II. Potential macro environmental risk factors

2.1 International economic and financial conditions

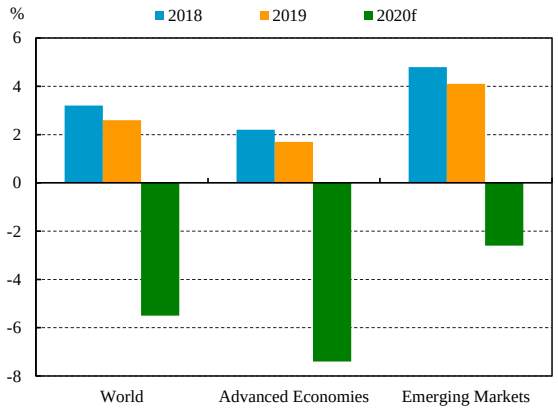
2.1.1 International economic and financial conditions

From 2020 onwards, the US and Mainland China reached an agreement on phase one of the trade deal, and the UK officially left the European Union and immediately entered an 11-month transition period. Nevertheless, the outbreak of the COVID-19 pandemic in Mainland China not only put downward pressure on its own economy, but also caused severe spillover effects to other economies. The pandemic has spread globally, resulting in excessive volatility in international financial markets. In response to threats to economic growth and financial stability driven by the COVID-19 crisis, major economies have adopted accommodative monetary policies, expansionary fiscal policies, and other measures to stabilize financial markets.

The pandemic significantly jeopardized global growth momentum and the great plunge in oil prices would suppress inflation

In 2019, rising US-China trade tensions[17] led to lower global trade and investment growth. Although trade tensions eased in the end of 2019,[18] uncertainties over US-China trade talks have aggravated business confidence and exports. As a result, the global economic growth rate decreased from 3.2% recorded in 2018 to 2.6% (Chart 2.1).

Chart 2.1 Global economic growth rates



Note: Figures for 2020 are IHS Markit estimates.
Source: IHS Markit (2020/5/15).

[17] In May and August 2019, the US respectively imposed tariffs on US$200 billion and US$300 billion worth of Chinese goods. Mainland China also increased tariffs or lodged a complaint against the US with the World Trade Organization as a response.

[18] The US and Mainland China reached an agreement on phase one of the trade deal in December 2019 and it was signed in January 2020. The deal stipulated that Mainland China should purchase an additional US$200 billion of US goods and services before 2021. In exchange, the US agreed to cut partial tariffs.

In the beginning of 2020, the COVID-19 pandemic broke out in Mainland China and has rapidly spread across the world, derailing global economic growth momentum. To cope with the outbreak, Mainland China adopted measures such as lockdown and production shutdown, resulting in a dramatic drop in its international and domestic tourism and import demand. The unprecedented confinement measures caused a supply-side shock with major disruptions to supply chains. In the meantime, with the aim of curbing the pandemic, other major economies also enhanced crowd management, which posed threats to corporate operation and consumption that could trigger demand-side shocks with outright cancellation of orders. Considering the aforementioned factors, IHS Markit predicts[19] that the global economy will experience a recession with growth forecast at -5.5% in 2020. Economic growth in advanced economies, including the US, the euro area, and Japan, is projected to reduce to -7.4%. Meanwhile, in view of the oil price collapse and weakening global demand, the average growth rate in emerging economies is forecast to decrease to -2.6% (Chart 2.1).

In 2019, affected by subdued momentum in global trade and unresolved US-China trade tensions, economic growth in most Asian emerging economies weakened. Looking ahead to 2020, since COVID-19 has disrupted Mainland China's demand and manufacturing production, IHS Markit anticipates that its economic growth will drop dramatically to 0.5%. For other Asian economies, any significant slowdown in Mainland China's economic growth arising from the pandemic could have negative spillovers to them. For instance, travel by tourists from Mainland China makes a key contribution to economic growth in both Thailand and the Philippines. Trade and industry chains in Hong Kong, South Korea, and Indonesia are all deeply connected with Mainland China. Therefore, IHS Markit projects that the economic growth rates in Hong Kong, South Korea, and the ten members and countries of the Association of South East Asian Nations (ASEAN-10) will markedly fall to -6.6%, -0.9%, and -2.6%, respectively.

A sharp drop in commodity prices will pull down global inflation

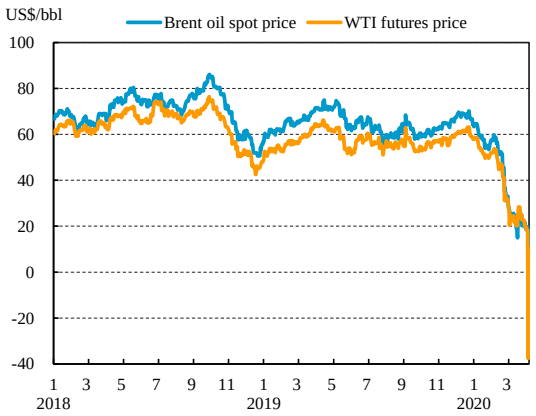
International oil prices fluctuated within a narrow range in 2019 (Chart 2.2). The average annual Brent crude oil spot price dropped to US$64.37 per barrel from US$71.19 registered in 2018, while the West Texas Intermediate (WTI) futures price showed a similar trend. In the meantime, metal prices fell, while food prices trended upwards. As a whole, with most commodity prices oscillating along a downward path, the global CPI inflation rate decelerated to 2.6% in 2019. The headline inflation rate in advanced economies decreased to 1.4%. On the other hand, although

[19] See Note 1.

inflation rates in most emerging markets moderated, the average rate in all emerging economies accelerated to 4.0% amid the rapid spread of African swine fever throughout Mainland China (Chart 2.3).

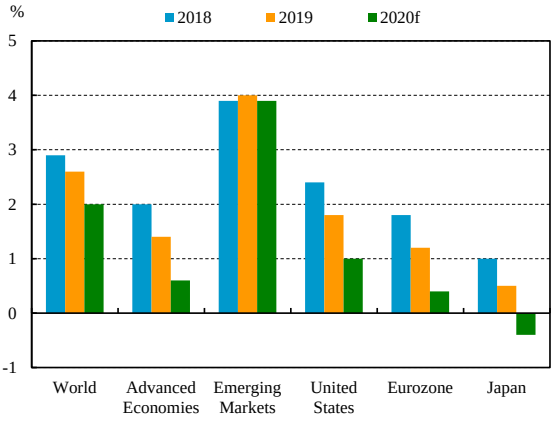
From early 2020 onwards, oil prices turned to a downward trend driven by a decline in oil demand amid an escalation of the COVID-19 pandemic. Additionally, following the collapse of the supply cut agreement between the Organization of the Petroleum Exporting Countries (OPEC) and Russia, some oil suppliers planned to boost production. This, together with lower oil demand stemming from tightened travel bans in Europe and the US, induced an oil price collapse.[20] Afterwards, despite the fact that the oil-producing nations reached a historic production cut agreement, the extent of the oil production cut was far below the decline in demand. Reflecting this, the May WTI futures price plummeted to a record low of US$-37.63 per barrel on April 20, 2020. Since the acceleration of the pandemic also caused a decrease in demand and prices for other commodities, IHS Markit predicts that the global headline inflation rate will drop to 2.0% in 2020. The headline inflation rate in advanced economies will sharply decrease to 0.6%, whereas the rate in emerging economies will fall slightly to 3.9%[21] (Chart 2.3).

Chart 2.2 Global commodity prices



Sources: EIA, Bloomberg.

Chart 2.3 Global headline inflation indices



Notes: 1. Figures for 2020 are IHS Markit estimates.
2. Japan's inflation rate is projected to drop into negative territory owing to weaker tourism revenue resulting from the coronavirus pandemic.

Source: IHS Markit (2020/5/15).

[20] Brent oil spot price plunged by more than 70% from a high of US$70.25 per barrel on January 6, 2020, to a low of US$19.19 at the end of March.

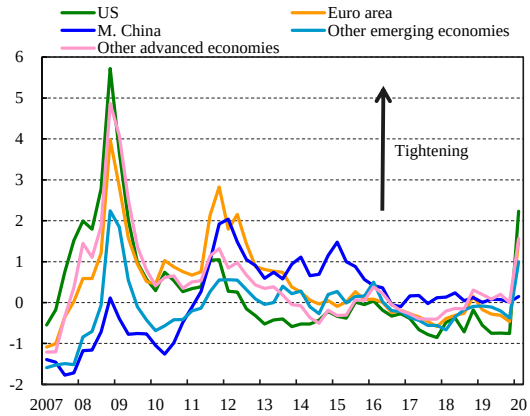
[21] IHS Markit anticipates that the CPI inflation rate in Mainland China will remain unchanged at 2.9% in 2020 compared to a year earlier.

With the outbreak of the COVID-19 pandemic, global financial conditions have tightened abruptly alongside exacerbating financial market turmoil

Financial conditions were getting tighter

In 2019, with uncertainties arising from US-China trade tensions and a global economic slowdown, major central banks adopted a more dovish stance. More accommodative monetary policies brought about an easing of financial conditions in advanced economies, particularly in the US and the euro area. In contrast, financial conditions in other advanced economies continued to tighten. In Mainland China, financial conditions were marginally tighter as a result of a stock market plunge, while financial conditions in other emerging markets roughly remained unchanged (Chart 2.4).

Chart 2.4 Global financial conditions indices



Notes: 1. Financial conditions indices are gauged by standard deviations from mean.
2. Other advanced economies comprise 11 economies, such as Australia, Canada and the UK, etc.
3. Other emerging economies include 6 economies, such as Brazil and India, etc.

Source: IMF (2020), *Global Financial Stability Report*, April.

From early 2020 onwards, the escalation of the COVID-19 pandemic put selling pressure on risky assets in global financial markets, resulting in stock market crashes and widening corporate bond spreads. Therefore, financial conditions in major economies, excluding Mainland China, tightened abruptly (Chart 2.4). Consequently, the corporate sectors would reduce investment because of rising funding costs and individuals would postpone their consumption amid a tightening of financial conditions. This, along with the impact of the pandemic that would entail a sharp slowdown in global economic activity,[22] could increase economic and financial risks globally.

Since the beginning of 2020, volatility of global financial markets has spiked along with mounting market panic sentiment

Global stock markets reported severe contractions in response to the COVID-19 pandemic, and US stock markets hit multiple circuit breakers

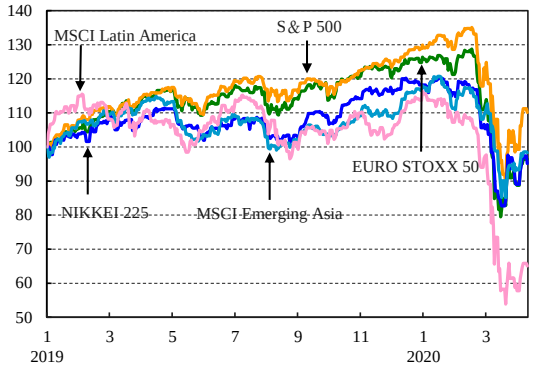
In 2019, global stock markets were only hammered temporarily in May and August as the US announced new tariffs on Chinese imports. Besides that, the markets mostly delivered gains

[22] According to the model estimation from the IMF, there is a 5% probability that global growth could fall below -7.4% in 2020. See IMF (2020), *Global Financial Stability Report*, April.

(Chart 2.5).

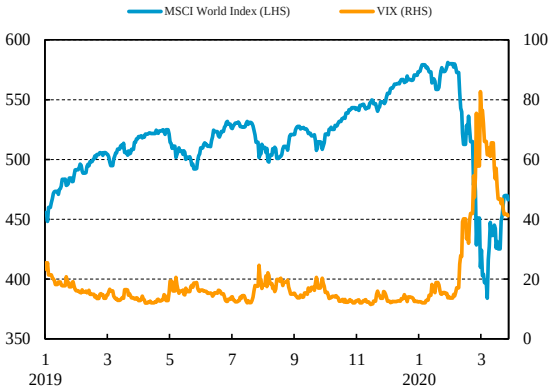
In January 2020, global stock markets followed their upward trend of 2019. However, from late February onwards, the spread of COVID-19 and plummeting oil prices induced mounting panic sentiment among investors and a sharp fall in global stock market values (Chart 2.5). Accordingly, the US stock market's circuit breakers were triggered several times and the VIX Index once surged to close at a record high of 82.69 in March (Chart 2.6). On March 23, the MSCI World Index fell to 384.04 (Chart 2.6), the lowest level recorded since 2016. Afterwards, with major economies successively introducing measures to combat the pandemic,[23] the VIX Index marked a decline to 40 or so and global stock markets recovered marginally (Chart 2.6).

Chart 2.5 Performance of key international equity indices



Notes: 1. January 1, 2019 = 100.
2. The Euro STOXX 50 refers to a stock index consisting of the largest 50 stocks in the 11 major economies of the euro area.
Source: Bloomberg.

Chart 2.6 MSCI World Index and VIX Index



Notes: 1. The MSCI World Index, maintained by Morgan Stanley, is a weighted index of stocks from large companies throughout the world.
2. The VIX Index is a standardized measure of market volatility created by the Chicago Board Options Exchange. It is used to gauge investor confidence in the stock market. When the VIX Index is high, market participants expect that the volatility will increase.
Source: Bloomberg.

Exchange rate volatility in most economies abruptly trended upward lately, and emerging market currencies faced sharp depreciations

In 2019, the movements of local currency exchange rates per US dollar diverged in advanced and emerging economies. Among them, exchange rates in advanced economies fluctuated within a narrow range. In contrast, the US dollar index of emerging economies oscillated with an upward trend in the first three quarters before reversing to decrease since 2019 Q4 (Chart 2.7).

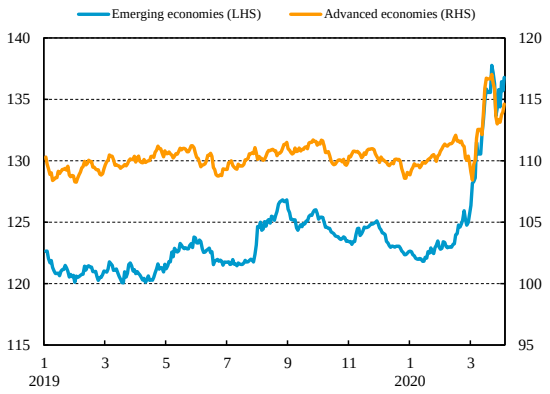
The US dollar index of advanced economies has declined since February 2020 as the spillovers of COVID-19 led to market expectations for interest rate cuts by the Fed. Nonetheless, against the backdrop of rapid spread of the pandemic, the index rebounded from lows after mid-March.

[23] See "Policy responses to COVID-19 in major economies" in this chapter.

Thereafter it dropped again after the Fed's announcement of unlimited bond buying. Reflecting repeated ups and downs of the dollar index, the volatility has risen in 2020 compared to that of the previous year[24] (Chart 2.7).

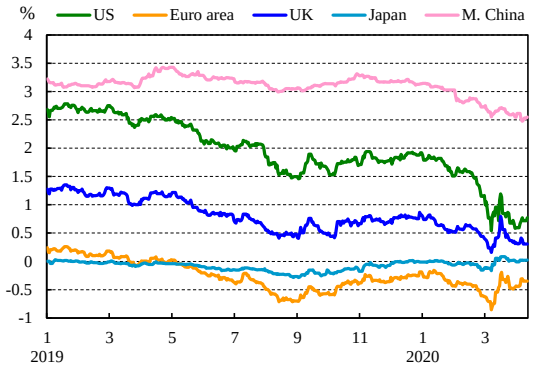
Over the same period, a combination of the impact of the COVID-19 pandemic and an oil price plunge triggered a sharp depreciation of currencies and skyrocketing US dollar index in emerging economies. Afterwards, as the Fed announced it would purchase bonds in the amounts needed to support smooth market functioning and effective transmission of monetary policy, the index turned to descend (Chart 2.7).

Chart 2.7 The US dollar indices of advanced and emerging economies



Note: The US dollar indices of advanced and emerging economies were developed by the Fed, and are weighted exchange rates of 7 and 19 trading partners, respectively. Base period is January 2016 (=100).
Source: Fed.

Chart 2.8 10-year government bond yields in major economies



Source: Bloomberg.

Government bond yields in major economies sank to a record low

In 2019, affected by the fact that major central banks hinted at easier monetary policy stances owing to concerns about a global economic slowdown and subdued inflation prospects, long-term government bond yields initially trended downwards. The yields bounced back thanks to some positive news: for example, the agreement on the US-China phase one trade deal. Nevertheless, bond yields in major economies headed in the opposite direction since February 2020 amid the COVID-19 crisis. In light of the deteriorating COVID-19 pandemic, together with an oil price plunge, government bond yields in the US, the UK, and the euro area fell to a 5-year low on March 9. Subsequently, the yields surged slightly as national authorities successively implemented fiscal stimulus packages (Chart 2.8).

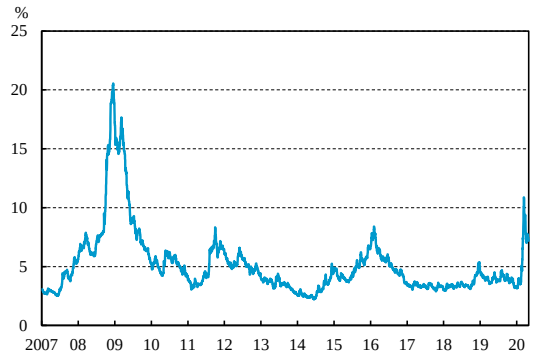
[24] The standard deviation of the US dollar index in advanced economies surged from 0.74 in 2019 to 2.22 in 2020 Q1.

With widened high-yield corporate spreads, the default rate was forecast to be revised upward

After the 2008 GFC, the influence of expansionary monetary policy on lowering borrowing costs has provided stronger incentives for countries to increase leverage. According to the statistics of the Institute of International Finance (IIF), global debt across all sectors hit US$255 trillion at the end of 2019, topping 322% of GDP, and was 40 pps higher than that of 2007. Among its components, non-financial corporate debt has surged over 70% since 2007 to US$74.2 trillion.[25]

Since late February 2020, the COVID-19 pandemic, coupled with elevating market, credit, and liquidity risks, raised market concerns about a large share of BBB corporate bonds being downgraded. As a result, high-yield bond spreads have widened dramatically. In the risky credit market segments,[26] US high-yield corporate bond spreads rose to post-GFC highs (Chart 2.9), which could pose an adverse shock to financial markets.

Chart 2.9 US high-yield corporate bond spreads



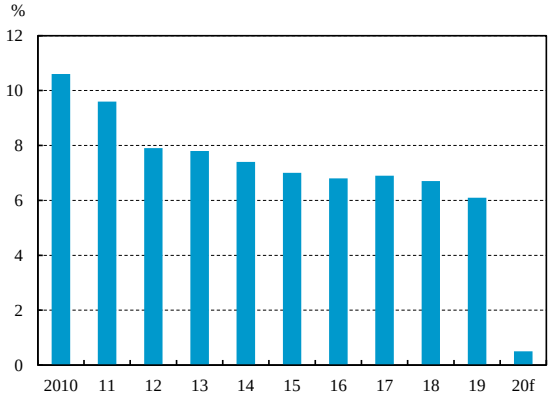
Source: Bloomberg.

2.1.2 Mainland China's economic and financial conditions

Economic growth slowed down significantly and continued to reach a record low

In 2019, owing to an escalation of the US-China trade dispute, Mainland China's trade growth dropped substantially.[27] Meanwhile, affected by weakening private consumption and investment momentum, the economic growth rate dropped to 6.1% in 2019 from 6.7% a year earlier (Chart 2.10) and continued to reach a record low.

Chart 2.10 Economic growth rate of Mainland China

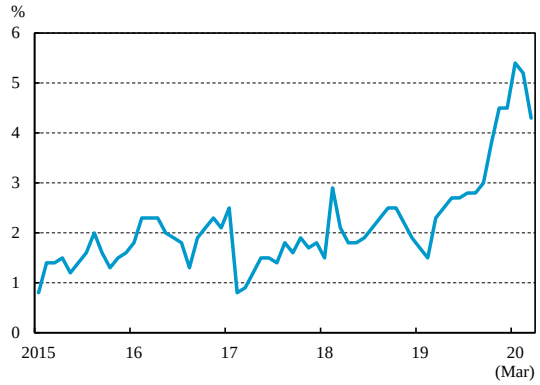


Note: Figure for 2020 is an IHS Markit estimate.
Sources: National Bureau of Statistics of China and IHS Markit (2020/5/15).

[25] IIF (2020), *Global Debt Monitor: COVID-19 Lights a Fuse*, April.
[26] The risky credit market includes high-yield bonds, leveraged loans, and private debt markets. According to the IMF estimates, these markets have reached US$9 trillion globally.
[27] According to the statistics of the National Bureau of Statistics of China, the annual growth rate of China's total trade volume in US dollars significantly reduced to -1.0% in 2019 from 12.6% a year before.

In the beginning of 2020, Mainland China's economic growth rate was battered severely by the outbreak of the COVID-19 pandemic and declined to -6.8% in 2020 Q1. IHS Markit sharply downgraded its forecast for the economic growth rate to 0.5% in 2020 (Chart 2.10).

Chart 2.11 CPI inflation rate of Mainland China

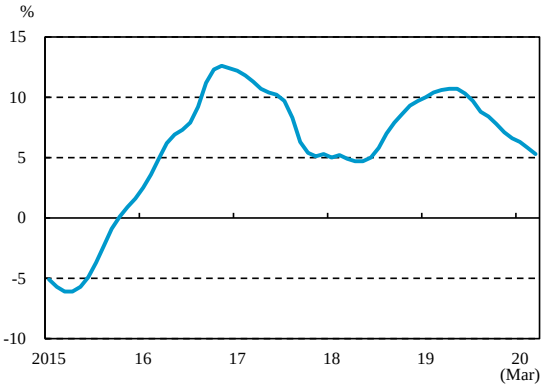


Source: National Bureau of Statistics of China.

CPI inflation rate expanded, while housing prices trended upwards

Affected by a sharp surge in pork and fresh fruit prices, the CPI inflation rate of Mainland China was 2.9% throughout 2019, an increase of 0.8 pps compared to a year earlier. In the beginning of 2020, the food inflation rate continued to rise owing to seasonal factors and a lower base period of the previous year. As a result, the annual CPI inflation rate reached 4.3% in March 2020 (Chart 2.11). IHS Markit projects the annual CPI inflation rate throughout 2020 will remain unchanged at 2.9%.

Chart 2.12 Average annual growth rate of new building sales prices in 70 medium-large cities of Mainland China



Source: Refinitiv Datastream.

With regard to the housing market, an accommodative monetary policy constantly adopted by the People's Bank of China (PBC) led to speculative trading, fueling a rise in the annual growth rate of housing prices in 70 medium-large cities in the first half of 2019. However, the growth of housing prices trended downwards in the second half of 2019 (Chart 2.12).

The PBC continued to implement sound monetary policies aiming to provide market liquidity

From 2019 onwards, in response to US-China trade tensions, the PBC adopted sound monetary policy tools, such as targeted or across-the-board cuts in reserve requirement ratios and the

medium-term lending facility (MLF),[28] along with short-term reverse repo operations in the open market, to keep ample liquidity in the financial system. In early 2020, the escalation of the COVID-19 pandemic triggered financial market turmoil. In response, the PBC further cut its reserve requirement ratios and expanded the volume of reverse repo operations in the open market, so as to inject capital into the market.

Mainland China's government actively adopted expansionary fiscal policies

In 2019, Mainland China's government actively implemented expansionary fiscal policies, including expansion of government spending, tax breaks, and fee reductions. Nevertheless, Mainland China still faced greater downward pressure on the economy. In late May 2020, in order to mitigate the severe impact on the economy arising from the COVID-19 pandemic, the government further adopted policies to expand domestic demand, such as raising the caps on the budget deficit to GDP ratio and the quota of special local government bonds, along with the issuance of special government bonds for containing the COVID-19 pandemic and the extension of tax breaks and fee reductions.

SSE Composite Index and RMB FX rate both trended upwards before fluctuating with a downward trend

In the beginning of 2019, the SSE Composite Index rebounded dramatically. Nevertheless, intensified US-China trade tensions led to a drop in the stock market in early May. Afterwards, the index fluctuated within a narrow range. In March 2020, the SSE Composite Index trended downwards driven by the plunge of global stock markets (Chart 2.13).

Chart 2.13 Shanghai Stock Exchange Composite index

Source: Bloomberg.

Regarding the FX market, affected by the escalation of the US-China trade dispute in early May 2019, coupled with Mainland China's designation as a currency manipulator by the US in early August, the renminbi exchange rate against the US dollar depreciated substantially. Afterwards, supported

[28] The MLF was introduced by the PBC, which provides funds for those commercial and policy banks that meet the PBC's macroprudential requirements and offer qualified collateral to it. This facility adjusts financial institutions' medium-term funding costs so that they can offer funds with lower costs to the real economy. As a result, the funding costs of the corporate sector will decrease.

byincreased optimism about a US-China trade deal, the renminbi turned to appreciate against the US dollar. However, in early 2020, the exchange rate depreciated sharply amid mounting market panic sentiment (Chart 2.14).

The continual increase in aggregate financing to the real economy pushed up the credit risks

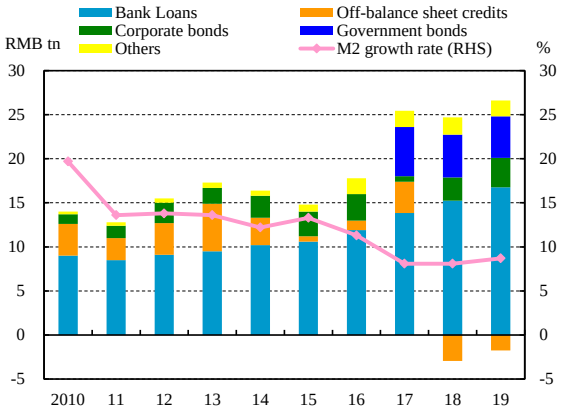
In 2019, against a backdrop of a shift towards easier monetary policy by the PBC, the annual growth rate of broad money supply M2 rose to 8.7% from 8.1% a year before. Meanwhile, the increment in aggregate financing to the real economy reached RMB25.7 trillion. Among them, the increment in bank loans increased to RMB16.8 trillion, accounting for the largest share. Off-balance sheet credit continued to shrink by RMB1.8 trillion amid more stringent supervision, but the decline narrowed (Chart 2.15).

At the end of 2019, the NPLs of commercial banks in Mainland China stood at RMB2.41 trillion, an annual increase of 19.16%, while the NPL ratio rose to 1.86% from 1.83% a year before (Chart 2.16), reflecting a deterioration in credit quality. Additionally, the outstanding amount of special-mention loans also rose to RMB3.77 trillion. In sum, the outstanding amount of classified assets expanded to RMB6.18 trillion. Given that the COVID-19 outbreak has inflicted severe damage on Mainland China's economic and financial

Chart 2.14 RMB/USD exchange rate

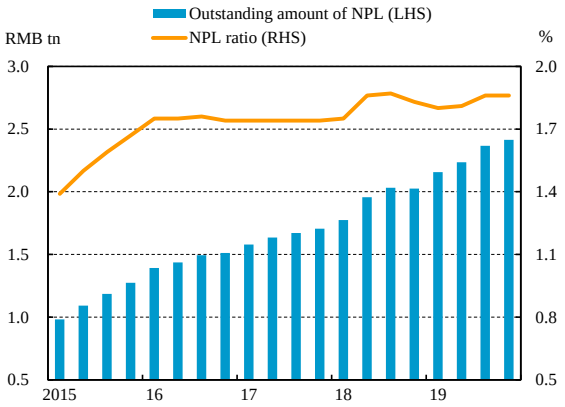
Source: CBC.

Chart 2.15 Increment of financing to the real economy and annual growth rate of M2 in Mainland China



Source: PBC.

Chart 2.16 NPLs of Mainland China's commercial banks



Source: China Banking and Insurance Regulatory Commission.

conditions, a persistent spread of the pandemic in the future could further increase the credit risks, which warrants close attention.

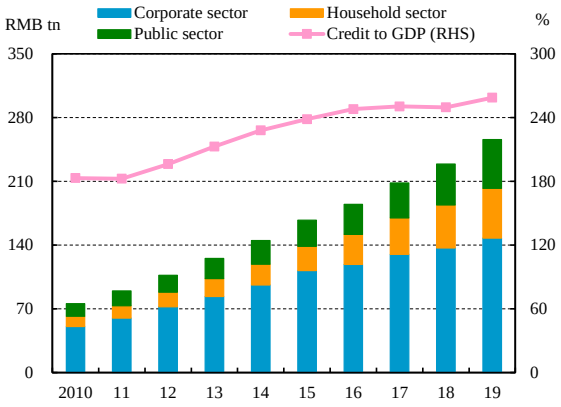
Mainland China's potential risks mounted with rising debt

According to the statistics of the Bank for International Settlements (BIS), the outstanding debt for nonfinancial sectors in Mainland China reached a record high of RMB255.9 trillion, equivalent to 258.7% of annual GDP, at the end of 2019 (Chart 2.17). Among them, the outstanding debt for the corporate sector, which is the main focus of deleveraging efforts, continually increased and stood at RMB147.7 trillion at the end of 2019.

With regard to the household sector, the outstanding debt, which was highly concentrated in mortgages,[29] reached RMB54.6 trillion at the end of 2019 (Chart 2.17). Excessive financing of the household sector may increase the bubble risk in the real estate market.

The outstanding amount of government debt reached RBM53.6 trillion at the end of 2019 (Chart 2.17). Affected by the recent policy that encouraged local governments to use special bonds for infrastructure construction in response to the downward risk of the economy, the debt service pressure on local governments may further surge in the future.

Chart 2.17 Outstanding amount of nonfinancial debts and credit-to-GDP ratio in Mainland China



Source: BIS.

[29] According to the statistics of the PBC, the outstanding amount of personal house-purchasing loans stood at RMB30.2 trillion at the end of 2019, accounting for more than 50% of total household loans.

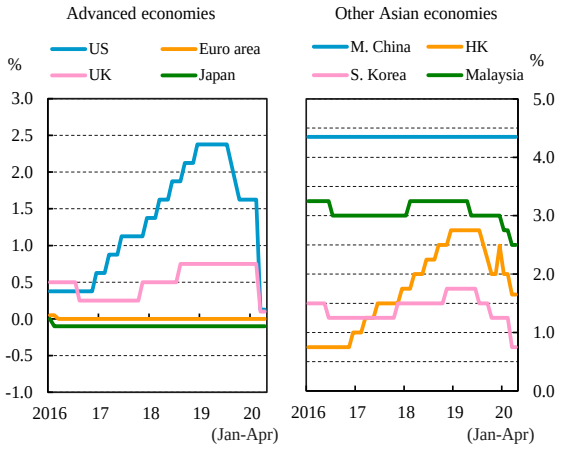
2.1.3 Policy responses to COVID-19 in major economies

With regard to the global COVID-19 issue, the International Monetary Fund (IMF) recommends[30] that individual countries should secure adequate resources for the health care system and enhance international cooperation. Besides this, in order to avoid the COVID-19 pandemic inducing sharp damage on economic activity, central banks should ensure sufficient provision of liquidity and credit to markets, and expand easing monetary policies. Moreover, financial supervisors should encourage banks to renegotiate loan terms for distressed borrowers, and governments should implement targeted fiscal stimulus.

Major economies have recently adopted accommodative monetary policy stances

To contain economic damage following the rapid spread of the COVID-19 pandemic, major central banks have promptly introduced a series of actions, such as policy rate cuts (Chart 2.18), large asset purchase programs, and active open market operations. These measures have provided massive liquidity to curb market panic. For example, the Fed has made emergency rate cuts twice throughout March 2020, lowering the federal funds rate by a total of 150 bps, and announced an unlimited asset purchase program in an unprecedented move. Additionally, the Fed provided up to US$2.3 trillion in loans to increase the flow of credit to households and corporations. With the aim of maintaining liquidity for the real economy, other major central banks also adopted easing monetary policy stances focusing on quantitative easing (QE), and offered funding for banks to lend to corporations.

Chart 2.18 Policy rates in major economies



Notes: 1. Advanced economies: figure for the US is based on the target federal funds rate; for the euro area, the main refinancing operations fixed rate; for the UK, official bank rate; for Japan, interest on excess reserves (before 2016/2/16, uncollateralized overnight call rate).
2. Other Asian economies: figure for Mainland China is based on financial institution one-year lending base rate; for Hong Kong, base rate; for South Korea, Bank of Korea base rate; for Malaysia, overnight policy rate.
3. Figures are as of April 30, 2020.
Sources: Central bank and monetary authority websites.

Furthermore, to better meet market needs for US dollars, the Fed and five central banks—namely, the Bank of Canada, the Bank of England, the European Central Bank (ECB), the Bank

[30] IMF (2020), *World Economic Outlook*, April.

of Japan, and the Swiss National Bank—agreed to reactivate unlimited US dollar liquidity swap facilities. Thereafter, the Fed set up temporary swap lines worth US$450 billion with nine additional central banks. The provision amounted to up to US$60 billion or US$30 billion for each central bank, so as to relieve strains in global US dollar funding markets. For more detailed monetary policy responses to COVID-19 in major economies, please see Table 2.1.

Major economies have launched expansionary fiscal policies

Movement restrictions on products and crowds amid the COVID-19 outbreak have resulted in serious impacts on the real economy and posed downside risks to the global economic outlook. In order to assist households and corporations to weather the COVID-19 crisis, major economies successively launched fiscal stimulus packages, including raising expenses for virus prevention and vaccine development, as well as offering credit guarantees and subsidies to the most affected industries and firms, and providing direct cash transfers to support vulnerable households. For example, the US has passed four fiscal stimulus bills totaling US$2.9 trillion,

Table 2.1 Monetary and fiscal policy responses to COVID-19 in major economies in 2020

Monetary policies

Policies	Economies	Contents
Interest rate cut	US, UK, M. China, S. Korea and HK	The Fed lowered its target band for the federal funds rate by a total of 150 bps to 0-0.25%.
Lowering required reserve ratios	M.China	The maximum cut to the required reserve ratios was 2%.
Expanding asset purchase programs	US, euro area, Japan, UK and S. Korea	Asset purchases included bonds, commercial paper, ETFs or REITs. Among the economies, the US announced an unlimited asset purchase program.
Actions to facilitate lending from banks	US, euro area, M. China and Japan	Actions were operated mainly through loan guarantees or refinancing operations rate cuts. The Fed provided US$2.3 trillion in loans.
Repo	US, UK and Japan	The Fed established a temporary repurchase agreement facility for foreign and international monetary authorities.
Dollar liquidity swap lines and emergency lending facilities	US	The Fed authorized dollar liquidity swap lines with 14 central banks and adopted multiple emergency lending facilities.

Fiscal policies

Policies	Economies	Contents
Financial aid or subsidies to households and corporations	US, UK, Japan, M. China, S. Korea, Singapore and HK	The authorities provided cash, vouchers, unemployment assistance, tax reductions, rent relief, and industrial development funds for vulnerable industries.
Bailout loans or loan guarantees	US, UK, Japan, S. Korea and HK	The US government passed an estimated US$2.2 trillion CARES Act and a US$483 billion Paycheck Protection Program and Health Care Enhancement Act.
Enhancing pandemic control	US, EU, M. China, HK and Japan	The measures included funding packages for COVID-19 containment, vaccine development, free COVID-19 testing and support to health care workers.
Suspending budget restriction rules and extending use of bonds	EU and M. China	The European Commission proposed maximum flexibility for budgetary requirements, and Mainland China accelerated the use of special local government bonds.

Note: Data related to US fiscal policies are as of May 2020. Other data are as of April 2020.
Sources: Official websites of selected economies, IMF and relavant news/reports. Summarized by the CBC.

far higher than the US$0.79 trillion made available during the GFC in 2008. The Japanese government approved a record 117 trillion yen economic stimulus package. Other major economies deployed substantial fiscal stimulus as well (Table 2.1).

2.2 Domestic macro environment

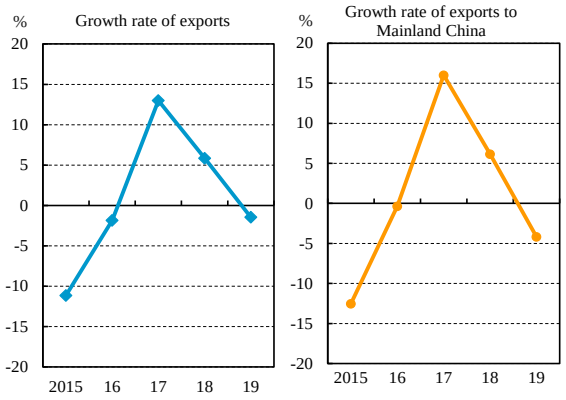
2.2.1 Domestic economic and fiscal conditions

Although exports reported a negative growth rate in 2019, the domestic economy grew moderately and inflation remained stable thanks to the three major investment programs promoted by the government[31] and steady growth momentum in private consumption. External debt servicing capacity stayed robust on the back of a persistent surplus in the balance of payments and ample FX reserves. While the government's fiscal deficits rebounded and outstanding government public debt marginally expanded, total government debt stayed within a manageable level.

Domestic economy remained on a mild growth path

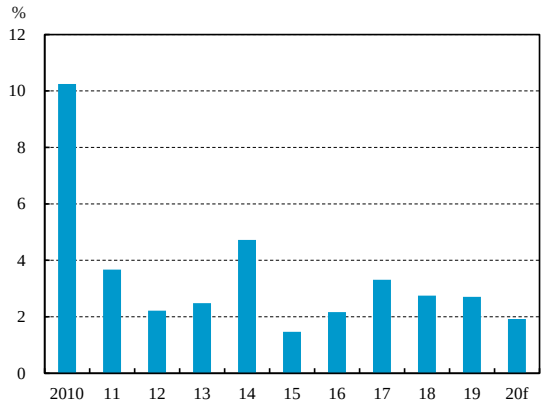
In 2019, affected by international trade disputes and falling international prices of raw materials, the growth rate of Taiwan's exports decreased by 1.44% year on year. Among Taiwan's major trading partners, the growth rate of exports to Mainland China (including Hong Kong) slid to negative territory at -4.17% (Chart 2.19). However, the domestic economy sustained a mild growth rate, underpinned by the three major programs for investing in Taiwan promoted by the government, expanding capital expenditures contributed by domestic semiconductor manufacturers, and modest momentum in private consumption. As a result, the annual economic growth rate in Taiwan reached 2.71%, slightly lower than the 2.75% of the previous year (Chart 2.20).

Chart 2.19 Annual growth rates of exports



Source: MOF.

Chart 2.20 Economic growth rate in Taiwan



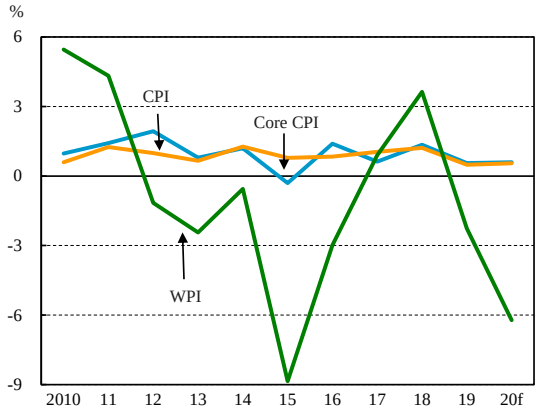
Note: Figure for 2020 is a CBC forecast released on March 19, 2020; other figures are released by DGBAS.
Sources: DGBAS and CBC.

[31] See Note 4.

Domestic prices rose moderately

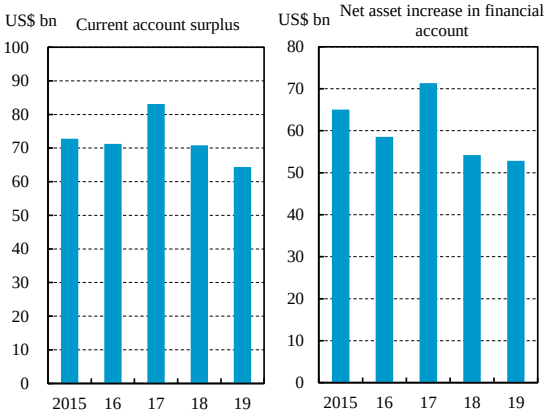
In 2019, on account of the US-China trade dispute and a decline in international crude oil prices, the annual wholesale price index (WPI) inflation rate registered -2.26%, much lower than the 3.63% recorded in 2018. The DGBAS projects the annual WPI inflation rate to continually fall to -6.22%[32] in 2020. With regard to consumer prices, the annual CPI inflation rate registered 0.56% in 2019, lower than the 1.35% of the previous year, owing to a decline in prices of fuel, communication fees, and garments. Meanwhile, the core CPI inflation rate in 2019 also increased mildly and reached 0.49%, lower than the 1.21% of the previous year (Chart 2.21). In 2020, in view of the COVID-19 pandemic weakening domestic consumer demand alongside a drop in the international prices of raw materials such as crude oil, the Bank forecasts the annual CPI and core CPI inflation rates to rise to 0.59% and 0.55%, respectively.

Chart 2.21 Consumer and wholesale price indices (% change, yoy)



Note: Figure for WPI in 2020 is a DGBAS forecast released on May 28, 2020; other figures for 2020 are CBC forecasts released on March 19, 2020.
Sources: DGBAS and CBC.

Chart 2.22 Current account surplus and net asset increase in financial account



Source: CBC.

Current account displayed a sustained surplus and FX reserves stayed abundant

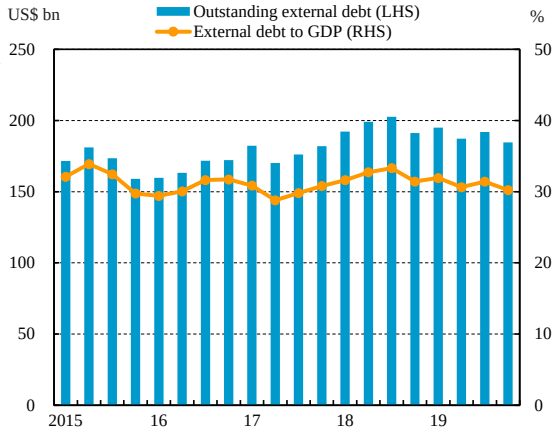
In 2019, the merchandise trade surplus trended down, causing the annual current account surplus to decline to US$64.4 billion, or 10.53%[33] of annual GDP, a decrease of 9.17% compared to 2018. Although the financial account showed continued outflows owing to the expansion in foreign securities investments by domestic securities investment trust funds and insurance companies, the movement was partially offset by a rise of inflows resulting from a sharp increase in investments by foreign institutional investors in Taiwan's stock markets (Chart 2.22). Accordingly, the financial account posted an increase of US$52.9 billion

[32] See Note 9.
[33] For the ratio of current account deficit to GDP, the cutoff point for risk is 3%. A country in which the reading is greater than 3% and has risen by at least 5 pps from the previous year is considered to be relatively high risk.

throughout the year. In sum, the Bank's reserve assets increased by US$16.7 billion in 2019, mainly fueled by earnings from portfolio investment operations of FX reserve assets.

FX reserves climbed to US$478.1 billion at the end of 2019, rising by 3.54% from a year earlier, mainly supported by the accumulation of earnings from portfolio investment operations of FX reserve assets. At the end of April 2020, the FX reserves continuously increased to US$481.8 billion.

Chart 2.23 External debt servicing capacity

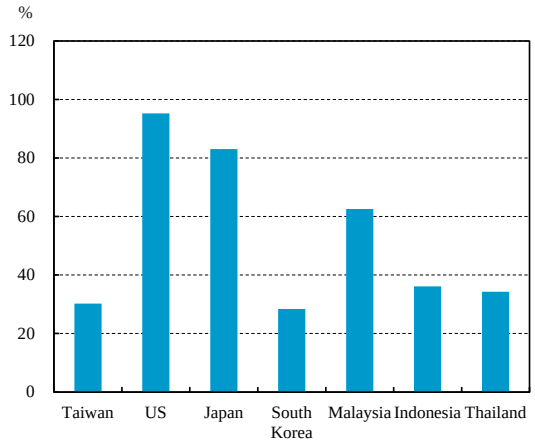


Notes: 1. Figures for outstanding external debts are on an end-of-period basis.
2. Figures for GDP are on an annualized basis
Sources: CBC and DGBAS.

Scale of external debt contracted, and debt-servicing capacity remained strong

Because of a shrinkage in the short-term external debt of the banking sector, Taiwan's external debt[34] fell to US$184.6 billion at the end of 2019 (Chart 2.23), decreasing by 3.40% compared to a year earlier. The largest share of external debt went for private external debt registering US$184.0 billion, while public external debt only reached US$0.6 billion.

Chart 2.24 External debt to GDP in selected countries



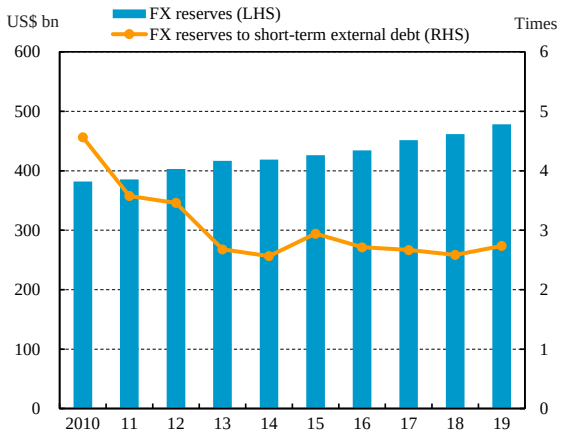
Note: Figures are as of the end of 2019.
Source: CEIC.

Taiwan's external debt stood at 30.21% of annual GDP at the end of 2019, lower than internationally recognized minimum levels.[35] Compared to the US and neighboring Asian countries, Taiwan's external debt was slightly higher than that in South Korea, but much lower than those in the US, Japan, and Malaysia (Chart 2.24).

[34] See Note 5.
[35] The general international consensus is that a country with a ratio of external debt to GDP lower than 50% is deemed to be relatively low risk.

Furthermore, at the end of 2019, the ratio of FX reserves to short-term external debt rose to 2.74 times owing to an increase in FX reserves and a decline in short-term external debt. It was much higher than internationally recognized minimum levels,[36] implying that Taiwan's FX reserves have a robust capacity to meet payment obligations (Chart 2.25).

Chart 2.25 Short-term external debt servicing capacity

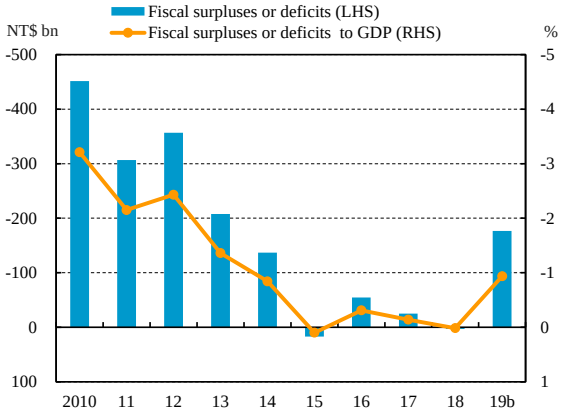


Source: CBC.

Fiscal deficits rebounded and government debt marginally increased

In 2019, the government actively promoted several measures in response to the economic situation, such as the second phase of the *Forward-looking Infrastructure Development Program*, technological development, industrial innovation, and an increase in educational spending, leading to an expansion of annual expenditures for both central and local governments. As a result, fiscal deficits rebounded to NT$176.7 billion or 0.94%[37] of annual GDP (Chart 2.26).

Chart 2.26 Fiscal deficits



Notes: 1. Fiscal position data include those of central and local governments.
2. Figures for 2019 are final accounts and budgets for the central government and local governments, respectively.

Sources: MOF and DGBAS.

At the end of 2019, the outstanding public debt at all levels of government[38] slightly rebounded to NT$6.41 trillion. However, the ratio of total public debt to annual GDP slightly fell to 33.93%[39] owing to a greater rise in GDP growth (Chart 2.27). In general, total government debt stayed within a manageable level.

[36] The general international consensus is that a country with a ratio of FX reserves to short-term external debt higher than 100% is deemed to be relatively low risk.
[37] See Note 6.
[38] The term "outstanding debt at all levels of government" as used in this report refers to outstanding non-self-liquidating debt with a maturity of one year or longer.
[39] See Note 7.

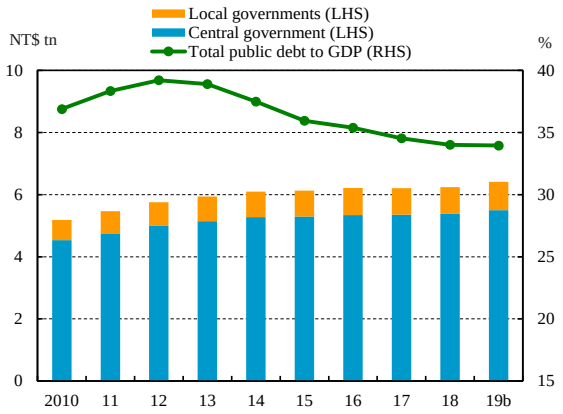
2.2.2 Corporate sector [40]

In 2019, profitability of TWSE-listed companies and OTC-listed companies abated alongside increasing financial leverage ratios, while short-term debt servicing capacity remained adequate. The NPL ratio for corporate loans granted by financial institutions as of the end of the year hit a record low in recent years, indicating sound credit quality of corporate loans.

Profitability of both TWSE-listed and OTC-listed companies abated

In 2019, the US-China trade war and subdued momentum in major economies induced weak market demand. Accordingly, the profitability of TWSE-listed and OTC-listed companies abated as their average ROEs declined to 12.62% and 12.23% from 14.92% and 13.02%, respectively, in the previous year (Chart 2.28). The ROEs of major industries mostly declined compared to a year earlier. Among them, the profitability of TWSE-listed electronic parts and components companies plunged deriving from falling panel prices and weak demand for passive components. This, coupled with mounting process costs in the semiconductor industry owing to lower equipment utilization, revealed a reduction in the ROE of the TWSE-listed electronics industry relative to the prior year. Conversely, the ROE of the OTC-listed electronics industry was slightly higher than that of the previous year. The increased ROE mainly benefited from the disposal of land and

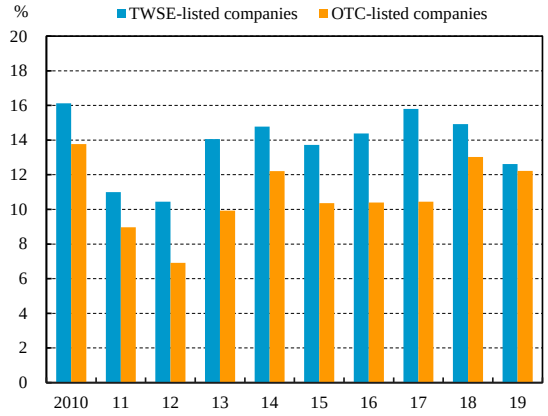
Chart 2.27 Public debt



Notes: 1. Outstanding public debt refers to non-self-liquidating debt with a maturity of one year or longer, excluding external debt.
2. Figures for 2019 are preliminary final accounts and budgets for the central government and local governments, respectively.

Sources: MOF and DGBAS.

Chart 2.28 Return on equity in corporate sector



Note: Return on equity = net income before interest and tax/average equity.

Source: TEJ.

[40] Corporate sector section only includes the non-financial industrial data of TWSE-listed companies and OTC-listed companies. Throughout this section, figures for listed companies are consolidated financial data; prior to 2011, the data are on the basis of generally accepted accounting principles in the Republic of China (Taiwan) (ROC GAAP), while from 2012, the data are on the basis of International Financial Reporting Standards as endorsed for use in Taiwan (TIFRSs). In light of changes in accounting treatment and presentation, readers should interpret these figures prudently when comparing statistics before and after IFRSs adoption.

factories by the optoelectronics industry, despite poor profitability in the electronic parts and components industry.

Leverage ratios increased, while short-term debt servicing capacity held at an adequate level for listed companies

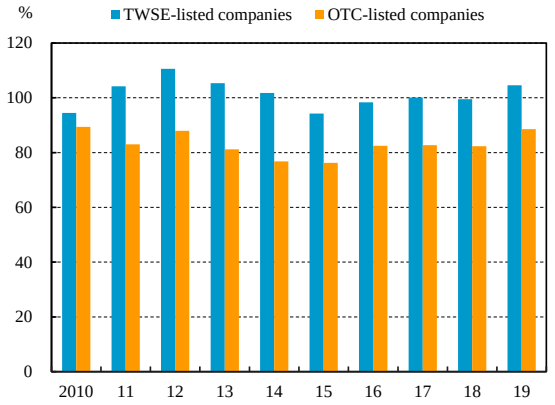
At the end of 2019, the average leverage ratios for TWSE-listed companies and OTC-listed companies rose marginally to 104.61% and 88.55%, respectively (Chart 2.29). Leverage ratios increased mainly because of a rise in the total liability, contributed to by increasing lease liability from lessee listed companies that applied the International Financial Reporting Standard (IFRS) 16 Leases from 2019 onwards, as well as a mild increase in the issuance of commercial paper by listed companies.

Meanwhile, the current ratios for TWSE-listed companies and OTC-listed companies dropped to 151.19% and 180.88% (Chart 2.30), and the interest coverage ratios also declined to 9.35 and 15.99 (Chart 2.31), respectively. However, for listed companies as a whole, short-term debt servicing capacity remained at an adequate level in 2019.

Credit quality of corporate loans remained satisfactory

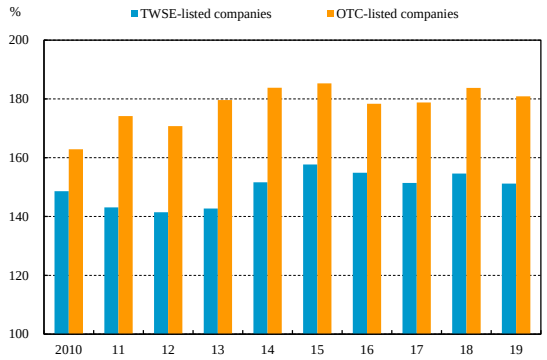
At the end of 2019, the NPL ratio for corporate loans[41] from financial institutions fell to a

Chart 2.29 Leverage ratios in corporate sector



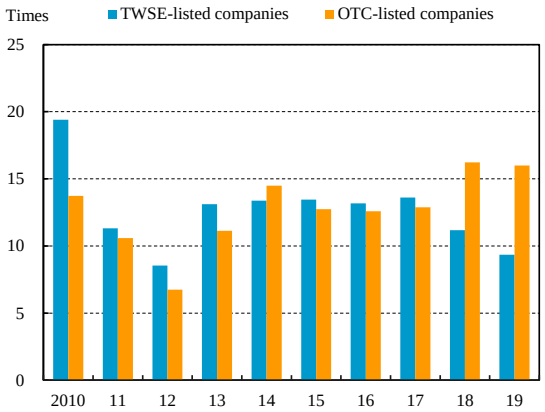
Note: Leverage ratio = total liabilities/total equity.
Source: TEJ.

Chart 2.30 Current ratios in corporate sector



Note: Current ratio = current assets/current liabilities.
Source: TEJ.

Chart 2.31 Interest coverage ratios in corporate sector



Note: Interest coverage ratio = income before interest and tax/interest expenses.
Source: TEJ.

[41] The data for the corporate sector herein are on the basis of listed and unlisted corporations provided by the Joint Credit Information Center (JCIC), excluding the data of overseas branches of domestic banks.

record low of 0.27% from 0.3% a year earlier. The overall credit quality for the corporate sector strengthened (Chart 2.32).

2.2.3 Household sector

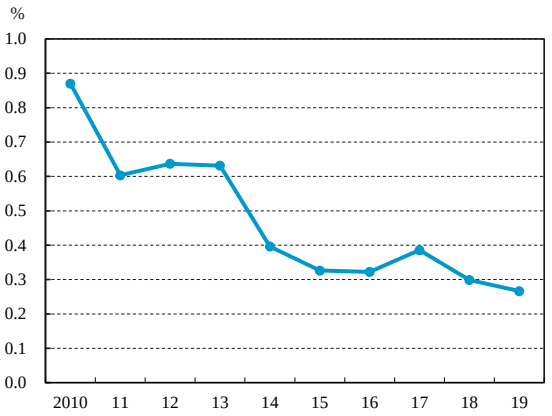
The balance of total household borrowing expanded continually in 2019. However, the household debt burden leveled off and the household net worth to GDP ratio was high, reflecting that the debt servicing capacity of households remained sound. Moreover, credit quality of household borrowing from financial institutions remained satisfactory.

Household borrowing increased continually

At the end of 2019, total household borrowing expanded and reached NT$16.39 trillion, equivalent to 86.74% of annual GDP (Chart 2.33). The largest share of household borrowing went for the purchase of real estate (62.88%), followed by current operation loans (34.60%).

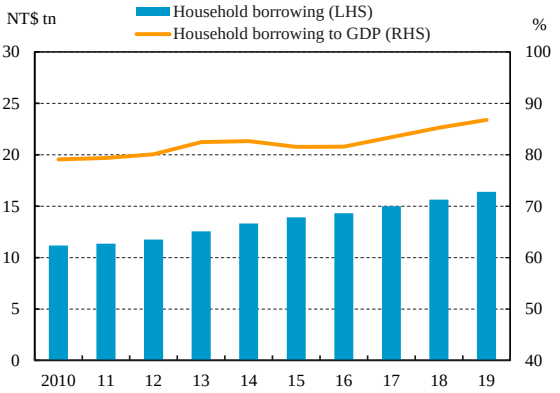
In 2019, household borrowing grew continually, with the annual growth rate slightly rising to 4.82%, mainly contributed to by the build-up in the purchase of real estate and current operation loans. Compared to other countries, the growth of total household borrowing in Taiwan was lower than that in South Korea, but higher than those in Australia, the US, and Japan. As to household borrowing to GDP, Taiwan's ratio was lower than those in Australia and South Korea, but higher than those in the US and Japan (Chart 2.34).

Chart 2.32 NPL ratio of corporate loans



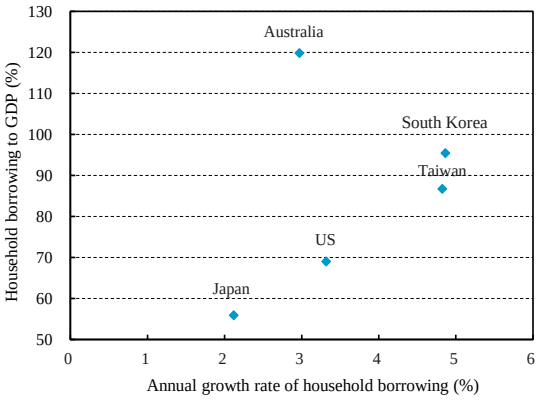
Source: JICC.

Chart 2.33 Household borrowing to GDP



Sources: CBC, JCIC and DGBAS.

Chart 2.34 Household indebtedness in selected countries



Note: Figures are as of the end of 2019.
Sources: Fed, BOJ, BOK, ABS, IMF, DGBAS, CBC and JCIC.

Household debt burden leveled off, while net worth was high

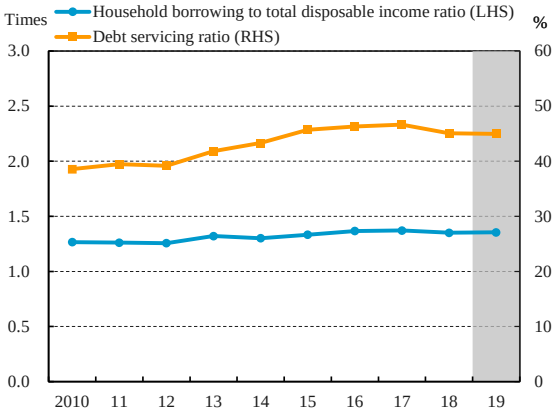
As disposable income grew at a faster pace than total household borrowing in 2019, the ratio of household borrowing to total disposable income[42] leveled off at 1.35 at the end of the year, reflecting a stable household debt burden. Moreover, the debt servicing ratio also declined to 44.98% (Chart 2.35), thereby indicating that household short-term debt servicing pressure relieved slightly.

Furthermore, in Taiwan, household net worth[43] has been remarkable over the past decades, which was more than 8.2 times the GDP in recent years. Compared to other countries, the household net worth to GDP in Taiwan was higher than those in the UK, US, South Korea, and Singapore (Chart 2.36), reflecting the sustained debt servicing capacity of households.

Credit quality of household borrowing remained satisfactory

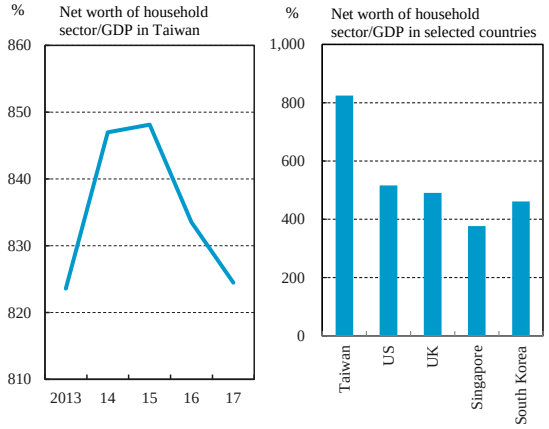
In 2019, the NPL ratios of household borrowing and loans to purchase real estate decreased to a new low of 0.22% and 0.18% at the end of the year (Chart 2.37), respectively, reflecting satisfactory credit quality.

Chart 2.35 Household indebtedness and debt servicing ratio



Notes: 1. Total disposable income in shaded area is a CBC estimate.
2. Debt servicing ratio = borrowing service and principal payments/total disposable income.
Sources: CBC, JCIC and DGBAS.

Chart 2.36 Household net worth to GDP



Notes: 1. The household sector herein includes households and non-financial groups.
2. On the right panel, figures are as of the end of 2017 in Taiwan and as of the end of 2018 in other countries.
Sources: DGBAS and official websites of selected countries.

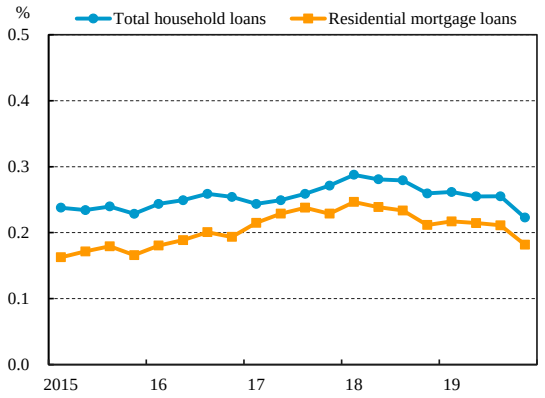
[42] Total disposable income = disposable income + rental expenses + interest expenses.
[43] See Note 8.

2.2.4 Real estate market

Trading volume in the housing market increased and house prices rose in 2019. In addition, new housing loans and construction loans grew remarkably, and the mortgage burden slightly increased. Building ownership transfers for transaction continued to grow moderately from January to March 2020; however, the housing market turned conservative amid the COVID-19 pandemic. As a result, building ownership transfers for transaction of the six metropolitan areas started to decline in April.

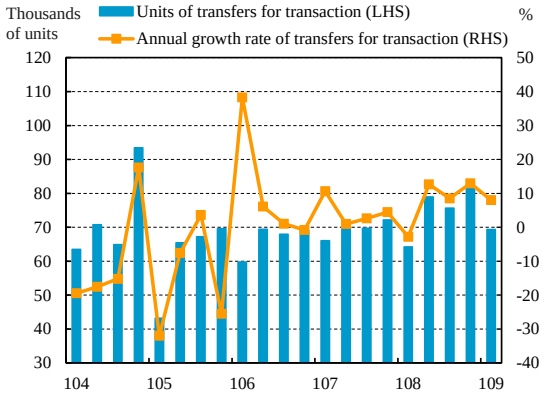
Box 1 analyzes the factors that may affect housing prices and indicates that the interest rate is not the best policy tool to address housing price problems. Instead, taxation measures to stabilize housing prices seem to be more effective. Therefore, the relevant ministries and departments under Taiwan's cabinet should fully cooperate with local governments to alleviate high housing price problems.

Chart 2.37 NPL ratios of household borrowing



Source: JCIC.

Chart 2.38 Building transfers for transaction and annual growth rate



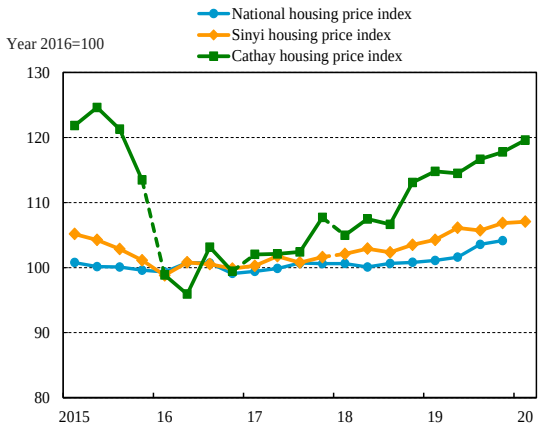
Source: Monthly Bulletin of Interior Statistics, MOI.

Trading volumes in the real estate market increased

In 2019 Q1, the total number of building ownership transfers for transaction turned to decrease by 2.78% year on year. The main reasons were a slowdown in the delivery of new buildings, elevated housing prices, and a gap regarding the views of housing prices between buyers and sellers. From Q2 onwards, the housing market gathered momentum. It was supported by the steady expansion of the domestic economy, together with a rebound in property purchase sentiment deriving from a rising demand for offices and production plants as well as buoyant market expectations as Taiwanese enterprises abroad reinvested in Taiwan. These, coupled with an increase in the delivery of new buildings, boosted a rebound of the total number of building ownership transfers for transaction with an annual growth rate of 12.96% in Q4 (Chart 2.38).

For the period of January to March 2020, the total number of building ownership transfers for transaction recorded an annual growth rate of 8.00%. However, with the acceleration of the COVID-19 pandemic, the housing market turned conservative and building ownership transfers for transaction of the six metropolitan areas decreased by 8.05% year on year in April. As a result, the average trading volume for the period of January to April was slightly less than the monthly average trading volume in 2019.

Chart 2.39 House price indices



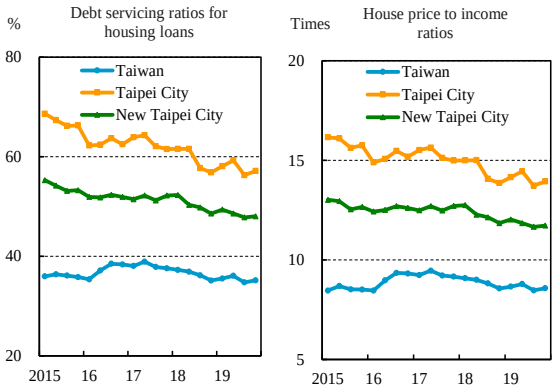
Notes: 1. The Cathay housing price index adjusted the possible transaction price model from 2016 Q1. In 2018 Q1, the model's parameters were revised, and from January 2017 the opening price, transaction price, and index of each quarter were recalculated.
2. For comparison purposes, all four indices use the same base year of 2016 (2016 average = 100).
Sources: MOI, Cathay Real Estate, and Sinyi Real Estate Inc.

Real estate prices trended upwards but increased at a moderate pace

The national housing price index rose gradually from early 2019 onwards. As of the end of Q4, the index reached a record high of 104.14, increasing by 3.31% year on year (Chart 2.39).

The Sinyi housing price index also rose moderately in 2019. In 2020 Q1, the index was close to the historical high level of 2013 Q2. The Cathay housing price index increased significantly. In 2020 Q1, the index rose and reached the level of 2015 Q4, but the annual growth rate fell to 4.19% from the 9.39% of 2019 Q3.

Chart 2.40 Debt servicing ratios for housing loans and house price to income ratios



Notes: 1. Debt servicing ratio for housing loans = median monthly housing loan payment/median monthly household disposable income.
2. House price to income ratio = median house price/median annual household disposable income.
Source: Housing Price Affordability Indicator Statistics, Construction and Planning Agency of the MOI.

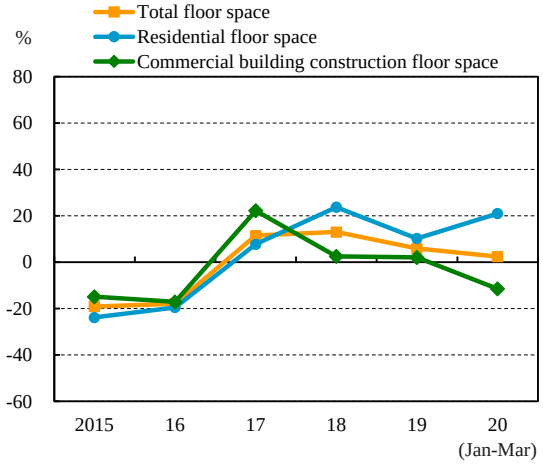
Mortgage burden remained heavy

The debt servicing ratio for housing loans slightly rose in the first half of 2019 and then declined to 34.73% in Q3. In Q4, following a rise in median house prices, the ratio rebounded to 35.15% (Chart 2.40). The house price to income ratio in 2019 also fluctuated within a narrow range. The ratio was 8.58 in Q4, marginally increasing 0.01 year on year. The mortgage burden remained heavy.

The total floor space of building commencement expanded, and pressure from the expansion of unsold new residential properties remained

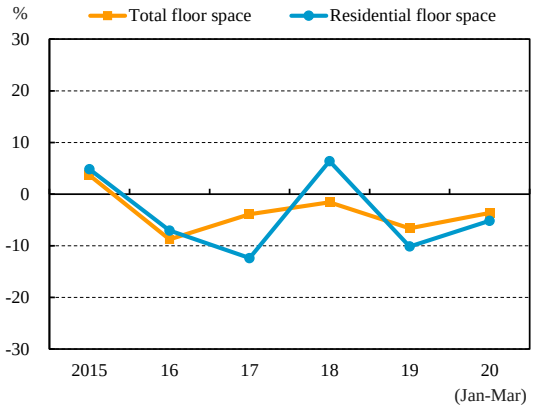
In 2019, the total floor space of building commencement increased by 6.02% year on year, with residential properties and commercial buildings construction increasing by 10.28% and 2.08%, respectively. It was mainly underpinned by a rebound in construction companies' confidence in investing in the real estate market as well as continual commencement of social housing and industrial and commercial buildings construction. For the period of January to March 2020, total floor space continued to increase by 2.46% year on year, mainly because of a substantial increase in residential properties construction with an annual growth rate of 21.05%. Nonetheless, owing to a higher base period resulting from firms' expansion in factories a year earlier, the floor space of industrial and commercial buildings construction turned to decrease by 11.43% year on year, partially offsetting an increase in total floor space (Chart 2.41).

Chart 2.41 Annual growth rates of floor space of building commencement



Note: Commercial building construction includes commerce, industry, storage, business and service.
Source: Monthly Bulletin of Interior Statistics, MOI.

Chart 2.42 Annual growth rates of floor space of usage licenses issued



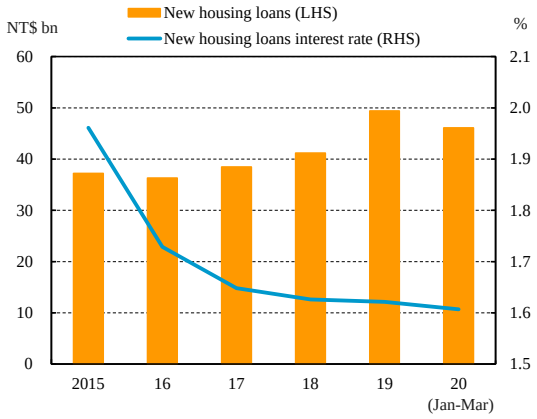
Source: Monthly Bulletin of Interior Statistics, MOI.

The annual growth rate of the total floor space of usage licenses issued was -6.62% in 2019, mainly because of a higher base period resulting from the gradual delivery of new buildings in 2018. Meanwhile, the annual growth rate of the floor space of residential properties turned to -10.12%. However, for the period of January to March 2020, the annual growth rate of the total floor space was -3.63%. The narrower decrease was mainly because residential properties also recorded a smaller decline of -5.15% year on year (Chart 2.42).

Unsold new residential properties construction registered 75.2 thousand units in 2018 Q4. In 2019, usage licenses issued for residential properties amounted to 92.3 thousand units, less than the previous year. Nevertheless, new residential buildings commencement reached 116.5

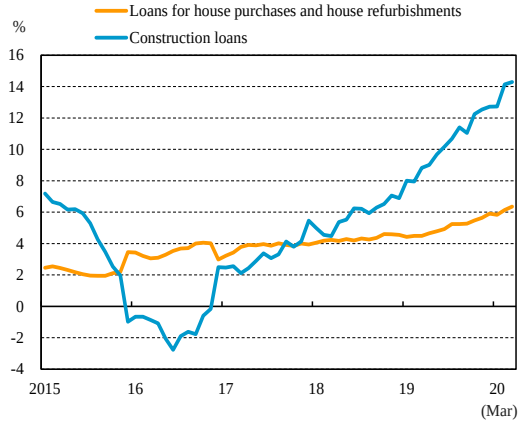
thousand units, an annual increase of 14.3 thousand units over 2018. Given high prices of new residential buildings and no improvement in their sale rates, the pressure on reducing the mounting number of unsold new residential properties remained high.

Chart 2.43 New housing loans – amount and interest rate



Source: CBC.

Chart 2.44 Annual growth rates of real estate loans



Source: CBC.

Real estate loans grew as mortgage interest rates trended downward

With transactions in the housing market expanding, the total new housing loans granted by the top five banks[44] registered NT$592.6 billion in 2019, substantially increasing by 19.92% year on year. In the first three months of 2020, the average figure was around NT$46.1 billion, an increase of 5.95% compared to the same period of 2019; nevertheless, it was lower than the annual average figure throughout 2019 (Chart 2.43).

In 2019, the interest rate for new housing loans granted by the top five banks trended downward and dropped to 1.608% in December. Afterwards, the interest rate slightly rebounded to 1.617% in January 2020 and then dropped to a low point of 1.593% in March following the interest rate cut by the Bank (Chart 2.43).

From early 2019 onwards, outstanding loans for house purchases and house refurbishments granted by banks[45] grew steadily and registered an annual growth rate of 6.36% at the end of March 2020. Meanwhile, owing to a rise in land purchases and construction projects by construction companies, outstanding construction loans continued to expand with double digit growth from June 2019 onwards and reached an annual growth rate of 14.29% at the end of March 2020 (Chart 2.44).

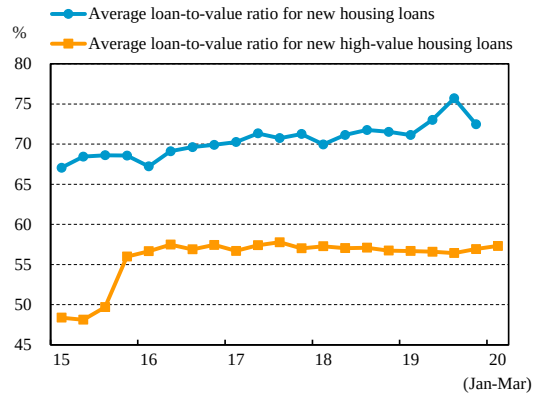
[44] The top five banks refer to the Bank of Taiwan, Taiwan Cooperative Bank, First Commercial Bank, Hua Nan Commercial Bank, and Land Bank of Taiwan.
[45] Refers to domestic banks and the local branches of foreign and Mainland China's banks.

Banks' risk management on real estate loans remained satisfactory

In 2019, with the housing market rebounding, the average loan-to-value (LTV) ratio for new housing loans registered 73.09%, slightly higher than that in 2018. Moreover, the ratio for high-value housing loans fell moderately to 56.66% throughout 2019 but then slightly rose to 57.31% for the period of January to March 2020 (Chart 2.45).

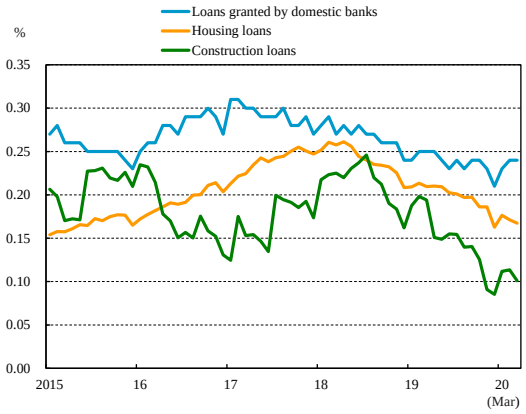
From the second half of 2018 onwards, the NPL ratios of housing loans and construction loans decreased moderately and reached 0.16% and 0.08%, respectively, at the end of 2019. At the end of March 2020, the ratios rose slightly to 0.17% and 0.10%, respectively, but remained at a low level and were both lower than the overall 0.24% NPL ratio of total loans granted by domestic banks (Chart 2.46). This reveals that the risk management of domestic banks to cope with potential mortgage loan losses remained satisfactory.

Chart 2.45 Average LTV ratios for new housing loans



Notes: 1. Figures are calculated by using the LTV ratios for new housing loans granted by all financial institutions.
2. Figures are calculated by using the LTV ratios for new high-value housing loans granted by all banks.
Sources: JCIC and CBC.

Chart 2.46 NPL ratios of housing loans and construction loans



Source: CBC.

2.2.4 COVID-19 impact on domestic macro economy

Lower economic growth is forecast owing to a slowdown in consumption and exports

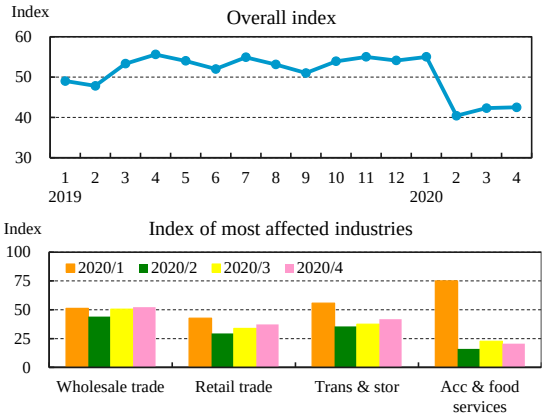
Since the beginning of 2020, global travel has almost ground to a halt amid the COVID-19 pandemic. Moreover, shrinking domestic tourism and weakened consumption have battered Taiwan's tourism industry. As a result, the Taiwan Non-Manufacturing Index (NMI) dropped significantly to 40.4 in February 2020. Despite the fact that the index rebounded slightly to 42.5 in April, it was still below the 50 "boom-bust" threshold. The accommodation & food

services, transportation & storage, and retail trade categories were the three most affected industries (Chart 2.47).

In 2020 Q1, Taiwan's exports remained resilient, despite a decline in most merchandise exports. The main products contributing to the growth momentum in exports were integrated circuits and network communication products, supported by the development of emerging technologies, including 5G networks, and the emergence of the stay-at-home economy. However, the annual growth rate has dropped into negative territory in March. With COVID-19 spreading around the world, mounted concerns over global demand contraction will put pressure on Taiwan's exports.

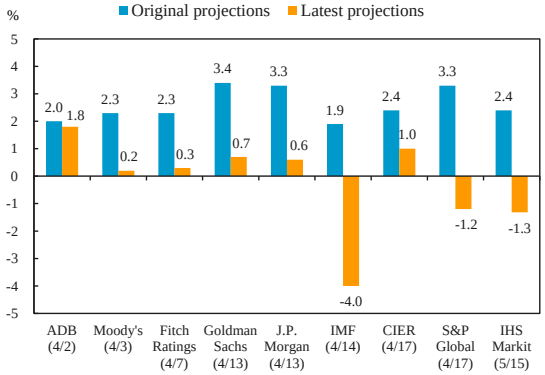
Against a backdrop of an exacerbating COVID-19 pandemic in major countries in Europe and North America, global trade and economic growth are set to plunge. Considering that Taiwan is a small open economy that is highly vulnerable to global external demand, major institutions have consecutively downgraded their projections for Taiwan's growth rate to a wide range of -4.0%~1.8% (Chart 2.48).

Chart 2.47 NMI in Taiwan



Note: Trans & stor = Transportation & storage, Acc & food services = accommodation & food services.
Source: CIER.

Chart 2.48 Taiwan's economic outlook projections



Notes: 1. Numbers in parentheses are release dates of the projections by each institution in 2020.
2. Original projections are forecast without considering the impact of COVID-19.
Sources: Institutions in the chart.

According to a preliminary estimate of the DGBAS, Taiwan's GDP decreased by 1.59%[46] in 2020 Q1. Although growth momentum weakened, the growth rate was still higher than those in the US (0.2%) and Mainland China (-6.8%). Based on a more conservative growth forecast in private consumption and investment amid the COVID-19 pandemic, combined with the adverse impact on export momentum, the Bank lowered its earlier forecast for Taiwan's economic growth to 1.07% for the first half of the year. If the situation of the COVID-19 pandemic improves in the second half of the year, global supply chains will gradually resume production and deferred private consumption will have a rebound effect on the economy. In

[46] See Note 9.

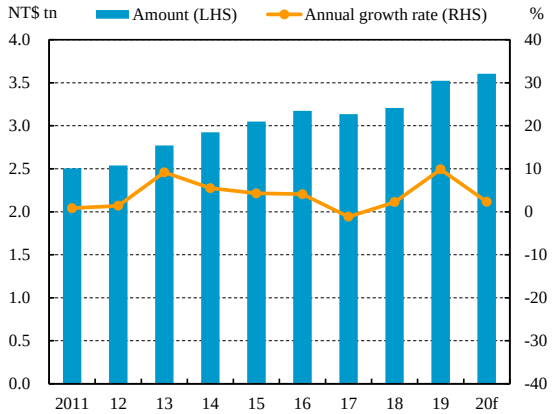
addition, export momentum expected to be regained from more business opportunities in emerging technologies, such as 5G networks and artificial intelligence (AI), along with the government's relief and revitalization measures to bolster domestic demand, point to a possible pickup in domestic economic growth in the second half of the year. The Bank forecasts the domestic economy to expand by 1.92% in 2020, a decrease of 0.79 pps compared to a year earlier (Chart 2.20).[47]

Companies whose operations were harmed by COVID-19 could have weaker financial health

In the corporate sector, the impact of the pandemic on individual industries was diverse. Among them, the industries of the manufacturing sector that are highly connected to Mainland China's supply chain could be vulnerable to the suspension of production and weaker logistic networks from Mainland China. Some of Taiwan's manufacturers (e.g., the petrochemical industry, machine tool industry, and electronic parts and components industry) are likely to benefit from the positive order-transfer effect. Nevertheless, the effect would not be enough to offset the negative shock arising from supply chain disruptions and order cancellation as the ongoing COVID-19 turmoil has weakened global demand. When it came to the services sector, the spread of the pandemic ravaged the revenue for some industries (e.g. the wholesale trade industry, retail trade industry, transportation & storage industry, and accommodation & food services industry) owing to a chilling of consumers' willingness to travel, eat out or participate in outdoor activities.

Furthermore, the COVID-19 crisis would reduce local firms' willingness to invest in Taiwan. Given a higher base period, the DGBAS forecast that the growth rate in real private fixed capital formation will decrease to 2.31% in 2020 (Chart 2.49), which may influence the growth momentum of corporate profits in the future.

Chart 2.49 Private investment



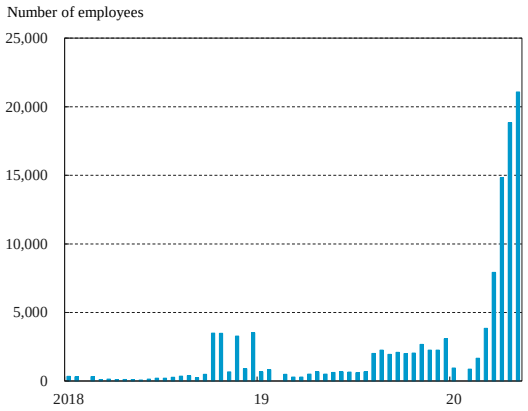
Notes: 1. The amount and the annual growth rate of private investment are expressed in real terms.
2. Figures for 2020 are forecast by DGBAS.
Source: DGBAS (2020/5/28).

[47] See Note 10.

The worsening labor market could hit households' earnings and debt servicing capacity

Taiwan's unemployment rate stood at 3.67% in December 2019, indicating a stable job market. Nonetheless, the unemployment rate climbed to 4.03% in April 2020 amid the COVID-19 outbreak. Moreover, some firms in the manufacturing sector and the services sector have taken different measures to curb the adverse shock, including encouraging their employees to take leaves or apply for furlough as well as adopting flexible working hours and salary reductions. Some companies even closed their businesses temporarily or permanently. As of May 15, 2020, a total of 21,067 Taiwanese employees, an increase of 17,993 workers compared to the end of 2019, agreed on negotiated reductions of working hours with their employers (Chart 2.50). Of the employees with reduced working hours, labor in the accommodation & food services industry, wholesale trade industry, and retail trade industry accounted for 37.40%. The worsening labor market could pose risks to households' income sources and further build up household debt servicing pressure. The aforementioned situation warrants close attention.

Chart 2.50 Number of employees who agreed on negotiated reductions of working hours with their employers



Note: The data are released in the middle and the end of the month. There are no data available during the Chinese New Year (mid-February 2018, mid-February 2019, and end-January 2020).
Source: MOL.

Other effects

In 2019, fiscal deficits and the outstanding government public debt mounted owing to a number of infrastructure projects promoted by the government. In April 2020, in an effort to mitigate the COVID-19 impact on the domestic economy, the government passed an expanded economic stimulus package totaling NT$1.05 trillion, or 5.4% of 2019 nominal GDP. The package comprised a special budget of NT$210 billion, of which NT$180 billion would be financed by debt (see Chapter 4). Accordingly, the government's fiscal deficits and outstanding debt could expand further.

On the other hand, although the pandemic has made little impact on trading volume and prices

in the real estate market so far, diminished home buyer interest to visit properties has been reported. This, coupled with the pandemic-induced job and income losses, could reduce some potential self-use buyers' willingness to purchase properties and result in a wait-and-see attitude towards the real estate market.

Box 1
Issues regarding interest rates, taxes and housing prices

In Taiwan, the problem of high housing prices results from a number of factors across various facets and thus can not be single-handedly addressed by one authority. With the aim of promoting a sound domestic housing market, government agencies would need to work together from the standpoints of demand, supply, and regulations of the real estate market.

1. The interest rate is only one of the many factors affecting house prices

1.1 The determinants of housing prices include supply, demand, and related regulations, while the interest rate is only one of the factors

Real estate trading volume and prices are determined by supply and demand factors, with an interplay of various forces, including taxation, household income, wealth effects, land supply, market expectations about home prices, and accessibility of real estate loans. Among those forces, real estate loans are affected not only by interest rates but also by loan restrictions such as loan-to-value (LTV) ratio caps as well as volume and prices of housing transactions.

1.2 International empirical research findings indicate that interest rates are not the crucial factor driving housing market booms

Cross-country empirical research findings[1] indicate that prior to the global financial crisis (GFC), a link between low interest rates and housing price bubbles was tenuous. After the 2008 GFC, housing prices in major cities in the US, the UK, Australia, and New Zealand have soared, mostly fueled by an increase in migrants alongside a slow adjustment in housing supply.

1.3 Taiwan's home price rises in the recent decade, albeit showing regional disparity, are partly due to a surge of capital inflows from residents repatriating offshore funds and foreigners investing in the local market

After the GFC, poor returns from offshore financial investments, coupled with a sharp reduction in estate and gift tax in 2009, led to massive offshore funds being repatriated by Taiwanese residents. In addition, excess domestic savings and low real estate holding costs caused those funds to flow into the housing market and, in turn, pushed up housing prices. From 2010 onwards, owing to a surge of capital inflows from residents repatriating offshore funds and foreigners investing in the local market, interest rates on new housing loans granted by domestic banks trended downwards. However, the movements in housing

prices varied among cities, indicating that interest rates were not the key driver pushing up housing prices, but factors such as supply and demand in the region and market expectations were responsible.

2. Multi-faceted policy tools should be used to address housing price issues

2.1 Charged with achieving a variety of policy objectives by means of different monetary policy instruments, the Bank does not set interest rates based solely on concerns over housing prices

Rather than aiming the interest rate tool at housing prices, the Bank's policy rate decisions take into account a wide range of factors such as output, inflation, and domestic and foreign economic and financial conditions. Therefore, macro-prudential tools, such as LTV ratio caps, would be more suitable to contain financial risks associated with housing prices.

2.2 Addressing housing price issues with interest rate tools could have widespread impact on the economy but has a limited effect on curbing rising house prices

Given that interest rates do not directly affect housing prices, if central banks want to impact housing prices, they have to raise interest rates to a significant extent. However, a substantial rise in interest rates would hammer normal economic activities. Moreover, in view of the fact that financial supervisors are unable to regulate the behavior of major investors who provide their own capital for domestic real estate, it is hard to effectively contain growth in housing prices through interest rate hikes. The experience of Sweden, which failed to address housing price problems with interest rate hikes in 2010, showed that the effectiveness of interest rate tools in stabilizing housing prices was limited, for which the costs were much higher than the benefits.

3. LTV ratio caps could productively contain the risk associated with real estate lending, while taxation measures are relatively effective in reducing housing price volatility

3.1 LTV ratio limits could effectively control the increase in housing loans, and taxation would be more appropriate for containing the volatility in volume and prices in housing markets

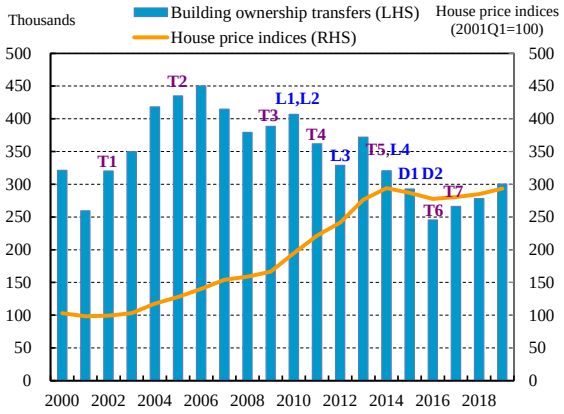
Studies[2] by the IMF and the Bank for International Settlements (BIS) indicated that measures such as LTV ratio caps could effectively control the growth of banks' housing loans and mitigate systemic financial risks. As for reducing housing price volatility, taxation on real estate would be more appropriate.

3.2 The Bank's mortgage-related regulations effectively controlled the expansion of mortgage credit, while taxation on housing had a more significant effect on curbing trading volume and prices

To cope with elevated housing prices, the Bank has introduced several pieces of rules on real estate loans since June 2010 (L1-L4 in Chart B1.1 and Table B1.1), and relevant ministries and agencies have also taken measures to promote a sound housing market (T4, T5 in Chart B1.1 and Table B1.2). After the consolidated tax on income from transactions of housing and land was implemented in 2016, relevant authorities and local governments successively adjusted related measures amid the downturn in the housing market. Meanwhile, the Bank gradually relaxed housing loan restrictions (D1-D2 in Chart B1.1, Table B1.1).

Domestic empirical research[3] suggested that capping the LTV ratio on real estate loans helped mitigate the impact of low interest rates on housing prices in Taiwan and real estate taxation measures affected the trading prices and volume in the housing market (T1-T7 in Chart B1.1, Table B1.2).[4] In particular, the consolidated tax on income from transactions of housing and land, adopted in 2016, had the most notable effect on reducing the trading volume in the housing market.

Chart B1.1 Building ownership transfers and house price indices



Note: L1 to L4 were the Bank's measures to restrict LTV ratios for real estate loans since 2010; D1 and D2 were measures to relax LTV ratios for real estate loans; T1 to T7 were major tax reforms adopted since 2000, detailed in Table B1.1 and Table B1.2.

Sources: CBC, MOF and MOI.

Table B1.1 Real estate loan measures since 2010

Year	Code	LTV ratios on real estate loan measures
Introducing LTV ratio restrictions		
2010	L1	• For second or more house-purchase loans in Specific Areas, capping the LTV ratio at 70%.
2010	L2	• Expanding the scope of Specific Areas, lowering the LTV ratio cap to 60%. • For land collateralized loans, capping the LTV ratio at 65%.
2012	L3	• For high-value housing loans, capping the LTV ratio at 60%.
2014	L4	• Further expanding the scope of Specific Areas. • For third or more house-purchase loans, capping the LTV ratio at 50%. • Adjusting the standards for high-value housing loans, lowering the LTV ratio cap to 50%. • For house-purchase loans granted to corporate legal entities, capping the LTV ratio at 50%.
Relaxing LTV ratio restrictions		
2015	D1	• Repealing restrictions on six Specific Areas. • Raising the LTV ratio cap of various real estate loans to 60%.
2016	D2	• Repealing LTV ratio limits on various real estate loans, except for high-value housing loans

Source: CBC.

4. Solution to elevated housing prices depends on the cooperation among relevant government agencies

4.1 High housing price problems should be addressed with coordinated efforts through policies related to taxation, land, real estate and finance

From 2018 onwards, housing prices stayed high and the mortgage burden remained heavy. As factors affecting housing prices and mortgage affordability are complicated, coordination among different policy areas involving taxation, land, housing and finance is necessary. In sum, the issue of elevated housing prices cannot be solved by a single agency.

Table B1.2 Real estate-related taxation measures since 2002

Year	Code	Real estate-related taxation measures
Measures to reduce tax burden		
2002	T1	• Land value increment tax: levying general land transaction at half the original tax rate.
2005	T2	• Reducing the applicable tax rates for general land to 20%, 30%, and 40%. • Granting real estate owners of long-term holding tax reductions and exemptions.
2009	T3	• Revising estate and gift tax from a progressive tax rate (up to 50%) to a single tax rate (10%).
Measures to increase tax burden		
2011	T4	• Levying a specifically selected goods and services tax.
2014	T5	• Introducing housing tax reforms, including an increase in the base tax rate for non-self-use housing.
2016	T6	• Levying a consolidated housing and land tax.
2017	T7	• Revising estate and gift tax from a single tax rate (10%) to a progressive tax rate (up to 20%).

Source: MOF.

4.2 Tax burden for real estate was low in Taiwan, which tended to fuel real estate investment

In recent years, local governments have successively increased the land value tax base; however, in 2020, the publicly announced land value only accounted for about 19.8% of the normal transaction prices. Moreover, many tax reduction and exemption regulations could easily lead to ineffective use of land, such as vacant land and land hoarding. This, together with a lower property tax burden and other favorable measures (e.g., a 50% reduction on land value increment tax effective from February 2002), have greatly reduced the tax burden on real estate transactions, which had possibly fueled demand for real estate investment.

4.3 Owing to large fluctuations in housing prices resulting from frequent movements of international capital, the Bank adopted appropriate management measures

Since 2019, overseas Taiwanese enterprises had increased investment in Taiwan. In order to avoid a rise in housing prices triggered by the large inflows of offshore funds, the government formulated measures to guide such funds towards non-speculative, industrial investments and limit capital flows into the housing market. The Bank also continued to regulate high-value housing loans by keeping the cap on the LTV ratio at 60%.

5. Conclusion

In 2016, Taiwan implemented consolidated taxation on income from transactions of housing and land with the aim of curbing short-term speculation. However, on the back of a low level of tax burden on holding real estate, it was still difficult to deter property owners from hoarding houses or land. From 2019 onwards, housing prices in Taiwan have stayed at a high level; nevertheless, this is an issue that cannot be solved by a single agency. Instead, it relies on the cooperation among ministries and agencies under the central and local governments to achieve a sound real estate market.

Notes: 1. IMF (2009), "Lessons for Monetary Policy from Asset Price Fluctuations," *World Economic Outlook*, October; Kuttner, Kenneth N. (2013), "Low Interest Rates and Housing Bubbles: Still No Smoking Gun," in Evanoff et al. (eds.), *The Role of Central Banks in Financial Stability: Has It Changed?* World Scientific, December.

2. Kuttner, Kenneth N. and Ilhyock Shim (2013), "Can Non-Interest Rate Policies Stabilise Housing Markets? Evidence from a Panel of 57 Economies," *BIS Working Papers*, No. 433, November; Zhang, Longmei and Edda Zoli (2014), "Leaning Against the Wind: Macroprudential Policy in Asia," *IMF Working Paper*, WP/14/22, February; Richter, Bjorn, Moritiz Schularick, and llHyock Shim (2018), "The Macroeconomic Effects of Macroprudential Policy," *BIS Working Papers*, No. 740, August.

3. Wang, Hong Ren, Chen, Nan Guang and Lin, Zi Yu (2017), "The Impact of LTV ratio on Taiwan's Real Estate Prices and Credits," *Quarterly Bulletin, Central Bank of the ROC (Taiwan)*, Volume 39, Issue 3, September.

4. Measures included: (1) the land value increment tax was cut by half, from February 2002 to January 2005, and general land was levied at half the original tax rate (40%, 50%, 60%); (2) since February 2005, the applicable tax rates for general land have been reduced to 20%, 30%, and 40%. In addition, landowners with long-term holdings were granted reductions and exemptions; (3) from January 2010, considering the increasing demand for changing to different types of homes, the applicable preferential tax rates for self-use residential land have been relaxed.