3. Domestic economy

Hong Kong's economy rebounded visibly in the first quarter of 2023, thanks to the revival of inbound tourism and domestic demand, and continued to recover in the second quarter although the momentum softened. The economic recovery is expected to continue for the rest of 2023, but this positive outlook is subject to risks and uncertainties stemming from the US policy rate path, the pace of the Mainland economic recovery, global economic environment and geopolitical tensions. The labour market is expected to improve further along with the ongoing economic recovery. This may exert some upward pressures on domestic business costs, although local inflation should remain largely moderate as external price pressures will likely recede further in the near term.

3.1 Real activities

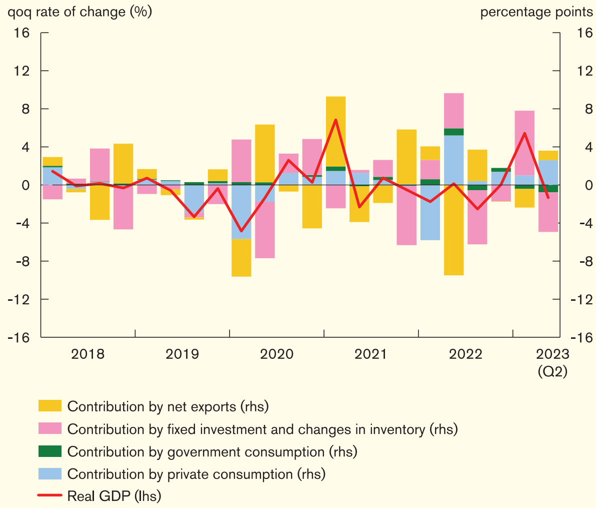
With the full resumption of normalcy in Mainland China and Hong Kong, the domestic economy experienced a sharp rebound in the first quarter of 2023. The recovery continued in the second quarter, although the momentum softened. Real GDP resumed growth of 2.9% and 1.5% on a year-on-year basis in the first and second quarters respectively, following contractions in the preceding four quarters (Table 3.A). On a quarter-on-quarter basis, economic growth reached 5.4% in the first quarter before declining to -1.3% in the second quarter against the high base of comparison (Chart 3.1).

Table 3.A
Real GDP growth

		Year-on-year growth rate (%)	Seasonally adjusted quarter-on-quarter growth rate (%)
2022	Q1	-3.9	-1.8
	Q2	-1.2	0.1
	Q3	-4.6	-2.5
	Q4	-4.1	0.0
2023	Q1	2.9	5.4
	Q2	1.5	-1.3

Source: Census and Statistics Department (C&SD).

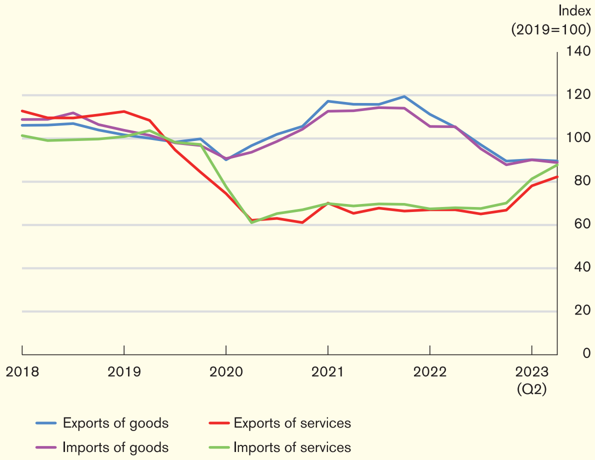
Chart 3.1
Real GDP growth and contribution by major expenditure component



Note: Growth rates are seasonally adjusted.
Sources: C&SD and HKMA staff estimates.

The economic growth was supported by the robust revival of inbound tourism and domestic demand. Domestically, private consumption expanded notably in the first half of the year on the back of the relaxation of COVID-19 restrictions as well as the disbursement of the first instalment of consumption vouchers. Investment spending picked up in the first quarter as business sentiment improved[16] alongside the return of normalcy in economic activities, although declining mildly in the second quarter amid tightened financial conditions. Box 2 uses granular data to evaluate the effectiveness of the enhancements to the SFGS. The study provides evidence that the SFGS helped lift the size of loans granted to local SMEs, thereby helping them to navigate through the pandemic. On the external front, exports of services revived, thanks to the strong recovery in inbound tourism following the resumption of normal cross-boundary travel[17] (Chart 3.2). In contrast, merchandise exports remained sluggish amid a challenging external economic environment. Overall, net trade contributed negatively to GDP growth in the first half of the year.

Chart 3.2
Export and import volume



Note: The data are seasonally adjusted.
Source: C&SD.

[16] The PMI stayed in the expansionary territory (above 50) in the first half of 2023 before easing slightly in July and August.

[17] The average number of inbound tourist arrivals has recovered to about 132 thousand per day in August, equivalent to 88% of the pre-pandemic average daily level in 2019. On a year-to-date basis, total inbound tourist arrivals amounted to 41% (up to 25 September) of the annual inbound tourist arrivals in 2019.

In the period ahead, Hong Kong's economic recovery is expected to continue for the rest of 2023, with inbound tourism and local consumption continuing to be the major growth drivers. The revival of inbound tourism will be sustained by further improvement in transportation and handling capacity. Meanwhile, improved labour market conditions, coupled with the disbursement of the second instalment of consumption vouchers in July, will render support to private consumption. The Government has also been exploring various measures to further strengthen the sustainability of the economic recovery given the softened business sentiment in recent months. On the other hand, merchandise trade may continue to face intense pressure as external demand is expected to remain weak.

Overall, in view of the actual outturn in the first half of this year, the Government revised the real GDP growth forecast for 2023 to 4.0%–5.0%.[18] That said, this positive economic outlook will hinge on a number of factors, including the US policy rate path, the pace of the Mainland economic recovery, the prospects for global economic growth and risks stemming from geopolitical tensions.

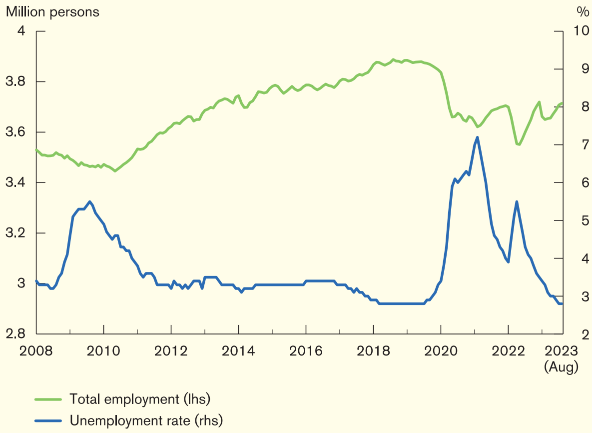
3.2 Labour market conditions

The labour market conditions improved further in the past few months alongside the rebound in economic activities. The seasonally adjusted unemployment rate declined further to a decade-low level of 2.8% in August 2023 (Chart 3.3). Total employment has also been picking up since February, albeit still below its pre-pandemic level. To address acute manpower shortages, the Government launched the labour importation schemes in July 2023 for the construction and transport sectors, with the first

[18] Private-sector analysts have also revised their forecasts to an average of 4.2%.

batch being expected to arrive in the fourth quarter. Additionally, the Government also introduced the ESLS in September 2023 with a view to help temporarily fill the manpower gap in other sectors, such as retail and food services. Looking ahead, the labour market is expected to continue improving amid the ongoing economic recovery.

Chart 3.3
Labour market conditions

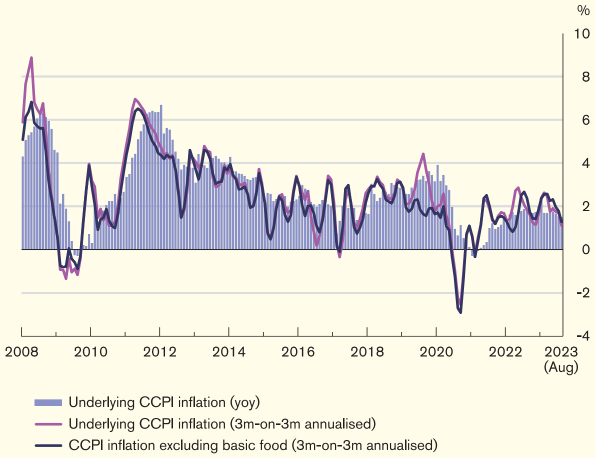


Source: C&SD.

3.3 *Inflation*

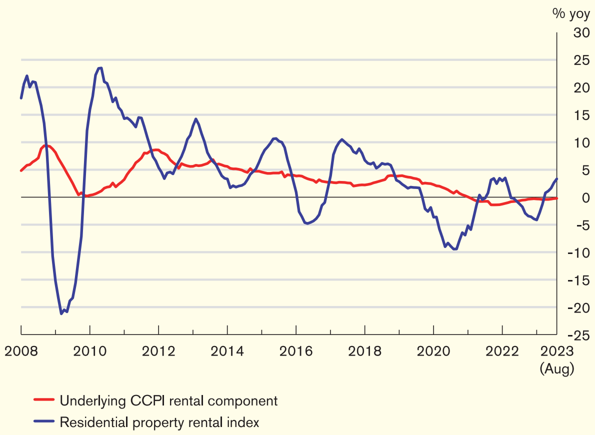
Local inflationary pressures remained mild in recent months. On a year-on-year comparison, the underlying composite consumer price index (CCPI) increased by 1.9% and 1.7% in the first and second quarters of 2023 respectively, and by 1.5% in August 2023.[19] Inflation momentum, as measured by the annualised three-month-on-three-month underlying inflation rate, also stayed moderate (Chart 3.4). Prices of energy-related items, meals out and takeaway food, and clothing and footwear saw a sharp year-on-year increase. By contrast, the housing rental component continued to weigh on overall inflation given the feed-through of earlier consolidation in fresh-letting residential rentals (Chart 3.5). Real unit labour costs also declined in the first quarter of 2023 (Chart 3.6). External price pressures were still notable, but their pace of increase eased in recent months (Chart 3.7).

Chart 3.4
Different measures of consumer price inflation



Sources: C&SD and HKMA staff estimates.

Chart 3.5
CCPI rental component and market rental



Sources: C&SD and Rating and Valuation Department (R&VD).

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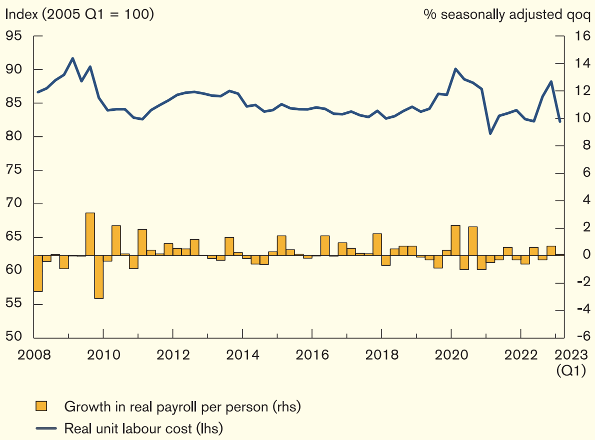
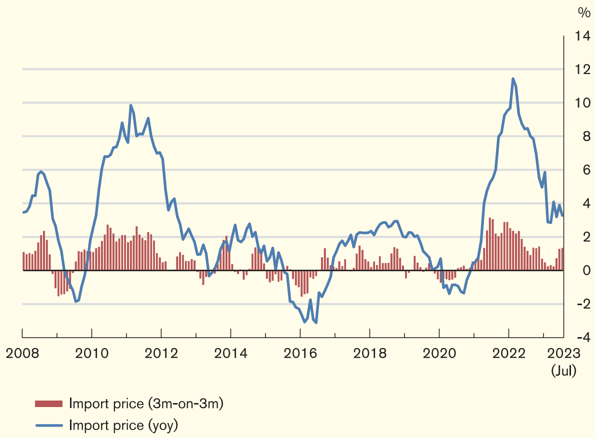
19 Inclusive of the effects of the Government's relevant one-off relief measures, the year-on-year headline inflation rate was 1.9% and 2.0% in the first and second quarters of 2023, and 1.8% in August 2023.

Chart 3.6
Unit labour cost



Sources: C&SD and HKMA staff estimates.

Chart 3.7
Hong Kong's import prices



Source: C&SD.

In the near term, local inflation is expected to remain moderate for the rest of 2023. While the domestic economic recovery and improving labour market may put some upward pressure on business costs, external price pressures may recede further. The Government projections for the underlying and headline inflation rates for 2023 are 2.0% and 2.4% respectively.

Box 2
Assessing the effectiveness of SME Financing Guarantee Scheme using granular data and deep learning

Introduction

The SFGS was launched in 2011 by the Hong Kong Mortgage Corporation Limited (HKMC) to assist SMEs and non-listed enterprises in obtaining financing from participating lenders. After being transferred to the HKMC Insurance Limited in 2018, the SFGS has introduced time-limited guarantee coverage products, such as the 90% guarantee coverage scheme, and the special 100% loan guarantee scheme.

While the scheme has gained popularity, previous studies examined only the aggregate effect of the SFGS enhancements and there is limited granular evidence on the effectiveness across different SME borrowers.[20] To fill this knowledge gap, our study examines the effectiveness of SFGS enhancements on increasing credit to Hong Kong SMEs. To achieve this objective, the study will leverage on the granular data from the HKMA Granular Data Reporting (GDR) scheme and apply a deep neural network (DNN) model to identify the factors influencing the size of bank loans to SMEs. In particular, we perform scenario analyses to estimate the hypothetical SME loan amounts with and without the SFGS's coverage, so as to evaluate the benefits derived from the SFGS.

[20] Tan et al. (2019) analysed the SFGS's impact on the supply of SME loans by banks in Hong Kong following the global financial crisis. Utilising a difference-in-differences model, they studied regulatory banking returns submitted to the HKMA by banks, discovering that public sector loan guarantee schemes significantly mitigated funding difficulties faced by SMEs. More recently, Wong et al. (2022) used aggregate data obtained from banking returns and demonstrated that banks with higher exposures to the SFGS registered greater year-on-year growth of loans to hard-hit sectors compared to other banks during the post-pandemic period.

Data and Methodology

The GDR programme requires pilot authorized institutions (AIs) to submit transaction-level corporate loan data to the HKMA on a monthly basis. This enables us to carry out a comprehensive, bottom-up analysis of the SFGS scheme's effect on bank lending to SMEs. The dataset covers information on over 350,000 outstanding corporate loans, totalling HK$6.6 trillion (around 90% of the outstanding corporate loans in Hong Kong) as of March 2023.

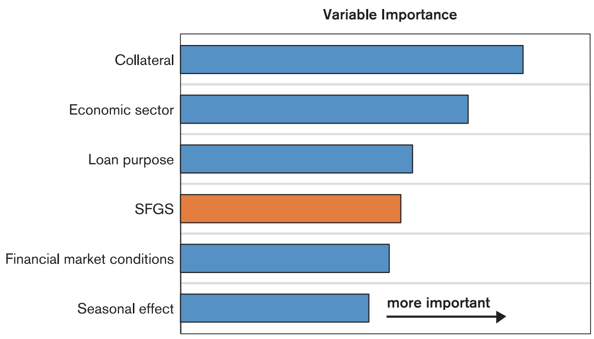
While this study concentrates on a specific subset of the GDR data, the sample size remains huge and poses considerable challenges to traditional econometric approaches. To address this issue, this study uses deep learning techniques that offer several advantages over conventional Ordinary Least Squares (OLS) regression models. In particular, deep learning algorithms are more capable than OLS models in discerning nonlinear and complex relationships between variables. Moreover, deep learning models can derive higher-level features from raw data and provide more accurate predictions without requiring a knowledge of the relevant features in advance.

Nevertheless, as DNN models employ complex, nonlinear functions and weightings, the predictions of DNN models are usually difficult to interpret intuitively compared to linear models like OLS regression. As a result, DNN models can give rise to the so-called "black box" problem. To overcome this problem, this study will employ reverse engineering tools to gain a deeper understanding of the decision-making process of the DNN model. Specifically, by analysing the impact of removing a given variable on the model's performance while keeping all other things constant, we can ascertain the relative importance of each variable and identify critical factors that can influence the loan amounts granted by banks to SMEs.

Empirical results

I. Which factors influence the size of SME loans the most?

Chart B2.1
Contribution of variables to loan amount predictions



Source: HKMA staff estimates.

Chart B2.1 highlights some of the most influential factors that are estimated to affect the size of SME loans. These factors include:

(i) **Collateral:** Consistent with experiences, the provision of collateral emerges as the most crucial determinant of the SME loan amount. Intuitively, collateral serves as a safeguard that banks can liquidate to recover a portion or the entirety of the loan amount if a borrower defaults. Consequently, lenders are more likely to offer larger loan amounts to SME borrowers who can provide collaterals.

(ii) **Economic sector:** Different industries have different funding requirements and risk levels, which can directly affect SME loan sizes. Capital-intensive sectors, like manufacturing, may require larger loans for equipment, while service-based industries may need smaller loans for operating expenses. Banks may also exercise caution when lending to sectors that are prone to economic volatility.

(iii) **Loan purpose:** The intended use of a loan can significantly affect its size. For example, loans for long-term investments, such as expanding operations, may be more appealing to lenders since these loans can contribute to the growth of business. Conversely, the size of loans for short-term needs, like working capital or cash flow management, may be smaller as these loans address mainly temporary liquidity challenges and therefore may be deemed riskier to lenders.

(iv) **SFGS:** Although not as influential as the other factors, our model shows that the SFGS can notably affect SME loan amounts. By guaranteeing part of the loan, the SFGS encourages lenders to lend to individuals or businesses that may otherwise be deemed too risky to qualify for a larger loan.

II. How substantial is the impact of the SFGS on the size of SME loans?

Our findings suggest that the SFGS plays a significant role in influencing the size of loans extended to SME borrowers. To explore the SFGS's effect quantitatively, we conducted a hypothetical scenario analysis using our trained DNN model (Chart B2.2). Specifically, we randomly selected a data point from our sample and generated two SME loans with identical attributes.[21] We then artificially modified a single characteristic of the loans, namely the SFGS coverage status, while holding all other things constant. By comparing how this change in the SFGS coverage status would affect our model's prediction, we can infer the effect of the SFGS on the loan amount.

[21] To verify the reliability of our results, we conducted several additional trials using distinct, randomly selected subsets of the data. These repetitions of the analysis yielded consistent findings.

Chart B2.2
Graphical illustration of scenario analysis

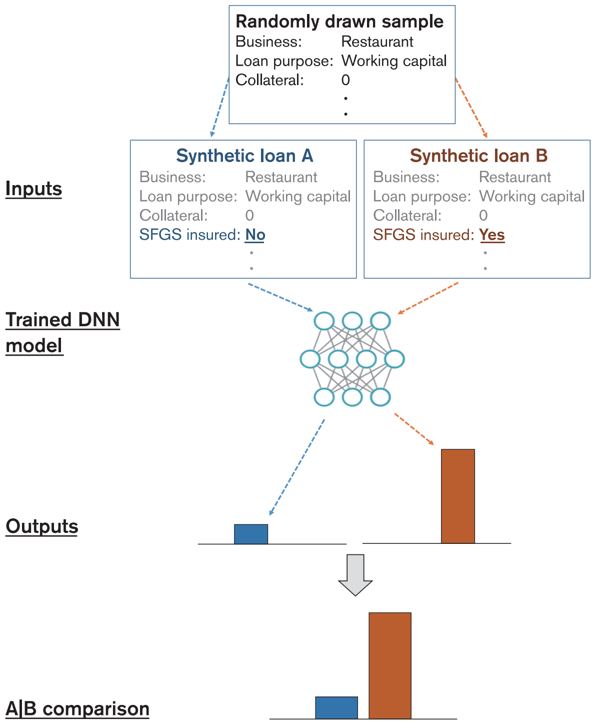
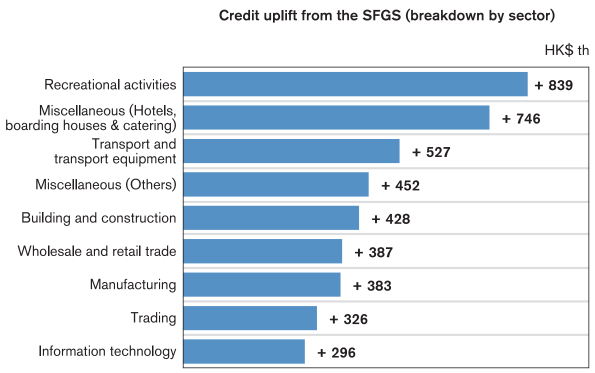


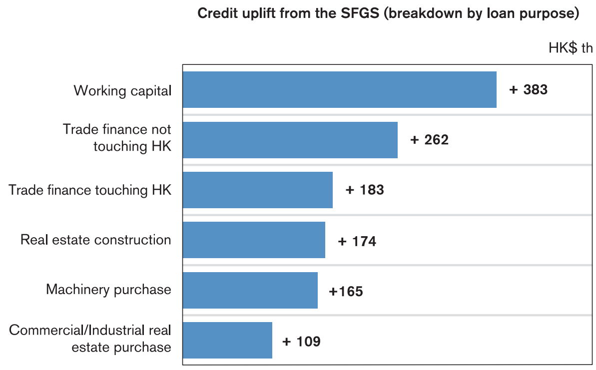
Chart B2.3
An illustration of the effect of the SFGS on SME loan amount (by sector)[22]



Source: HKMA staff estimates.

Chart B2.3 shows the estimated effect of the SFGS on SME borrowers across major industry sectors. As expected, SFGS can provide relatively more credit support to those industries that were hardest hit by the pandemic, such as recreation, hospitality, and food services. In contrast, the SFGS can provide relatively modest but still significant supports to industries that were more stable and less affected, such as manufacturing.

Chart B2.4
An illustration of the effect of the SFGS on SME loan amount (by loan purpose)[22]



Source: HKMA staff estimates.

Chart B2.4 displays the effect of SFGS on loans for different purposes. The SFGS is estimated to provide the greatest support for working capital loans, while loans for equipment see relatively less benefits. This disparity suggests lenders view uncertainty and risk as more significant for cash flow-related expenses than for those with collateral values. By guaranteeing the loans and therefore reducing uncertainty and risk facing the lenders, the SFGS can provide relatively more support to the size of working capital loans.

Conclusion

This study analyses the effectiveness of the SFGS in Hong Kong using granular data obtained from the HKMA's GDR programme and a DNN model. Our findings suggest that the SFGS can significantly affect the size of loans granted to SMEs, with factors such as collateral, economic sector, and loan purpose also playing critical roles in determining the loan sizes. Our scenario analysis further illustrates the varying degrees of credit uplift provided by the SFGS to loans across different industries and purposes.

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22 To enable cross-sectional comparisons, the above credit uplifts are derived using a standard uncollateralised loan amount of HK$200,000. This closely aligns with the median value of uncollateralised loans in the training set.

Overall, our results suggest that the SFGS has been effective in supporting SMEs, particularly those operating in industries most affected by the pandemic, or industries that require loans for purposes deemed as rendering more uncertainties to lenders. This support has been particularly valuable during the pandemic, when businesses faced heightened uncertainty and financial challenges.

Our findings contribute to the existing literature on the effect of the SFGS on SME financing and provide insights for policymakers on the effectiveness of such guarantee schemes in promoting credit access and fostering inclusive finance. However, it is important to note that our study only provides an approximation of the SFGS's impact based on a DNN model and may not capture the full complexity of the lending process.

References

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