOC Hong Kong Financial Research Institute

(ii) The PBOC regularly issues offshore PBOC bills thus providing provide sufficient collateral. Given strong market demand in Hong Kong for high-grade and highly liquid RMB assets, the PBOC and HKMA signed an agreement in September 2018 to use the CMU’s bond bidding platform to tender and issue PBOC bills in Hong Kong. In November 2018, the PBOC issued PBOC bills in Hong Kong for the first time, issuing a total of CNH20 billion across three-month and one-year tenors. As of 2021, a total of 38 issuances of CNH PBOC bills had been made in Hong Kong with a cumulative value of CNH460 billion, and maturities spanning from one month, three months, six months to one year. During the past three years, the issuance of offshore PBOC bills has accounted for more than 70% of the total notional issuance of all Dim Sum bonds, which in combination with CGBs has assisted in the process of building a CNH benchmark yield curve. The fact that PBOC bills are issued by the Central Government makes them ideally suited as collateral, hence them having been chosen as qualified collateral for the RMB Liquidity Facility by both the HKMA and the clearing bank.

Figure 5: Hong Kong’s RMB Central Bill issuance and share in the RMB Dim Sum Bond Market



Source: HKMA, BOC Hong Kong Financial Research Institute

(iii) The HKMA and the clearing bank have established the CNH repo business in Hong Kong. Through the HKMA’s RMB Liquidity Facility, banks can obtain overnight RMB funds available on the same day, 1-day RMB funds available on the next day, 1-week RMB funds available on the next day and intraday RMB funds from the HKMA by using eligible collateral funds. The HKMA has also launched the Primary Liquidity Provider (PLP) scheme, initially designating seven banks as PLPs and later increasing the number to nine. The HKMA provides a dedicated repo facility of RMB2 billion to each of the PLPs, requiring them in turn to provide market-making services and effectively manage their liquidity. Using this repo facility, PLPs can obtain intraday or overnight RMB funds from the HKMA. The Hong Kong RMB Clearing

Bank also provides participating banks with intraday RMB repo trading. This scheme has helped market participants to enhance their understanding of the repo business.

(iv) Hong Kong has improved its financial infrastructure to develop a safer and more efficient repo business. In 1990, Hong Kong established a Central Clearing and Settlement System for Debt Instruments (CMU) to provide electronic settlement and services for exchange fund bills and bonds. The system was linked to the Real Time Gross Settlement (RTGS) System in HKD, RMB, USD and EUR, providing real-time and end-of-day delivery versus payment (DvP) services for bond trading. The CMU system was later connected to both Euroclear and Clearstream, in addition to central securities settlement and clearing systems in Mainland China and other jurisdictions. It offers an efficient, safe and convenient clearing and custodian system and provides a variety of services such as collateral management, securities lending, market-making for exchange fund bills and notes, an issuance programme for exchange fund bills and notes, and custodian services. The main focus of the CMU is to provide services for the issuance, trading and settlement of RMB bonds and bills. In addition, the CMU provides custodian services that accept collateral in the form of RMB government bonds, central bank bills, policy bank bonds and local government bonds, which further helps to support the repo business.

4. Suggestions for Further Development of the Offshore PBOC Bills Repo Market

The development of the PBOC bills repo market will have a significant impact on the internationalisation of RMB. Compared with using USD-CNH swaps, PBOC bills repo transactions allow banks to make use of their existing CNH assets, meaning that they can achieve their short-term CNH funding goals without having to alter their asset and liability structures. Furthermore, PBOC bills repo transactions are not affected by foreign exchange rates, which makes them an ideal tool for managing liquidity. There are two main reasons why developing the PBOC bills repo market should be a priority:

First, PBOC bills repo is an ideal liquidity management tool for offshore RMB and can also reduce market volatility and tighten spreads between onshore and offshore funding costs. To promote the usage of RMB as a major international currency, it is necessary to further develop the offshore RMB market, including improving the availability of liquidity management tools and stabilising both the exchange rate and interest rate. PBOC bills repo is a critical instrument which must be developed alongside both swaps and interbank lending as a prerequisite for developing the offshore RMB market. This will help to further improve short-term RMB funding, stabilise the front end of the yield curve, and deepen liquidity.

Second, PBOC bills repo can enhance the status of RMB as an international currency and help develop more efficient pricing of offshore RMB assets. The continued development of the PBOC bills repo market alongside the primary auctions and secondary market trading of PBOC bills forms an integrated ecosystem that represents the maturing of the Hong Kong Dim Sum bond market. Investors and market participants greatly benefit from the improved liquidity offered by PBOC bills repo as it enables them to either obtain RMB funding or lend RMB when needed, which increases willingness to buy and hold PBOC Bills. This in turn increases primary issuance, secondary transaction volumes and repo volumes across RMB sovereign, institutional and corporate bonds. A growing RMB bond market not only helps to establish a more complete CNH yield curve, but also promotes loan business, bond financing and asset management, all of which encourage the global usage of RMB as a major international currency.

The long-term goal should be to develop and integrate the offshore and onshore RMB markets. We should explore methods to develop a funding channel that enables liquidity to flow between offshore and onshore markets. This would improve the effectiveness and strengthen the external transmission mechanism of onshore monetary policy, enhance its ability to prevent global financial risks, and build a stable foundation to promote RMB internationalisation.

The PBOC bills repo market is still comparatively small, having only started to develop relatively recently, and has several other problems which still need to be resolved. For example, most newly-issued PBOC bills are purchased by large financial institutions, which means that small and medium-sized institutions hold relatively fewer bills and are therefore limited by insufficient collateral when seeking RMB funding. In addition, since repo is a relatively new product, some institutions face long internal approval processes before they can engage in repo business. Furthermore, participation amongst non-bank institutions is relatively low, and there is not yet any channel to connect the offshore PBOC bills repo market with the onshore market.

To promote the development of the offshore PBOC bills repo market and the RMB market in Hong Kong, we recommend a number of targeted measures:

First, **a gradual increase in the notional issue size of PBOC bills should be considered.** This will give more institutions the opportunity to purchase and hold collateral which can be used in the repo market, without market participants connecting the issuance of PBOC bills with expectations of higher funding costs or the shrinking of the offshore RMB liquidity pool.

Second, we should **explore methods to establish a liquidity channel between the onshore and offshore markets,** which would enable offshore market-makers to finance themselves directly from onshore commercial banks.

Third, we should **enhance current cross-border liquidity products,** investigate methods for enabling offshore institutions to participate in the onshore swap, repo and CCS (cross currency swap) markets, and attempt to lower regulatory barriers.

Finally, there should be **greater promotion of the offshore PBOC bills repo market** to help attract more market players to participate.

In the long run, by taking advantage of its status as a global offshore RMB financial centre, Hong Kong can cultivate the offshore RMB bond market and asset management industry; **actively promote the issuance of Chinese Government Bonds and policy bank bonds;** strengthen the development of RMB repo products, and improve financial infrastructure such as custody services and connectivity mechanisms. We can further leverage Hong Kong's favourable taxation system to provide incentives for market makers to improve their services, expand market scale, and strive to develop an offshore RMB repo market that aligns with the international status of RMB.

主要經濟指標 (Key Economic Indicators)

	2020	2021	2021/Q3	2021/Q4
一. 本地生產總值 GDP				
總量 (億元) GDP(\$100 Million)	26,716	28,426	7,205	7,692
升幅 (%) Change(%)	-6.1	6.4	5.5	4.8
二. 對外貿易 External Trade			2021/12	2021/1-12
外貿總值 (億元) Total trade(\$100 Million)				
總出口 Total exports	39,275	49,607	4,895	49,607
進口 Total imports	42,698	53,078	5,223	53,078
貿易差額 Trade balance	-3,422	-3,471	-328	-3,471
年增長率 (%) YOY Growth(%)				
總出口 Total exports	-1.5	26.3	24.8	26.3
進口 Imports	-3.3	24.3	19.3	24.3
三. 消費物價 Consumer Price				
綜合消費物價升幅 (%) Change in Composite CPI(%)	0.3	1.6	2.4	1.6
四. 樓宇買賣 Sale & Purchase of Building Units			2022/01	2022/01
合約宗數 (宗) No. of agreements	73,322	96,133	5,911	5,911
年升幅 (%) Change(%)	-2.0	31.1	-4.8	-4.8
五. 勞動就業 Employment			2021/10-2021/12	2021/11-2022/01
失業人數 (萬人) Unemployed(ten thousands)	259.1	250.9	14.3	13.5
失業率 (%) Unemployment rate(%)	5.5	5.5	3.9	3.9
就業不足率 (%) Underemployment rate(%)	3.1	2.7	1.7	1.8
六. 零售市場 Retail Market			2021/12	2021/1-12
零售額升幅 (%) Change in value of total sales(%)	-24.3	8.1	6.2	8.1
零售量升幅 (%) Change in volume of total sales(%)	-25.5	6.5	3.4	6.5
七. 訪港遊客 Visitors			2021/12	2021/1-12
總人數 (萬人次) arrivals (ten thousands)	356.9	9.1	0.9	9.1
年升幅 (%) Change(%)	-93.6	-97.4	91.0	-97.4
八. 金融市場 Financial Market			2021/11	2021/12
港幣匯價 (US\$100=HK\$)				
H.K. Dollar Exchange Rate (US\$100 = HK\$)	775.2	779.8	780.2	779.8
貨幣供應量升幅 (%) change in Money Supply(%)				
M1	30.1	8.0	9.4	8.0
M2	5.8	4.3	2.9	4.3
M3	5.8	4.3	2.9	4.3
存款升幅 (%) Change in deposits(%)				
總存款 Total deposits	5.4	4.6	3.3	4.6
港元存款 In HK\$	6.2	1.4	1.7	1.4
外幣存款 In foreign currency	4.6	7.9	4.9	7.9
放款升幅 (%) in loans & advances(%)				
總放款 Total loans & advances	1.2	3.8	4.2	3.8
當地放款 use in HK	1.7	4.7	5.6	4.7
海外放款 use outside HK	0.1	1.7	1.1	1.7
貿易有關放款 Trade financing	-6.2	14.2	14.9	14.2
最優惠貸款利率 (%) Best lending rate (%)	5.0000	5.0000	5.0000	5.0000
恆生指數 Hang Seng index	27,231	23,398	23,475	23,398