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CENTRAL BANK OF TRINIDAD & TOBAGO

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MONETARY POLICY REPORT

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Central Bank of Trinidad and Tobago

Monetary Policy Report

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The Central Bank of Trinidad and Tobago conducts monetary policy geared towards the promotion of low inflation and a stable foreign exchange market that is conducive to sustained growth in output and employment. This Report provides an account of how monetary policy actions support this objective, in light of recent economic developments.

Preface

The Central Bank of Trinidad and Tobago's monetary policy framework is guided by the objectives of maintaining low and stable inflation in an environment conducive to economic growth and financial system development. The Central Bank employs a range of instruments (direct and indirect) to effect monetary policy. Prior to the 1990s, the Central Bank utilised direct policy tools such as reserve requirements and direct credit controls. However, the onset of trade and financial liberalisation in the 1990s brought about a greater emphasis on market-based instruments such as open market operations. Since mid-2002, the Central Bank's monetary policy framework was revised to include the use of a Repurchase ('Repo') rate as a key policy tool. The Central Bank utilises the Repo rate to signal to the banking system the direction in which it wishes short-term interest rates, and ultimately, the structure of interest rates, to move. Open market operations involve the purchase and sale of Government securities by the Central Bank to impact the level of liquidity in the domestic financial system.

The Monetary Policy Committee (MPC) develops and communicates the Central Bank's overall monetary policy stance. The MPC currently comprises members of the Central Bank's Senior Management and is chaired by the Governor. The Committee issues quarterly Monetary Policy Announcements (MPA) which provide insights into the MPC's deliberations, and oversees the preparation of the semi-annual Monetary Policy Report (MPR). The MPC is assisted by the Monetary Policy Secretariat (MPS), made up of staff from various Departments, which undertakes ongoing economic and financial analysis. The Central Bank utilises the MPR to communicate to the public its views on economic and financial developments and the main factors that influence the Central Bank's monetary policy decisions.

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- The International Monetary Fund (IMF), in its April 2023 World Economic Outlook (WEO), forecasts global growth to moderate to 2.8 per cent in 2023, lower than its 2022 outturn. Emerging Market and Developing Economies (EMDEs) are expected to be the main driver of global growth in 2023, with growth forecasted to expand by 3.9 per cent while output in the Advanced Economies (AEs) is projected to grow by 1.3 per cent.

- Domestically, energy output in the fourth quarter of 2022 rose while indications are that non-energy output was steady. Retail price pressures decelerated in early 2023, largely reflecting a slowdown in both food and core inflation.

- With the banking system well-capitalised, profitable and liquidity levels adequate, the system appears well-positioned to absorb shocks and manage growing credit demand.

- Monetary policy thus far in 2023 has continued to balance considerations of inflation alongside domestic and external factors. The Central Bank, in its latest Monetary Policy Committee (MPC) March 2023 meeting, kept the Repo rate steady at 3.50 per cent.

MONETARY POLICY OVERVIEW AND OUTLOOK

Overview

Since the November 2022 Monetary Policy Report, risks to global financial stability from the monetary policy actions by major central banks to combat record-high inflation rates have surfaced, further dampening the global economic outlook. Initially poised for recovery from the COVID-19 pandemic and the 2022 geopolitical shock, the global growth outlook dulled as financial risks surfaced. Persistent monetary policy tightening by major central banks to temper inflationary pressures fuelled risks to financial stability, which materialised in the failure of a few banks in the United States (US) and the takeover of one international bank. Subsequently, monetary authorities and financial regulators took action to avert widespread contagion. Nonetheless, with inflation still elevated in many economies, further monetary policy tightening is anticipated - though at a more measured pace in order to avert deeper financial repercussions.

Though with a more cautious approach, monetary policy tightening continued in several advanced economy central banks. The US Federal Reserve, the Bank of England and the European Central Bank all increased benchmark interest rates to mitigate price pressures early in 2023. Given the slower-than-anticipated deceleration in inflation and tight labour market conditions in a number of economies, it is likely that monetary policy tightening would continue in the near term to bring inflation toward target.

Domestically, there was an increase in energy output in the fourth quarter of 2022 on a year-on-year basis. Available data however, suggests some sluggishness in non-energy output during that period, while overall energy production was fairly steady in the first quarter of 2023. Labour market conditions improved as the unemployment rate fell and labour force participation rose in the fourth quarter of 2022. Retail price pressures continued to decelerate in 2023 with inflation in April recorded at 6.0 per cent (year-on-year) after peaking at 8.7 per cent in December 2022. Food inflation slowed over February, March and April 2023 as Bread and Cereals, Vegetable and Fruit prices eased. Similarly, core inflation decelerated to 4.8 per cent.

Financial system liquidity remained ample, supporting expansion in private sector credit. Commercial banks' daily average excess liquidity decreased to $4.7 billion by end-April 2023 but rebounded to $6.3 billion by May 2023, same as the $6.3 billion in November 2022, driven by fiscal injections as well as net redemptions of open market operation instruments. Meanwhile, the Central Bank's foreign exchange sales to authorised dealers indirectly removed $4.8 billion from the financial system over November 2022 to May 2023. With liquidity levels still ample, business, consumer and real estate mortgage lending strengthened, supporting the growth momentum in consolidated system credit. Commercial banks' lending rates trended downward over the first quarter of 2023. In addition, continued monetary policy tightening in the US resulted in the widening of the TT-US short-term interest rate differential.

The Central Bank kept the Repo rate unchanged while adjusting its open market operations to deal more flexibly with changing liquidity conditions. Following its Monetary Policy Committee (MPC) meetings in December 2022 and March 2023, the Central Bank maintained the short-term rate on its overnight collateralised financing to commercial banks, the Repo rate, at 3.50 per cent. In calibrating its stance, the MPC took account of the potential global financial stability risks while considering the impact of unanticipated external impulses and second-round effects on domestic inflation.

Outlook

The cooling effects on inflation from monetary policy tightening by key central banks are anticipated to become more apparent in 2023. Tighter monetary conditions are likely to remain in 2023 as the priority continues to be arresting the rising cost of living in many countries. Global growth is anticipated to slow further. The IMF, in its April 2023 World Economic Outlook, forecasts global economic activity to moderate to 2.8 per cent in 2023. Emerging Market and Developing Economies (EMDEs) are expected to be the main driver of global growth in 2023, boosted by the reopening of China's economy during the last two months of 2022. More specifically, EMDEs are forecasted to expand by 3.9 per cent in 2023, while output in the Advanced Economies (AEs) is projected to grow by 1.3 per cent.

Key sources of economic uncertainty can stem from amplified financial sector stress and its associated contagion effects, higher-than-anticipated inflation rates as a result of intensified geopolitical tensions, and a prolonged period of monetary policy tightening. Despite monetary policy tightening cycles in 2022, inflation is anticipated to decelerate slower than initially expected. The IMF forecasts a gradual downward trend in global inflation, falling from 8.7 per cent in 2022 to 7.0 per cent in 2023.

Domestic price pressures are anticipated to continue to ease in the short-run. Core inflation, nonetheless, may be affected by the path of wage settlements, a gradual recovery of consumer demand, and possible implementation of higher utility rates. Food inflation is expected to be tempered by the slowdown in international food costs but adverse weather could lead to periodic spikes in domestic agricultural produce prices.

Domestic economic activity is expected to improve and be fairly broad-based. Several new projects should help the energy sector, while an uptick in business and consumer demand bodes well for non-energy activity and could offer more job opportunities. The strengthening of the domestic recovery will take place alongside a much more competitive global environment that requires all economies and businesses to significantly improve their efficiency. Macroeconomic policy coordination in Trinidad and Tobago–on the fiscal, monetary and structural fronts–will remain essential in providing a stable supportive setting. Monetary policy per se will need to remain agile and responsive to the evolving data on international and local developments.

1. THE INTERNATIONAL ECONOMIC CONTEXT

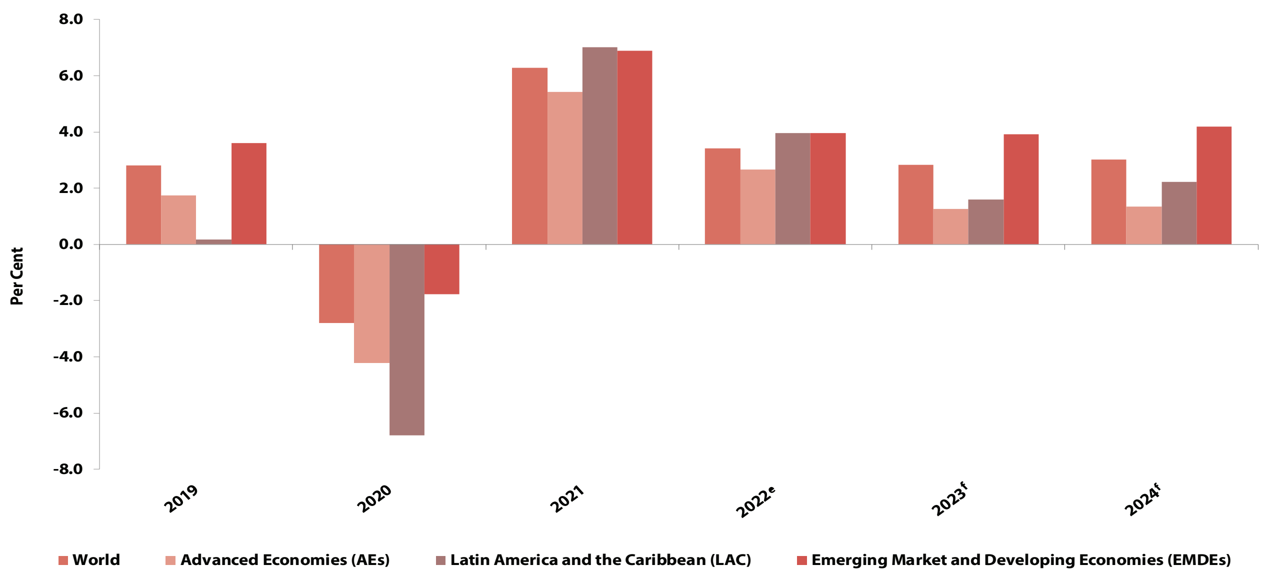
Continued monetary policy tightening by Advanced Economies (AEs) to rein in persistent inflation resulted in rising financial stability concerns following a round of bank failures in the United States (US) in early 2023. Amid a deceleration in inflation several central banks among the Emerging Market and Developing Economies (EMDEs) paused monetary policy rate increases.

Recent Economic Developments and Outlook

The global economic recovery remains fragile due to heightened uncertainty caused by financial sector vulnerabilities and ongoing adjustments to successive shocks. The International Monetary Fund (IMF), in its April 2023 World Economic Outlook (WEO), forecasts global economic activity to moderate to 2.8 per cent in 2023, 0.6 per cent lower than its 2022 outturn (Chart 1.1). EMDEs are expected to be the main driver of global growth in 2023, boosted by the reopening of China's economy towards the end of 2022. More specifically, EMDEs are forecasted to expand by 3.9 per cent in 2023, while output in the AEs is projected to grow by 1.3 per cent. Despite heightened financial sector risks, monetary policy tightening cycles are expected to continue. However, underlying price pressures and tight labour market conditions in several countries are anticipated to lead to a slower than initially expected deceleration of inflation rates. The IMF forecasts a gradual downward trend in global inflation, from 8.7 per cent in 2022 to 7.0 per cent in 2023.

CHART 1.1

Global Growth: Annual Real GDP Growth



Source: International Monetary Fund, World Economic Outlook, April 2023
e estimated
f forecasted

Monetary policy actions by major central banks remained focused on achieving sustained disinflation resulting in tighter financial conditions

Amid elevated inflation, the US Federal Reserve (the Fed) continued tightening its monetary policy during the first five months of 2023 to ensure a sustained downward path of inflation towards its 2.0 per cent target. In its May 2023 monetary policy meeting, the Fed increased its federal funds target range by 25 basis points to a range of 5.00 per cent to 5.25 per cent - the highest level since 2007. As the Federal Open Market Committee (FOMC) remains committed to returning inflation to its target, it anticipates further increases in the target range and continued reduction in its holdings of Treasury securities and agency mortgage-backed securities. In light of the cumulative tightening of monetary policy and the lags with which monetary policy affects economic activity and inflation, the FOMC slowed the pace of policy tightening in December 2022 and again in January 2023 but indicated that it is likely to increase its benchmark interest rates further in 2023 to combat inflation. However, rising financial stability concerns following the failure of a few US banks in early 2023[1] may temper future rate hikes[2,3], with market analysts anticipating a pause to interest rate hikes after the FOMC's May 2023 meeting.

The Bank of England (BoE) and the European Central Bank (ECB) continued to tighten monetary policy into 2023 to stave off price surges and return inflation to target. In May 2023, the BoE increased its Bank rate by 25 basis points to 4.50 per cent, representing the twelfth consecutive rate hike. The BoE indicated that the decision to increase its key interest rate was attributable to the risk of greater persistence in underlying inflation given tight labour market conditions. Meanwhile, consistent with its inflation target of 2.0 per cent, the ECB increased its interest rate on the main refinancing operations by 25 basis points to 3.75 per cent in May 2023[4]. However, the ECB signalled a slowing pace of policy tightening. Additionally, the ECB announced its plans to discontinue reinvestment under its Asset Purchasing Programme from July 2023. The upward adjustments in interest rates by both central banks pushed borrowing costs to their highest levels since 2008.

Unlike other major AE central banks, the Bank of Japan (BoJ) maintained its key short-term interest rate during the first four months of 2023. In monetary policy meetings held in January, March and April 2023, the BoJ kept its benchmark interest rate steady at -0.1 per cent. In addition, the decision to modify its yield curve tolerance level at its December 2022 monetary policy

1 Silvergate Bank, Silicon Valley Bank, Signature Bank, and First Republic Bank collapsed early in 2023.
2 In response to the bank failures, the Fed intervened with the creation of a new Bank Term Funding Program (BTFP) which will make available additional funding to eligible depository institutions to help banks meet the needs of all their depositors. The BTFP offers loans of up to one year to banks, savings associations, credit unions and depository institutions pledging US Treasuries, agency debt and mortgage-backed securities, and other qualifying assets as collateral.
3 US Treasury Secretary Janet Yellen indicated that banks are likely to become more cautious and may tighten lending further in the wake of bank failures, possibly negating the need for further tightening of the Fed interest rates (Reuters 2023).
4 The interest rate on the main refinancing operations and the interest rates on the marginal lending facility and the deposit facility were all increased to 3.75 per cent, 4.00 per cent and 3.25 per cent, respectively.

meeting was maintained to examine the effects on market functioning[5].

Amid a deceleration in inflation coupled with a slowdown in economic growth, several EMDE central banks paused monetary policy rate adjustments. Due to intermittent COVID-19 lockdowns, benign economic growth, rising unemployment and persistent challenges in the property sector, the People's Bank of China (PBoC) maintained its benchmark interest rate - the 1-year Loan Prime Rate (LPR) at 3.65 per cent for the ninth consecutive month in May 2023. Similarly, the Central Bank of Russia (CBR) left its benchmark interest rate at 7.50 per cent in April 2023. The CBR signalled future rate increases may be required to ensure inflation remains below its 4.0 per cent target as it noted increased price pressures due to a weaker currency.

On the other hand, some Latin American central banks further increased policy rates to curb inflation in early 2023. In response to inflationary pressures, the Central Banks of Mexico, Colombia, and Peru upwardly adjusted their benchmark interest rates early in 2023. Subsequently, the Central Banks of Mexico and Peru held their key policy rates in May 2023. Similarly, the Central Bank of Brazil maintained its benchmark interest rate, the SELIC rate, at 13.75 per cent in May 2023 amid a deceleration in consumer prices. Meanwhile, the Central Bank of Chile maintained its key policy rate at 11.25 per cent at its May 2023 monetary policy meeting.

Despite some deceleration, persistent inflation continues to challenge monetary authorities

Inflation in the US, as measured by the Personal Consumption Expenditure (PCE) price index, accelerated to 4.4 per cent (year-on-year) in April 2023 from 4.2 per cent one month earlier, reflecting higher prices for goods and services during the month. Remaining well above its 2.0 per cent target, inflation in the Euro area accelerated slightly in April 2023 to 7.0 per cent (year-on-year), from 6.9 per cent (year-on-year) recorded in the previous month due to increased cost of energy and services (Chart 1.2). Inflation eased in the United Kingdom (UK) to 8.7 per cent (year-on-year) in April 2023, down from 10.1 per cent (year-on-year) one month earlier, due to slowdowns in the cost of electricity and gas. Similarly, inflation in most EMDEs eased due in part to a slowdown in food and energy costs and is anticipated to decelerate further in 2023 according to the IMF's April 2023 WEO.

In the Latin American and Caribbean (LAC) region, inflation continued to trend above central bank targets, primarily driven by international energy and food prices. Brazil's inflation rate eased to 4.2 per cent in April 2023, down from 4.7 per cent

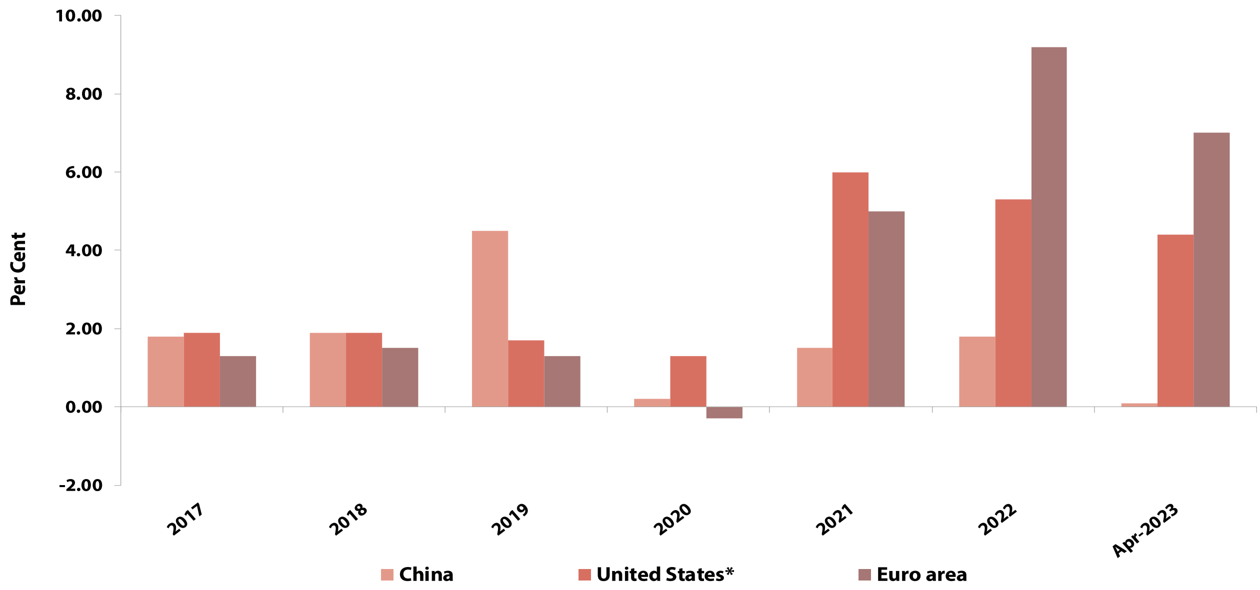
5 The Bank of Japan (BoJ) modified its conduct of yield curve control at its December 2022 meeting. More specifically, the range on the 10-year Japanese Government Bond yield was expanded to fluctuate from +/- 0.25 percentage points to +/- 0.5 percentage points. The decision is aimed at improving the functioning of the domestic bond market in order to better facilitate monetary policy transmission.

one month earlier. After reaching a high of 14.1 per cent in August 2022, Chile's inflation rate slowed to 9.9 per cent in April 2023. In the Caribbean inflation rates remain elevated. Jamaica's inflation rate decelerated to 5.8 per cent (year-on-year) in April 2023 just below the upper bound of the Bank of Jamaica's inflation target range of 4.0 per cent to 6.0 per cent. On the other hand, inflation in Barbados inched up to 6.6 per cent (year-on-year) in February 2023, compared to 2.2 per cent in the similar month of 2022, primarily reflecting higher demand for dining services, and cultural and recreational services.

CHART 1.2

Selected Economies: Headline Inflation

(Year-on-Year Per Cent Change)



Source: Bloomberg
* PCE Price Index.

The slowdown in energy and food costs aided the deceleration in inflation

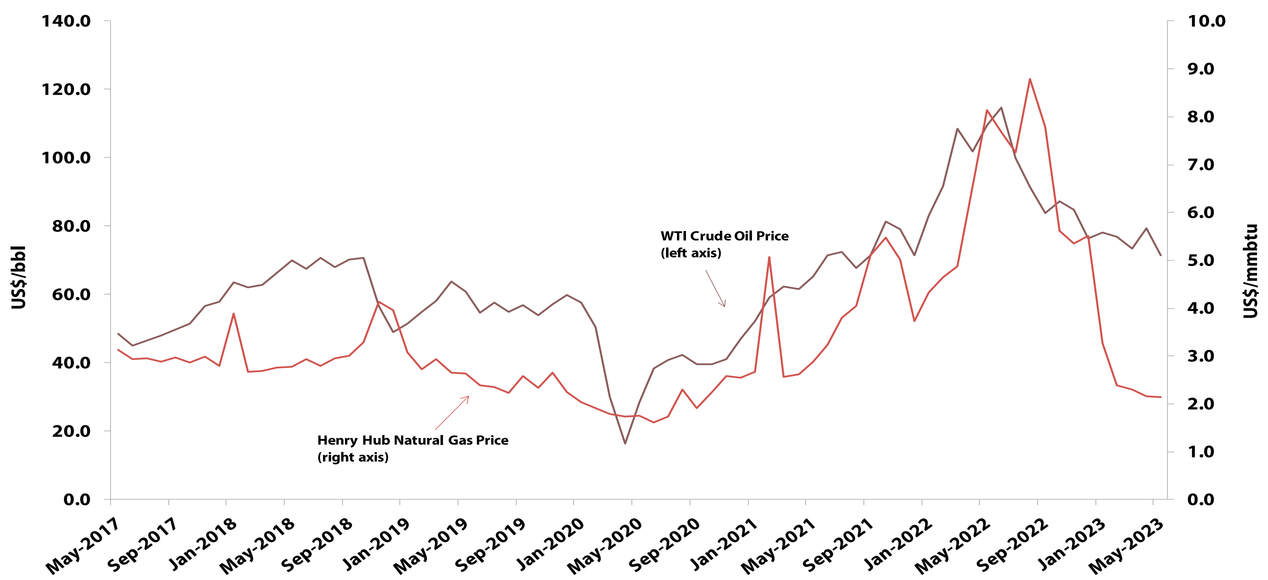
Crude oil prices fell in the fourth quarter of 2022 and continued their downward trajectories into the first five months of 2023. West Texas Intermediate (WTI) prices averaged US$78.49 per barrel over the eight-month period ending May 2023, representing a decline of 13.6 per cent when compared to the corresponding period of the previous year (Chart 1.3). Brent crude prices also fell by 11.6 per cent to an average of US$83.67 per barrel. Increases in global crude oil inventories alongside recessionary fears resulted in lower global energy prices. Inventory builds often signal an impending glut on the market which was further exacerbated by concerns of a global recession where demand for petroleum products could contract further. Moderate expectations for global economic growth have also affected the demand for energy commodities thus keeping prices below levels of the previous year.

Natural gas prices experienced similar contractions over the review period. The US Henry Hub natural gas price fell by 32.8 per cent (year-on-year) to an average of US$3.59 per million British Thermal Units (mmbtu) over the same period. Natural gas prices were affected by warmer than expected winter weather, which lowered the demand for gas for heating purposes. This lower demand alongside an increase in LNG shipments to the European Union helped to substitute Russian pipeline gas and maintain high inventory levels in the region. China's reduced demand for LNG due to COVID-19 restrictions in the country also weighed on prices. The fall in natural gas prices was transmitted to all other derivative commodities such as urea (-44.4 per cent), propane (-37.6 per cent), ammonia (-31.5 per cent), natural gasoline (-21.7 per cent) and methanol (-8.9 per cent).

In early 2023, the United Nation's Food and Agricultural Organisation (FAO) Real Food Price Index continued to decline, reflecting softer international food prices. In May 2023, the United Nation's FAO Real Food Price Index fell 22.7 per cent (year-on-year), underpinned by declines in major indices such as Vegetable Oils, Cereals and Dairy (Chart 1.4).

CHART 1.3

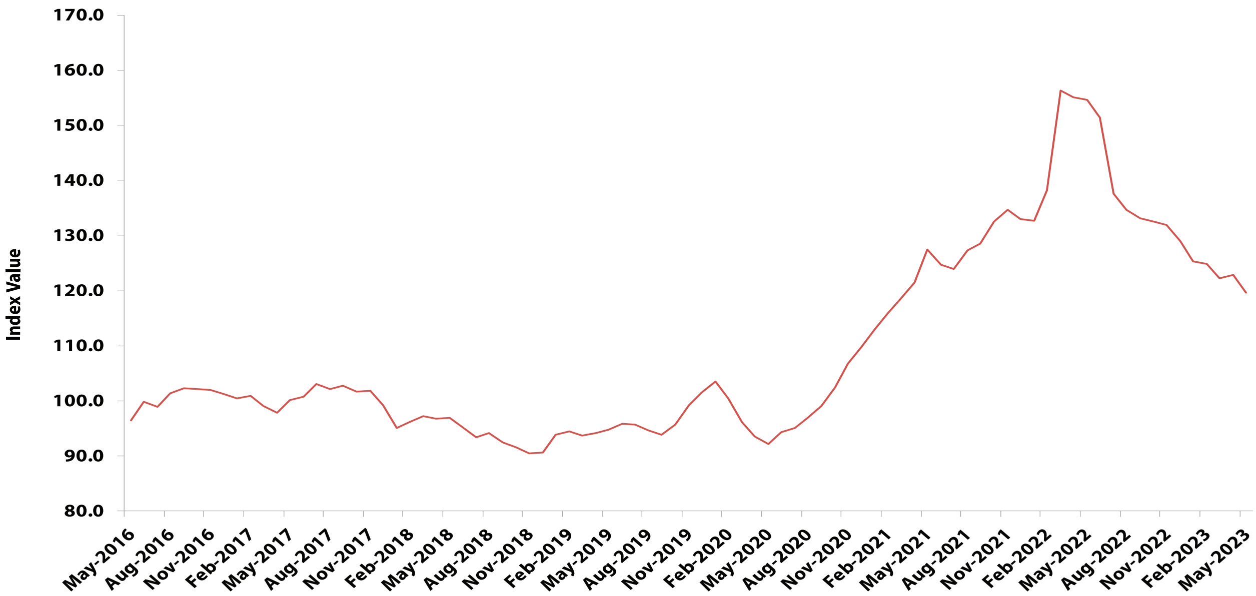
Natural Gas and Crude Oil Prices



Source: Bloomberg

CHART 1.4

FAO Real Monthly Food Price Index



Source: Food and Agriculture Organisation
Note: 2014-2016=100.

AE equity markets recorded an improvement, despite downside risks from persistent inflation, monetary policy tightening, banking sector concerns, and intensifying geopolitical tensions

Following weak market conditions in 2022, AE equity markets generally recorded improvements over the seven months ending May 2023. During 2022, the global economy was impacted by a steep rise in inflation. Consequently, monetary authorities in AEs increased key policy rates to curtail inflationary pressures. However, this resulted in an increase in corporate bond yields and spreads, and bear equity market conditions as investors became concerned about the future path of corporate credit. Subsequently, by the end of 2022 and into the first quarter of 2023, AE equity markets recovered some ground amid signs that inflation had peaked and was on a downward trajectory. These factors contributed to an improvement in market conditions over the seven months ending May 2023 as the US S&P 500 gained 8.0 per cent, the UK FTSE 100 increased by 5.0 per cent, and the Japan Nikkei 225 jumped by 12.0 per cent. Despite an improvement in market conditions, the VIX[6] index trended slightly above the high volatility threshold, averaging 20.4 over November 2022 to May 2023 (Chart 1.5). However, the uptick in volatility over the period was likely due to pressures in the US banking system

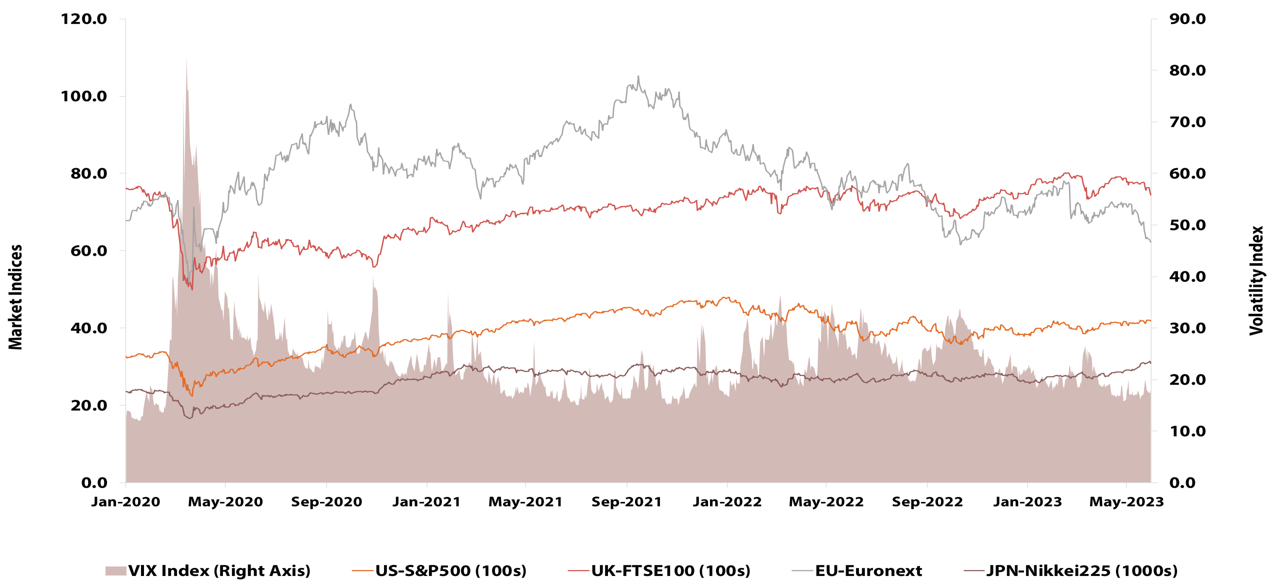
6 The Chicago Board Options Exchange (CBOE) VIX Volatility Index is a benchmark index used to measure the market's expectation of future volatility. The index is based on option trading of the S&P 500 and is considered a main gauge of US equity market volatility. A level above 20 is considered high volatility.

following bank runs and the collapse of Silicon Valley Bank, Signature Bank, and Silvergate Bank in March 2023. On the other hand, the European Euronext slipped by 3.3 per cent as monetary tightening in the region continues to slow economic growth.

Despite an improvement in equity market conditions, pressures in the global banking sector can have negative spillovers on financial market performance. Following the collapse of Silicon Valley Bank, Signature Bank, and Silvergate Bank, Moody's Investor Services downgraded its outlook (to negative) for the US banking system noting that operating conditions have deteriorated. The credit rating agency expects that pressures on the banking system will continue to persist as the Fed and other AE monetary authorities hike interest rates to combat inflation. Consequently, the stressed operating environment can lead to a reduction in bank lending, fewer share repurchases, or a cut in dividends to preserve capital, adversely affecting stock prices of the banking sector and other financial institutions, while increasing volatility in equity markets. However, actions taken by the US Treasury Department, the Fed, and the Federal Deposit Insurance Corporation (FDIC) appeared to mitigate further instability in the banking system. Nonetheless, continued monetary policy tightening can heighten credit and interest rate risks in the banking sector and in the broader financial system. Rising interest rates, and the associated increase in the cost of funds can impact credit conditions, while greater banking sector regulations following the recent collapses might curtail bank lending. Consequently, the exposure of firms to these conditions could undermine company financial outcomes, with adverse consequences for the performance of equity markets.

CHART 1.5

Advanced Economies Equity Market Indices



Source: Bloomberg

Economic conditions pose risks to growth

Economic activity in some major economies remains constrained. Following a 0.9 per cent slowdown in the final quarter of 2022, US real GDP expanded 1.6 per cent (year-on-year) in the first three months of 2023 due to increased private spending. On the other hand, year-on-year real GDP growth slowed further for the Euro area (1.3 per cent) in the first quarter of 2023 compared to 1.8 per cent (year-on-year) in the fourth quarter of 2022. Higher borrowing costs constrained economic growth in the UK. Real GDP growth in the UK slowed to 0.2 per cent (year-on-year) in the first quarter of 2023, down from 0.6 per cent (year-on-year) in the previous quarter. Real GDP growth in China accelerated by 4.5 per cent (year-on-year) in the first quarter of 2023, from 2.9 per cent recorded in the previous quarter. The pickup in activity reflected the largest expansion since the first quarter of 2022 (4.8 per cent) owing to improvements in retail sales and industrial output.

Amidst soaring inflation rates and monetary policy tightening, growth in the LAC region was mixed

Real GDP growth was mixed in the LAC region. In the fourth quarter of 2022, the pace of economic activity in Brazil decelerated (1.9 per cent) due to slowdowns in government and consumer spending. More recently, in the first quarter of 2023, Peru's economic growth contracted by 0.4 per cent from the previous quarter, owing to a reduction in household and government consumption which underpinned a decrease in domestic demand. Constrained by falling consumption and investment levels, real GDP in Chile shrank by 0.6 per cent in the first quarter of 2023, reflecting the second consecutive quarter of contraction. At the same time, economic growth in Mexico increased by 3.7 per cent in the first quarter of 2023, from the previous quarter's outturn of 3.6 per cent, reflecting expansions in the services sector. Meanwhile, Colombia's real GDP expanded by 3.0 per cent in the first quarter of 2023, up from 2.1 per cent in the final quarter of 2022, owing to increased household spending.

The economic outturn in the Caribbean was positive. Real GDP in Jamaica grew by 3.8 per cent (year-on-year) in the fourth quarter of 2022, compared to 5.9 per cent in the previous quarter, mainly driven by activity in the 'Services' and 'Goods Producing' industries. This represented Jamaica's sixth consecutive quarter of growth. The Barbadian economy recorded its eighth consecutive quarterly expansion during the first quarter of 2023. Real GDP grew by 6.4 per cent (year-on-year), compared to 9.5 per cent in the previous quarter, mainly driven by improvements in tourism activity and its spill-over to other sectors such as Construction, and Wholesale and Retail Trade. Guyana's positive economic outturn during 2022 largely stemmed from significant growth in major sectors, particularly oil and gas activity[7].

7 Guyana's oil production has increased significantly. According to Guyana's National Budget 2023 presentation, the domestic economy is estimated to have grown by 62.3 per cent in 2022 Budget 2023: Guyana's economy grew by 62.3% in 2022 – DPI Guyana.

2. DOMESTIC ECONOMIC ACTIVITY AND PRICES

There was an uptick in the energy sector, but less evidence of robust growth in the non-energy sector in the fourth quarter of 2022. Energy sector activity in first quarter 2023 was fairly steady. Nonetheless, employment conditions improved as the unemployment rate fell in the fourth quarter of 2022. Meanwhile, domestic inflation eased from its peak in December 2022, reflecting an easing of food and core inflation.

Recent Economic Developments and Outlook

Increased natural gas production contributed to the marginal expansion in energy sector output in the fourth quarter of 2022. Natural gas output was up 1.3 per cent following the start-up of several projects. In the first half of 2022, Shell delivered first gas from its Colibri project and in the latter part of 2021 the Barracuda project started production. The commencement of production at bpTT's Matapal project in late 2021, and DeNovo's Zandolie project in July 2022 also helped to buffer production. Though the improved natural gas output aided the production of liquefied natural gas (LNG) (7.6 per cent), activity in the Refining sector declined marginally given a sizable fall in the production of natural gas liquids (NGLs) (20.7 per cent). Over the period, petrochemical production also improved (1.5 per cent) on account of increased methanol output (14.1 per cent) which countered the decline in the production of ammonia (7.3 per cent). Methanol output recovered from downtime at several plants which occurred one year ago including M5000 and the TTMC 1 methanol plant, while ammonia production suffered from outages at Nutrien and Point Lisas Nitrogen Limited.

Indicators monitored by the Central Bank suggest non-energy sector activity was somewhat sluggish in the fourth quarter of 2022. Declines were observed across key sectors. The Construction sector recorded a sizable reduction (23.8 per cent) during the period, premised on significant falloffs in the local sales of cement and the production of mined aggregates (Chart 2.1). The Manufacturing sector (excluding Refining and Petrochemicals) also recorded a decline of 0.6 per cent in the fourth quarter of 2022. Further, indicators pointed to a falloff in activity within the Electricity and Water (excluding Energy) and Agriculture sectors. Notably, the reduced activity in the Agriculture sector was driven by a drop in the production of crops such as cabbage, cucumber, melongene and pumpkin. The Financial and Insurance Activities sector also estimated to have declined, reflecting a reduction in bank investments. Notwithstanding the slowdown in overall activity, expansions were recorded in Transportation and Storage, Real Estate and Wholesale and Retail Trade (excluding Energy) sectors. On the labour front, official labour force statistics from the Central Statistical Office (CSO) indicated that the unemployment rate fell to 4.7 per cent in the fourth quarter of 2022, down from 4.9 per cent in the corresponding quarter of 2021. There was also an increase in the labour force participation rate over the reference period.

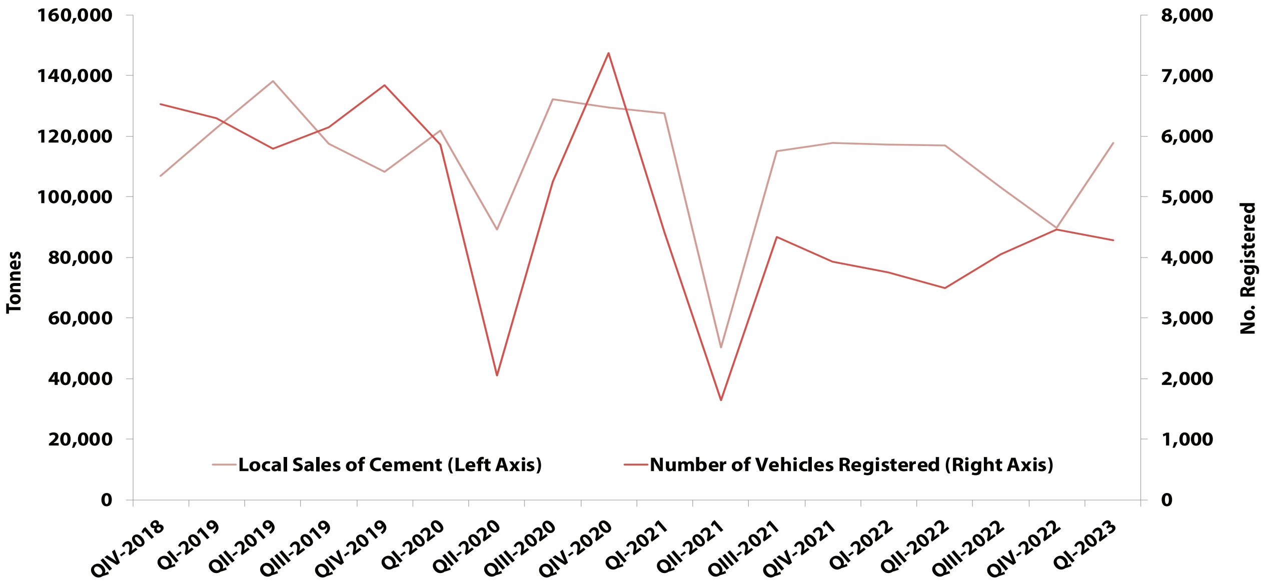
Data for the first quarter of 2023 suggests that energy sector output was fairly steady over the period. Activity in the sector was affected by declines in the production of both crude oil (6.0 per cent) and natural gas (0.4 per cent). Activity in the Refining sector was affected as an improvement in the production of liquefied natural gas (LNG) (1.3 per cent) was outweighed by a falloff in the production of natural gas liquids (NGLs) (15.4 per cent). Output in the Petrochemicals sector waned over the period, driven by declines in the production of ammonia (8.2 per cent) and urea (32.2 per cent). Meanwhile, methanol production improved (5.6 per cent) over the period.

Price pressures eased in early 2023, with both food and core inflation driving the deceleration

Domestic price pressures as measured by the Central Statistical Office's (CSO) Retail Price Index (RPI) eased in early 2023 after increasing in the second half of 2022 (Chart 2.2). After peaking in December 2022 (8.7 per cent), headline inflation trended downward reaching 6.0 per cent in April 2023. The deceleration in headline inflation came from slower price increases in food and core inflation.

CHART 2.1

Non-Energy Indicators (Cement Sales, Vehicle Registrations)



Source: Central Bank of Trinidad and Tobago

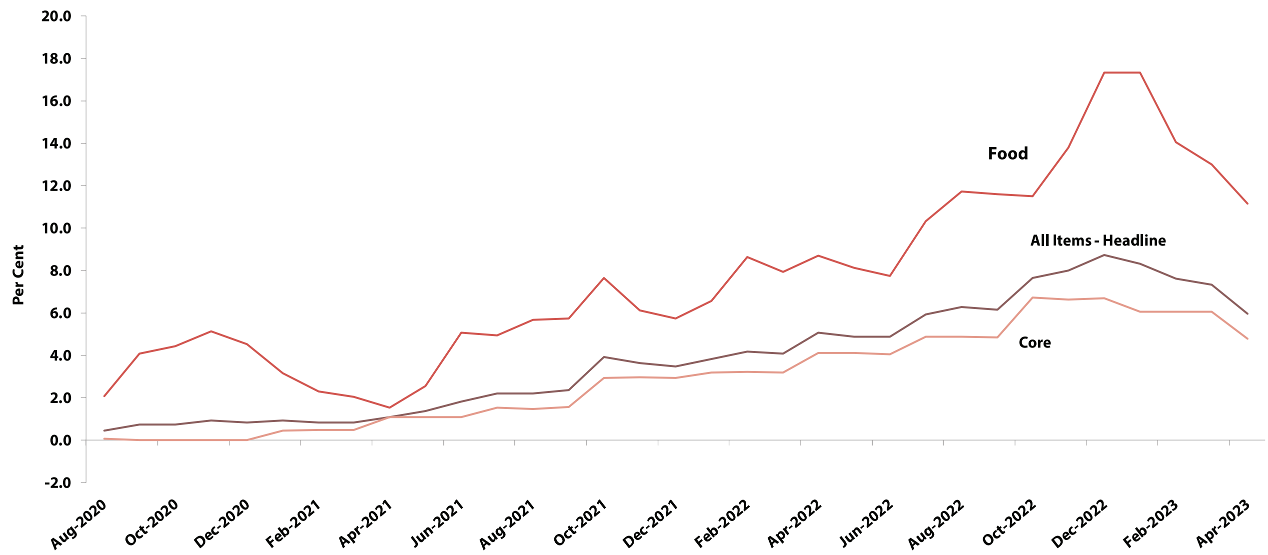
Food inflation, the most volatile component of headline inflation, decelerated to 11.2 per cent in April 2023 after reaching a high of 17.3 per cent in December 2022 and January 2023. Slower price movements in several major categories of food, including; Bread and Cereals – which decelerated to 15.6 per cent in April 2023 from 21.3 per cent in December 2022; Meat (3.4 per cent in April 2023 from 10.6 per cent in December 2022); and Vegetables (8.6 per cent in April 2023 from 26.1 per cent in December 2022); were responsible for the deceleration in domestic food inflation. Several categories of food with high import content (Bread and Cereals and Milk, Cheese and Eggs) also slowed in April 2023 consistent with softer international food commodity prices[8]. Noteworthy, the Vegetables sub-index recorded slower price increases owing to notable decelerations in the prices for lettuce, spinach, bodi, cucumber, carrots and green sweet pepper along with reduced prices for patchoi, cabbage, pumpkin and tomatoes on account of increased production compared to December 2022.

Core inflation slid from 6.7 per cent in December 2022 to 4.8 per cent in April 2023. Most categories of core inflation slowed during the period, including Furnishing, Household Equipment and Routine Maintenance (6.2 per cent in April 2023 from 9.3 per cent in December 2022); Housing, Water, Electricity and Gas (0.7 per cent in April 2023 from 5.0 per cent in December 2022) and Transport (10.7 per cent in April 2023 from 14.6 per cent in December 2022). However, Clothing and Footwear registered price declines (-0.6 per cent in April 2023 from 1.9 per cent in

CHART 2.2

Retail Price Index

(Year-on-Year Per Cent Change)



Source: Central Statistical Office

8 The United Nation's Food and Agriculture Organisation (FAO) Food Price Index declined 19.7 per cent in April 2023 (year-on-year).

December 2022). Meanwhile, the Health (3.1 per cent in April 2023 compared to 1.8 per cent in December 2022), and Alcoholic Beverages and Tobacco (2.7 per cent in April 2023 compared to 0.8 per cent in December 2022) sub-indices recorded faster price increases. The Health sub-index reflected faster price movements for prescription medication, over-the-counter drugs, medical services and services of medical labs and x-ray centres while negligible price declines for tobacco products impacted the Alcoholic Beverages and Tobacco sub-index.

Producer prices, as measured by the CSO's Producer Price Index (PPI), slowed in the fourth quarter of 2022, measuring 1.2 per cent. This compares to 1.4 per cent (year-on-year) recorded in the previous three quarters. Softer producer prices were noted in several industries including; the Assembly-type and Related Industries (0.5 per cent in the fourth quarter of 2022 compared to 1.3 per cent in the third quarter of 2022) and the Drink and Tobacco (-1.8 per cent), which saw producer prices for tobacco decline by 5.5 per cent. Meanwhile, producer prices in a few industries namely; Textiles, Garment and Footwear and Printing, Publishing and Paper Converters and Wood Products held steady during the fourth quarter of 2022 when compared to the previous quarter.

The CSO's Index of Retail Prices of Building Materials (BMI), eased to 3.2 per cent (year-on-year) in the first quarter of 2023, down from 7.2 per cent recorded in the fourth quarter of 2022. Slower price increases were broad-based, occurring in all categories of the BMI. Notably, Site Preparation, Structure and Concrete Frame (4.4 per cent in March 2023 compared to 9.4 per cent in December 2022) and Electrical Installation and Fixtures (14.4 per cent in March 2023 compared to 20.7 per cent in December 2022) drove the slowing momentum in building material prices.

Export earnings declined while imports increased

Export earnings contracted over the final quarter of 2022, driven by lower energy exports (Chart 2.3). Export earnings fell by 6.5 per cent (year-on-year) to US$3,439.5 million over the fourth quarter of 2022 due to a reduction in energy exports underpinned by lower energy export volumes. More specifically, energy exports declined by 5.3 per cent (year-on-year) to US$2,966.4 million during the three months to December 2022. Declines were recorded in most commodity sub-categories petroleum crude and refined products (18.1 per cent) and petrochemicals (4.9 per cent). Non-energy exports also decreased to US$473.1 million over the reference period, down from US$546.5 million in the same period of 2021. In particular, a reduction in exports of manufactured goods was mainly responsible for the fall-off in non-energy exports.

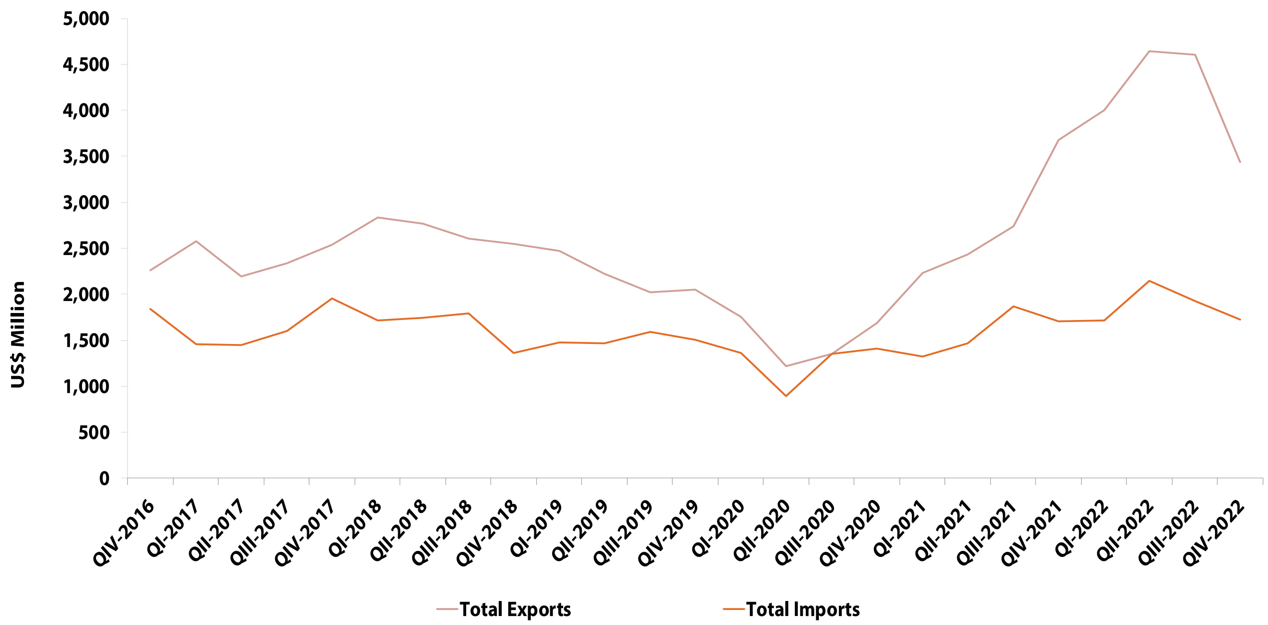
Total imports grew by 1.2 per cent (year-on-year) to US$1,725.1 million over the final quarter of 2022 driven primarily by increased capital imports. Capital imports rose by US$108.0 million to US$427.6 million over the review period. On the other hand, the 5.3 per cent reduction in 'other' imports, to US$953.8 million, largely stemmed from a decrease in the importation of inedible crude materials, except fuel. To a lesser extent, fuel imports declined by US$33.9 million to US$343.7 million.

The widening TT-US interest rate differential has not unduly quickened the pace of investments abroad

Portfolio investment registered a slightly smaller net outflow of US$149.3 million over July to September 2022. Increased holdings of foreign assets, particularly long-term and short-term debt securities held abroad in large part by domestic financial and non-financial institutions, were partially offset by a reduction in the holdings of foreign equity securities by non-financial institutions over the reference period.

CHART 2.3

Trends in Exports and Imports



Source: Central Bank of Trinidad and Tobago
* Energy goods data comprise estimates by the Central Bank of Trinidad and Tobago.

3. DOMESTIC FINANCIAL CONDITIONS

Domestic monetary policy in late 2022 and early 2023 remained accommodative, taking into account inflationary conditions, the post-pandemic recovery and external considerations (Box 1). Over the same period, TT-US short-term interest rate differentials widened and credit continued to expand while system liquidity remained ample. The Central Bank's liquidity management strategy thus far in 2023, utilised open market operations to maintain ample system liquidity. At meetings held in December 2022 and March 2023, the MPC maintained the Repo rate at 3.5 per cent – unchanged since March 2020.

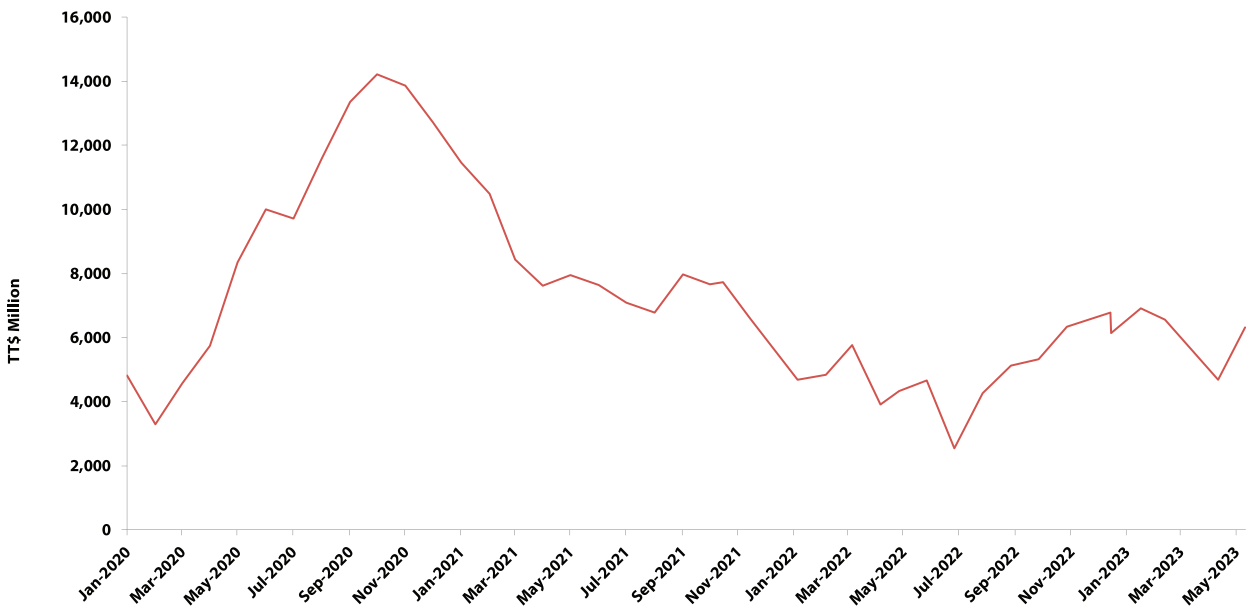
Liquidity Conditions and Interest Rates

Financial system liquidity has remained stable, buttressing the supply of credit to the economy

Over the period November 2022 to May 2023, liquidity levels in the financial system remained stable. Compared to injections of $318.2 million over November 2021 to May 2022, fiscal operations, usually a primary driver of excess liquidity, resulted in net injections of $4,378.1 million over November 2022 to May 2023. Central Bank's Open Market Operations (OMOs) resulted in net redemptions of $1,877.0 million over November 2022 to May 2023 compared to net redemptions of $284.0 million over the same period one year earlier. Regarding Central Bank's foreign exchange sales to authorised dealers, $4,817.8 million was indirectly removed from the system over the period, compared to $5,011.9 million one year earlier. As a result of these developments, daily average excess liquidity reached $6,307.5 million in May 2023 up from $4,690.5 million in April 2023 and slightly lower than the $6,326.7 million in November 2022 (Chart 3.1).

CHART 3.1

Commercial Banks' Excess Reserves



Source: Central Bank of Trinidad and Tobago

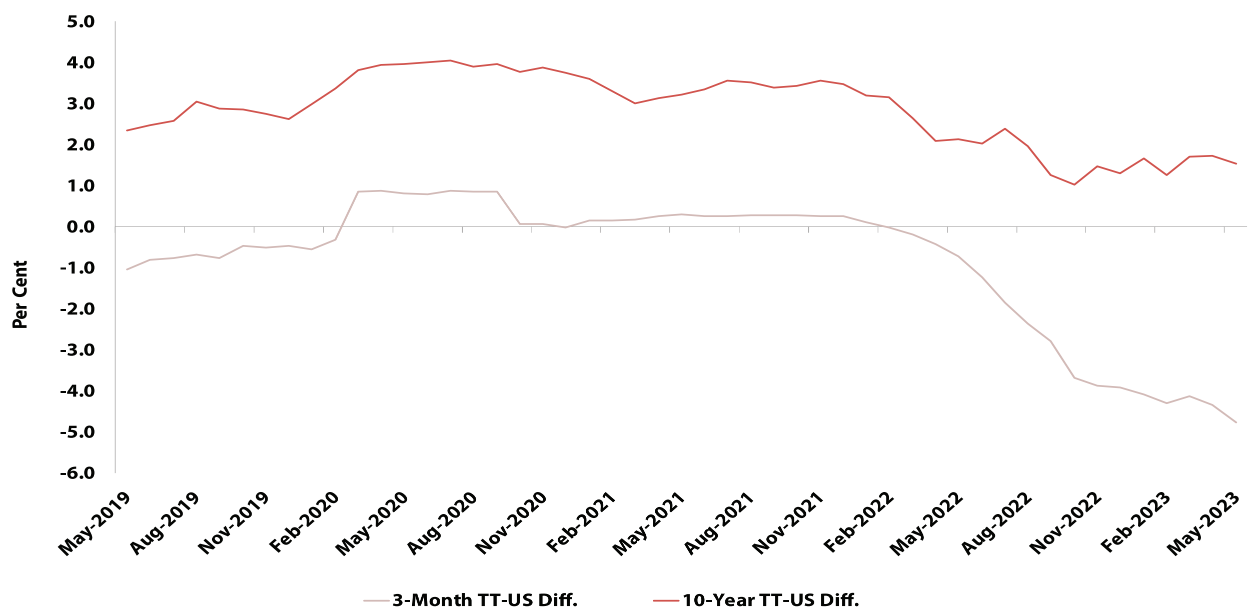
Daily interbank borrowing averaged $28.8 million over November 2022 to May 2023, compared to $37.4 million over the same period a year prior. The Repurchase Facility (Repos) extended to commercial banks for overnight liquidity was not utilised over November 2022 to May 2023, compared to $2.8 million in Repo activity in the same period a year prior.

Short-term interest rates edged up in late 2022 and into early 2023. Over the period November 2022 to May 2023, the TT 91-day OMO Treasury Bill rate increased by 26 basis points to reach 0.76 per cent. Persistent US policy rate hikes continued to affect yields on US short-term instruments. The US 91-day short-term benchmark yield reached 5.52 per cent by the end of May 2023, from 4.37 per cent in November 2022. As a result, the TT-US 91-day differential widened to -476 basis points in May 2023 compared with -387 basis points in November 2022 (Chart 3.2). However, the TT 1-year Treasury rate increased by 32 basis points over the reference period, settling at 1.37 per cent in May 2023. Meanwhile, the US 1-year Treasury rate increased by 44 basis points over November 2022 to May 2023 to reach 5.18 per cent. The movements resulted in a widening of the TT-US 1-year differential to -381 basis points in May 2023, from -369 basis points from November 2022.

The US 10-year Treasury yield declined over November 2022 to May 2023, losing 4 basis points over the period to reach 3.64 per cent. This movement in the rate mainly reflected the impact of policy interventions by regulatory authorities in the US financial system to contain a spate of bank failures in early 2023, balanced by the need to keep inflation contained. The TT 10-year Treasury rate increased by 1 basis point over the period to reach 5.17 per cent, resulting in a 5 basis point improvement of the 10-year yield differential to 153 basis points over the period.

CHART 3.2

3-Month and 10-Year TT-US Differentials

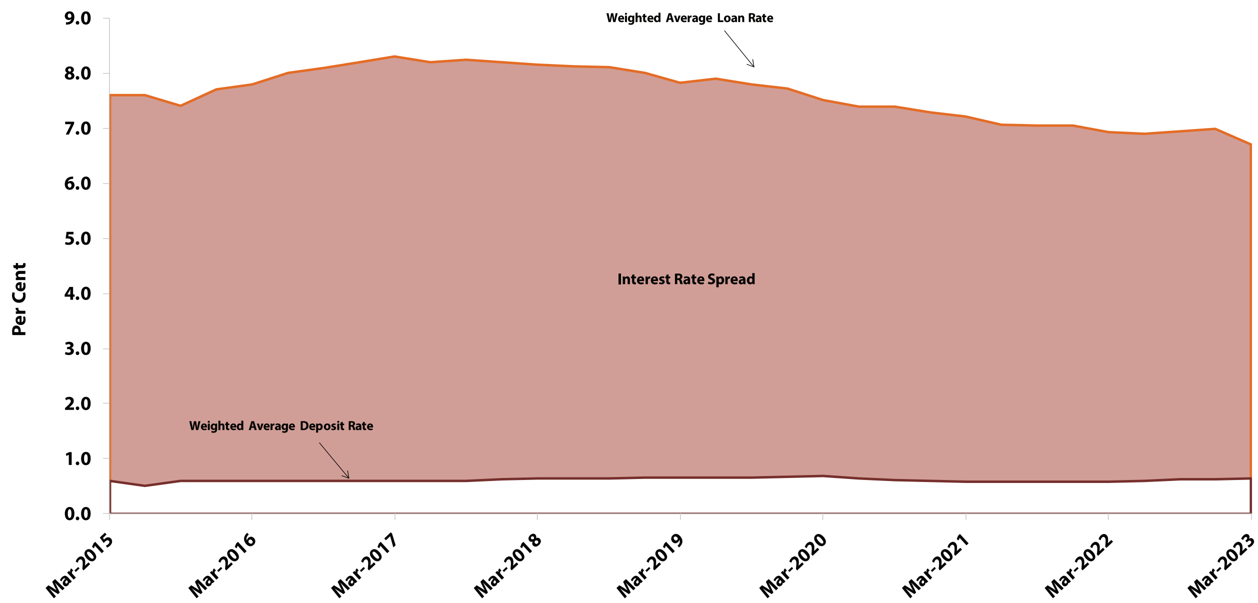


Sources: Central Bank of Trinidad and Tobago and the US Department of Treasury

Commercial banks' interest rates and associated interest spreads decreased notably over June 2022 to March 2023. The commercial banks' quarterly weighted average lending rate (WALR) fell to 6.71 per cent in March 2023, 19 basis points lower than in June 2022 (Chart 3.3). The fall in the WALR likely reflected increased competition for private sector credit. Over the same reference period, the weighted average deposit rate increased by 5 basis points to reach 0.64 per cent. As a result, over the nine months ending March 2023, the banking interest rate spread fell by 24 basis points to reach 6.07 per cent. With respect to other commercial bank measures of profitability, between June and March 2023, banks' return on assets slid from 2.5 per cent to 2.1 per cent; return on equity declined from 18.9 per cent to 16.1 per cent; interest margin to gross income increased from 63.9 per cent to 66.8 per cent; and non-interest income to gross income decreased from 36.1 per cent to 33.2 per cent. Commercial banks' median prime lending rate also remained unchanged since declining from 9.25 per cent in February 2020 to 7.50 per cent in March 2020 due to policy measures aimed at addressing the potential economic fallout from COVID-19. Thus far, over the reference period, the interbank borrowing rate remained unchanged at 0.50 per cent.

CHART 3.3

Commercial Banks' Interest Rates



Source: Central Bank of Trinidad and Tobago

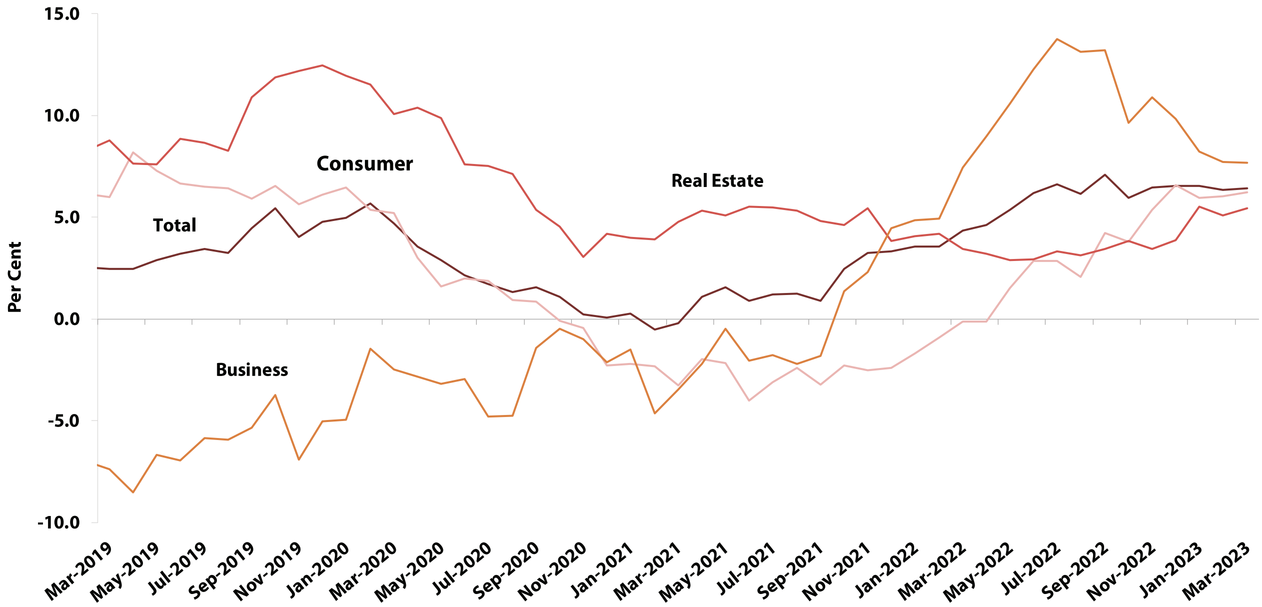
Private Sector Credit

Renewed market confidence has increased credit demand, but the effects of global monetary policy tightening have affected foreign exchange market dynamics

Consolidated system credit growth remained strong, although the pace has slowed compared to the last MPR. Over the last few months of 2022 and the first three months of 2023, increased local activity and reduced economic uncertainty drove credit demand. In March 2023, consolidated system credit grew by 6.4 per cent (year-on-year), less than one per cent slower than the growth recorded in September 2022. Overall credit was supported by expansions in corporate, consumer and real estate mortgage borrowing (Chart 3.4).

CHART 3.4

Private Sector Credit



Source: Central Bank of Trinidad and Tobago

Domestic economic prospects supported net disbursements of corporate loans. Lending to firms grew by 7.7 per cent (year-on-year) in March 2023, though lower than the 13.2 per cent expansion in September 2022. Commercial bank corporate lending steadily decelerated, but non-bank lending accelerated in 2023, with double-digit growth in early 2023 (levels last seen in 2014). The net effect was a slowing of the momentum in overall business lending. According to sectoral credit data for the period ending March 2023, all categories expanded. The main categories driving growth were loans for Finance, Insurance and Real Estate (namely Banks and Finance and Acceptance Service, with increases of 55.8 per cent and 53.0 per cent, respectively), Other Services (particularly Personal Services along with Hotels and Guest Houses, with rises of 17.9 per cent and 22.7 per cent, respectively), Manufacturing (6.4 per cent) and Construction (11.4 per cent). Revitalised local and cross-border traffic coupled with seasonal activities possibly drove the uptick in Other Services loans, while current and future projects drove the Manufacturing loan category.

Consumer loans climbed, spurred in the main by the pick-up in local activity. In the twelve months to March 2023, consumer credit grew by 6.2 per cent, higher than the 4.2 per cent expansion observed in September 2022. The uptick in loans was mainly driven by the Refinancing, Consolidation of Debt and Credit Cards categories. For the twelve-month period ending March 2023, the aforementioned loan categories recorded increases of 4.3 per cent, 7.0 per cent and 10.8 per cent, respectively. Two other categories, Travel and Other Furniture and Furnishings, returned to positive territory in December 2022 after sixteen and eleven quarters of consecutive double-digit contractions, but maintained the expansion in March 2023 rising by 13.0 per cent and 6.0 per cent, respectively. The occurrence of more events and higher activity drove the spike in travel. Meanwhile a vibrant Christmas season possibly spurred the turnaround in other Furniture and Furnishings loans in December 2022. Additionally, Home Improvement/Renovation remained robust (13.5 per cent rise in March 2023). The decline in Motor Vehicle loans, a major line of consumer credit, lessened, recording a 0.7 per cent year-on-year decline in March 2023, compared to a 9.3 per cent drop one year prior. Easing supply chain bottlenecks contributed to the improvement.

Real estate mortgage lending activity grew steadily. On a year-on-year basis, real estate mortgage loans grew by 5.4 per cent in March 2023, slightly higher than the 3.4 per cent increase observed in September 2022. In March 2023, residential real estate mortgage loans and commercial real estate mortgage loans grew by 5.0 per cent and 6.4 per cent, respectively. Since the last MPR, both residential and commercial real estate mortgage rates have come down, more so for commercial mortgage rates. Loans for new and existing houses along with land purchases grew by 2.0 per cent, 8.3 per cent and 2.3 per cent, respectively in March 2023. The contractions in renovation loans continued (a drop of 6.0 per cent compared to a 3.1 per cent decline one year prior).

Despite renewed market confidence,

rising global interest rates and inflationary pressures have supported the demand for foreign exchange even as supply remained tight. On a year-on-year basis, foreign currency credit[9] rose by 6.3 per cent in March 2023, down from a 24.5 per cent increase in September 2022, lower commercial bank lending contributed to the slowdown. Similarly, foreign currency business loans grew by 3.1 per cent in March 2023, considerably lower than the 22.2 per cent jump recorded six months prior. Foreign currency deposit drawdowns also intensified. In March 2023, the contractions in foreign currency deposits deteriorated, falling by 7.8 per cent (year-on-year), lower than the 5.5 per cent fall in September 2022. Business deposits fell for the seventh consecutive month (5.2 per cent in March 2023), while consumer deposits contracted (5.8 per cent in March 2023).

Reflecting the recovery in domestic economic activity, the monetary aggregates expanded. Carnival festivities possibly contributed to the changes over the last few months of 2022 and early 2023. On a year-on-year basis, M1-A, which comprises currency in active circulation plus demand deposits, rose by 5.5 per cent in March 2023, up from the 5.1 per cent rise in September 2022. A rise of 6.4 per cent in demand deposits in March 2023 accounted for the majority of the increase. M2 grew by 3.0 per cent in March 2023, slightly higher than the pickup recorded six months prior. The persistent declines in time deposits continued, recording a 0.3 per cent (year-on-year) contraction, while saving deposits rose by 0.5 per cent.

9 Includes loans and investments to resident individuals and businesses.

Foreign Exchange Market Developments

The domestic market for foreign currency remained tight thus far in 2023. Over January to May 2023, purchases of foreign exchange by authorised dealers from the public amounted to US$2,000.8 million, an increase of 2.7 per cent relative to the same period a year earlier. The increase in purchases came despite a 5.5 per cent decline in conversions by energy companies relative to the same period in 2022. Purchases from the energy sector accounted for 71.8 per cent of total foreign currency purchases over US$20,000 in value.

Sales of foreign exchange by authorised dealers to the public reached US$2,676.2 million over January to May 2023, an increase of 5.2 per cent relative to the same period a year prior. Based on reported data for transactions over US$20,000, credit cards (35.3 per cent), retail and distribution (20.2 per cent), energy companies (15.7 per cent) automobile companies (6.4 per cent) and manufacturing firms (6.1 per cent) made up the bulk of foreign exchange sales by authorised dealers to the public. The net sales gap reached US$675.3 million during the period. To support the market, the Central Bank sold US$500.0 million to authorised dealers (Table 1 and Chart 3.5).

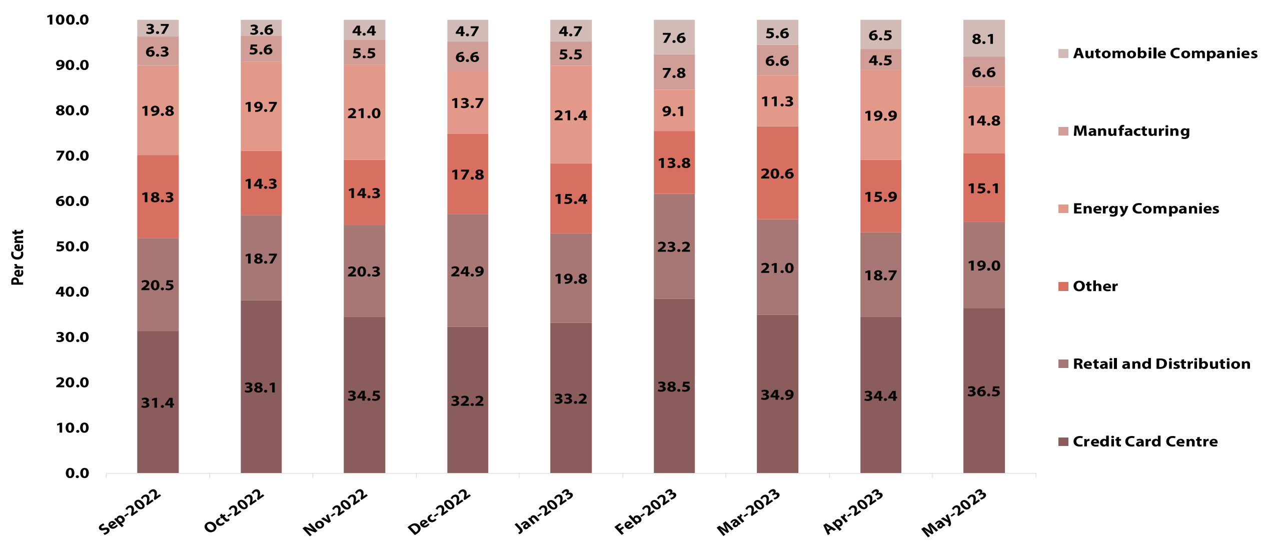
TABLE 1
Authorised Dealers' Foreign Exchange Market Activity
(US$ Millions)

Date	Authorised Dealers Purchases from Public	Authorised Dealers Sales to Public	Authorised Dealers Net sales	Authorised Dealers Purchases from CBTT[1]
2017	3,606.9	5,195.3	1,588.4	1,816.0
2018	4,101.4	5,677.4	1,576.0	1,501.0
2019	4,285.6	5,939.8	1,654.2	1,504.0
2020	3,298.2	4,504.1	1,206.0	1,292.2
2021	4,148.9	4,969.4	820.5	1,212.1
2022	5,528.8	6,551.2	1,022.4	1,270.6
Jan - May 2022	1,948.0	2,543.8	595.8	550.0
Jan - May 2023	2,000.8	2,676.2	675.3	500.0
Y-o-Y Per cent Change	**2.7**	**5.2**	**13.3**	**-9.1**

Source: Central Bank of Trinidad and Tobago

1 Purchases from the Central Bank of Trinidad and Tobago include transactions under the Foreign Exchange Liquidity Guarantee facility, and excludes sales under the EXIM Bank and Other Public Sector provisional facilities.

CHART 3.5
Sales of Foreign Currency by Authorised Dealers to the Public*



Source: Central Bank of Trinidad and Tobago
* Represent sales in excess of US$20,000.

Capital Markets

Activity on the primary Government bond market was slightly lower over October 2022 to March 2023; however, secondary Government bond market activity picked up notably in 2023

Provisional data suggests that during the six-month period ending March 2023, the primary debt market recorded five bond issues raising $2,612.9 million (Table 2)**, compared to four issues raising $3,437.4 million over the same period one year prior.** Over the recent period, two state enterprises issued three bonds totalling $910.0 million, while the Central Government financed $1,702.9 million via two bonds. It should be noted that the $702.9 million Government of the Republic of Trinidad and Tobago (GoRTT) 2037 bond issued in January 2023 was part of the CLICO Investment Fund (CIF) distribution of assets.

TABLE 2

Primary Debt Security Activity

(October 2022 to March 2023)p

Period Issued	Borrower	Face Value (TT$ M)	Period to Maturity	Coupon Rate Per Annum	Placement Type
	Home Mortgage Bank (HMB)				
Oct-22	Tranche 1	150.0	4.0 years	Fixed Rate 4.00%	Private
	Tranche 2	150.0	4.0 years	Fixed Rate 4.50%	Private
	Home Mortgage Bank (HMB)	300.0	5.0 years	Fixed Rate 3.50%	Private
	Trinidad and Tobago Mortgage Finance Company Limited (TTMF)	310.0	4.0 years	Fixed Rate	Private
Dec-22	Central Government of Trinidad and Tobago				
	Tranche 1	200.0	2.0 years	Fixed Rate 1.90%	Private
	Tranche 2	800.0	10.0 years	Fixed Rate 4.24%	Private
Jan-23	Central Government of Trinidad and Tobago	702.9	14.0 years	Fixed Rate 4.25%	Public

Sources: Ministry of Finance and Market Participants

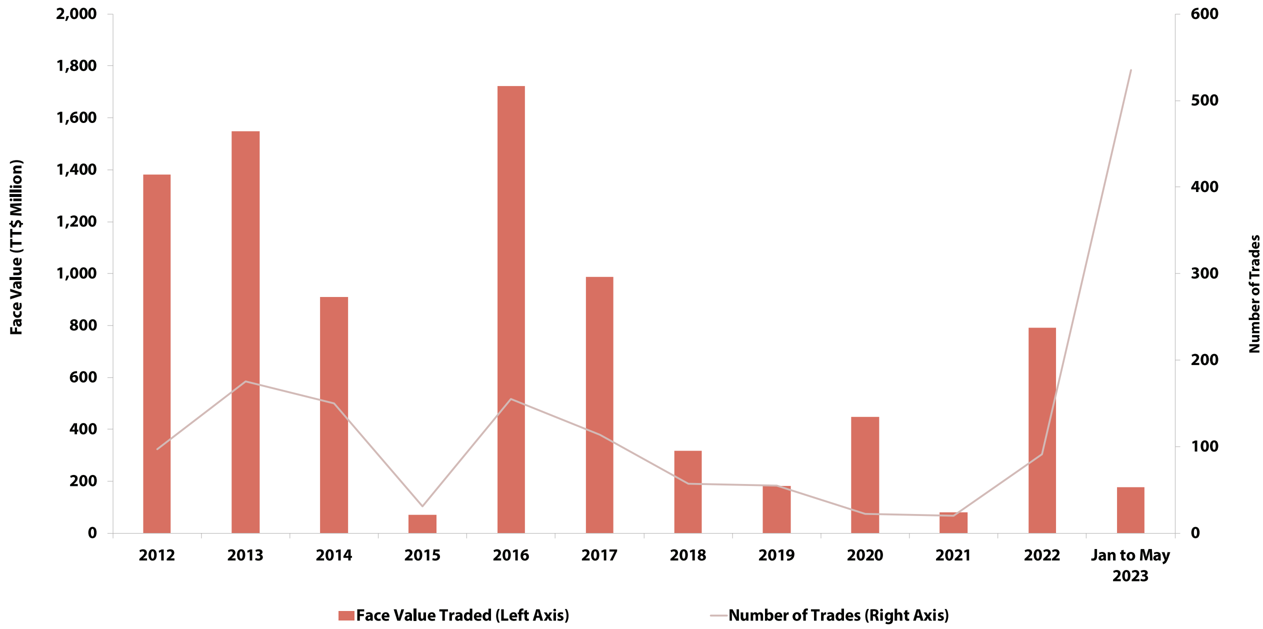
p Provisional.

Activity on the Trinidad and Tobago Stock Exchange (TTSE) secondary Government bond market expanded notably over the six months ending May 2023, recording 536 trades at a face value of $187.1 million, compared to zero trades over the same period one year prior (Chart 3.6)**.** The jump in trading activity coincided with the listing of the $702.9 million GoRTT 2037 bond (GoRTT2037), which was part of the CLICO Investment Fund (CIF) distribution of assets following the maturity of the fund. In accordance with the provisions of the Trust Deed, CIF shareholders were allocated shares in Republic Financial Holdings Limited, the GoRTT2037 bond, and a residual cash payment at the end of January 2023. Subsequently, shareholders were allowed to trade their allocations on the domestic stock market.

Conversely, activity on the TTSE secondary corporate bond market[10] declined over the six months ending May 2023, recording 54 trades at a face value of just $3.3 million, compared to 122 trades at a face value of $72.5 million over the comparable period one year prior.

CHART 3.6

Secondary Government Bond Market Activity



Source: Trinidad and Tobago Stock Exchange

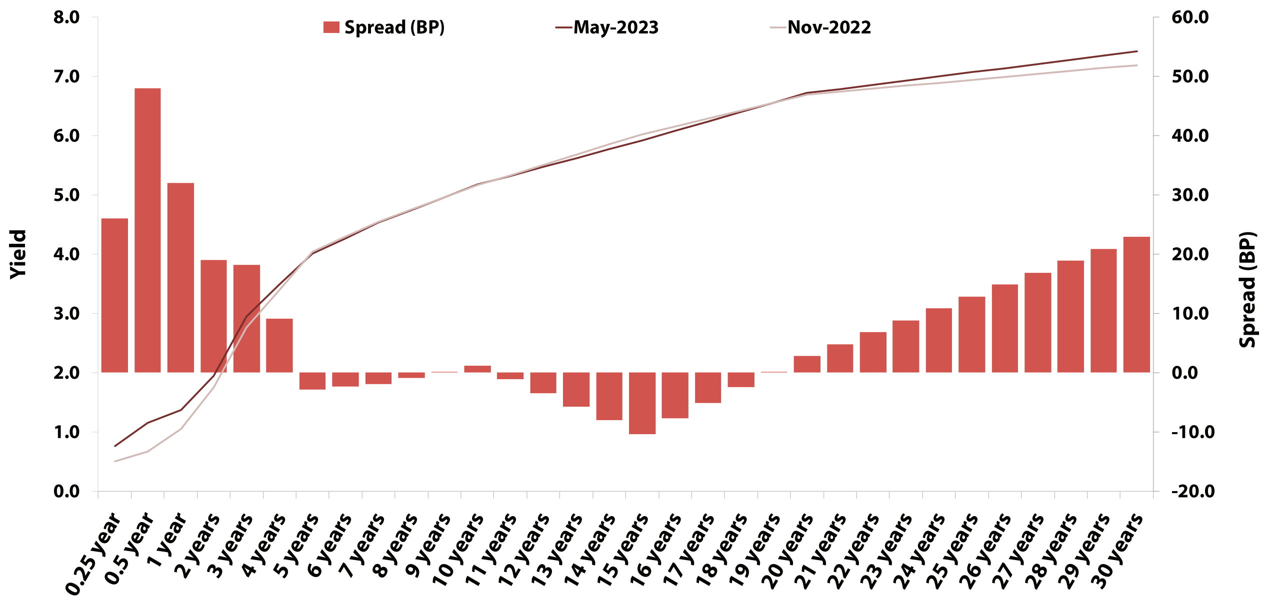
10 Activity on the TTSE corporate bond market records the price and yield movements of the three National Investment Fund Holding Company Limited bonds listed in September 2018.

Over November 2022 to May 2023, yields on the Central Government yield curve displayed mixed movements (Chart 3.7). Over the period, the 3-month rate jumped by 26 basis points to 0.76 per cent, while the 1-year rate gained 35 basis points to 1.37 per cent. This was driven primarily by a decline in liquidity levels during April 2023, prompting an increase in short-term rates. Conversely, the tempering of inflationary conditions likely resulted in most medium and long-term rates declining or remaining relatively unchanged. The medium-term 5-year rate slipped by 2 basis points to 4.01 per cent, while the long-term 10-year rate increased by 1 basis point to 5.17 per cent. On the other hand, the 15-year rate fell by 10 basis points to 5.92 per cent.

CHART 3.7

Trinidad and Tobago Central Government Treasury Yield Curve

November 2022 to May 2023



Source: Central Bank of Trinidad and Tobago

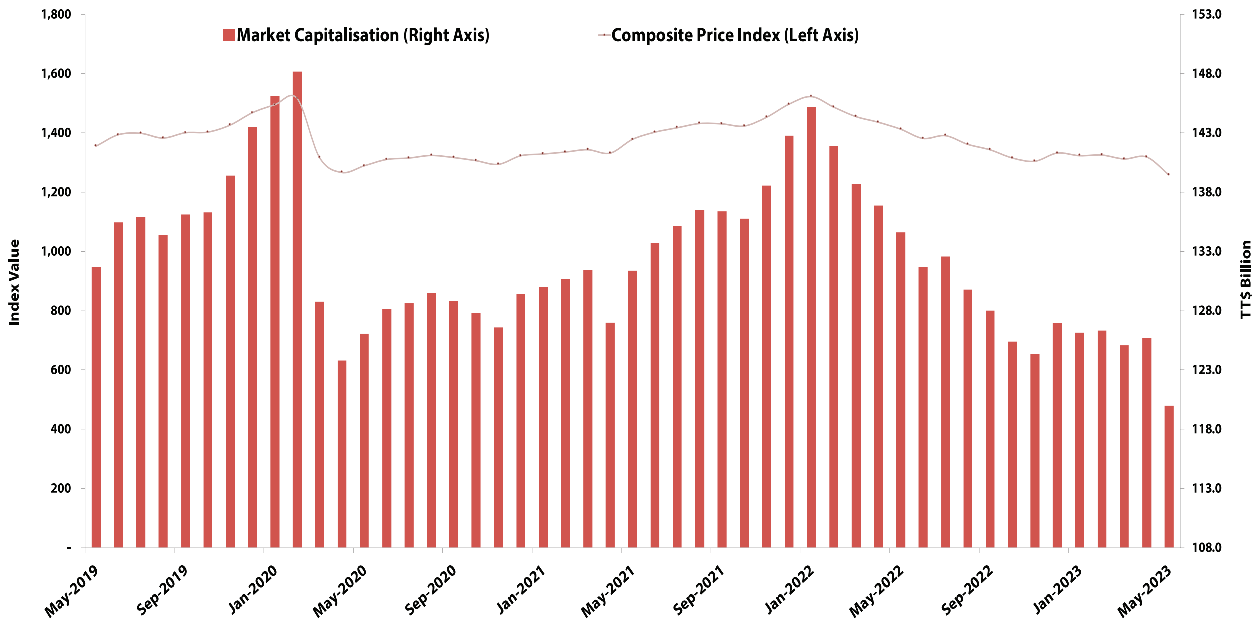
Over November 2022 to May 2023, the domestic stock market recorded a decline, driven by weakening in both local and regional equities

Over the six months ending May 2023, the Composite Price Index (CPI) declined by 3.5 per cent, resulting in total stock market capitalisation ending the period at just under $120.0 billion (Chart 3.8). The market decline was driven by a 2.3 per cent and a 7.9 per cent fall in the All Trinidad and Tobago Index (ATI) and Cross Listed Index (CLI), respectively. The first tier market deterioration reflected declines in the Manufacturing II (-26.0 per cent), Manufacturing I (-20.7 per cent), Energy (-11.7 per cent), Non-Banking

Finance (-9.0 per cent), and Banking (-3.4 per cent). Conversely, improvements were observed in only two indices: Trading (56.2 per cent), and Conglomerates (1.7 per cent). The overall market decline was likely driven by the persistence of inflationary pressures from ongoing supply-chain issues and higher energy costs. However, the improvements in the Trading and Conglomerates indices reflected financial improvements as a result of the effective management of increased costs, strategic acquisitions, the lifting of COVID-19 restrictions, and the return of Carnival in the first quarter of 2023 which provided a boost to operations. Additionally, the decline in the CLI reflected a 0.7 per cent decline in both the Caribbean Exchange Index[11] and the Jamaican Stock Exchange index. On the other hand, the Barbados Stock Exchange index improved by 0.7 per cent over the same period.

CHART 3.8

Movements in the Composite Price Index and Stock Market Capitalisation



Source: Trinidad and Tobago Stock Exchange

11 The Caribbean Exchange Index was launched in October 2022, as a collaborative effort by five regional stock exchanges: Jamaica, Barbados, The Eastern Caribbean, Guyana, and Trinidad and Tobago. The index consolidates the activity of the main market stocks across the different exchanges into a single performance measure and is intended to be an indicator of the performance of the Caribbean region.

Despite challenging conditions in international capital markets and monetary policy tightening in the AEs, the domestic mutual funds industry improved during the six months ending March 2023

Aggregate funds under management[12] improved by 1.6 per cent to $52,178.8 million[13], driven by advances in Money Market and Income funds (Chart 3.9). Income funds, the largest component, increased by 1.4 per cent to $28,510.8 million, while Money Market funds improved by 3.2 per cent to $14,806.9 million as investors sought the safety of principal protection and short-term liquidity. Additionally, funds classified as 'Other'[14] negligibly increased by 0.2 per cent to $454.8 million. On the other hand, equity market volatility resulted in Equity funds deteriorating marginally by 0.4 per cent to $8,406.2 million. Overall, the market was negatively impacted by volatile equity markets, both local and foreign, and increasing interest rates in Advanced Economies. In comparison, during the same period one year earlier, aggregate funds under management remained relatively flat at a 0.1 per cent increase, however, the industry was largely supported by advances in Equity funds.

Reflecting the demand for principal protection, short-term liquidity, and low duration, fixed Net Asset Value (NAV) funds recorded growth of 1.9 per cent to $38,593.4 million during the six months ending March 2023. On the other hand, higher-risk floating NAV funds observed a 0.7 per cent gain to $13,585.4 million. Meanwhile, TT dollar funds increased by 0.4 per cent to $42,425.5 million, while foreign currency funds jumped 7.1 per cent to $9,753.3 million.

During the six-month period, the industry observed $394.4 million in net sales, comprising $8,673.0 million in sales and $8,826.9 million in redemptions. Comparatively, during the same period in 2021, the mutual fund industry observed $940.7 million in net sales.

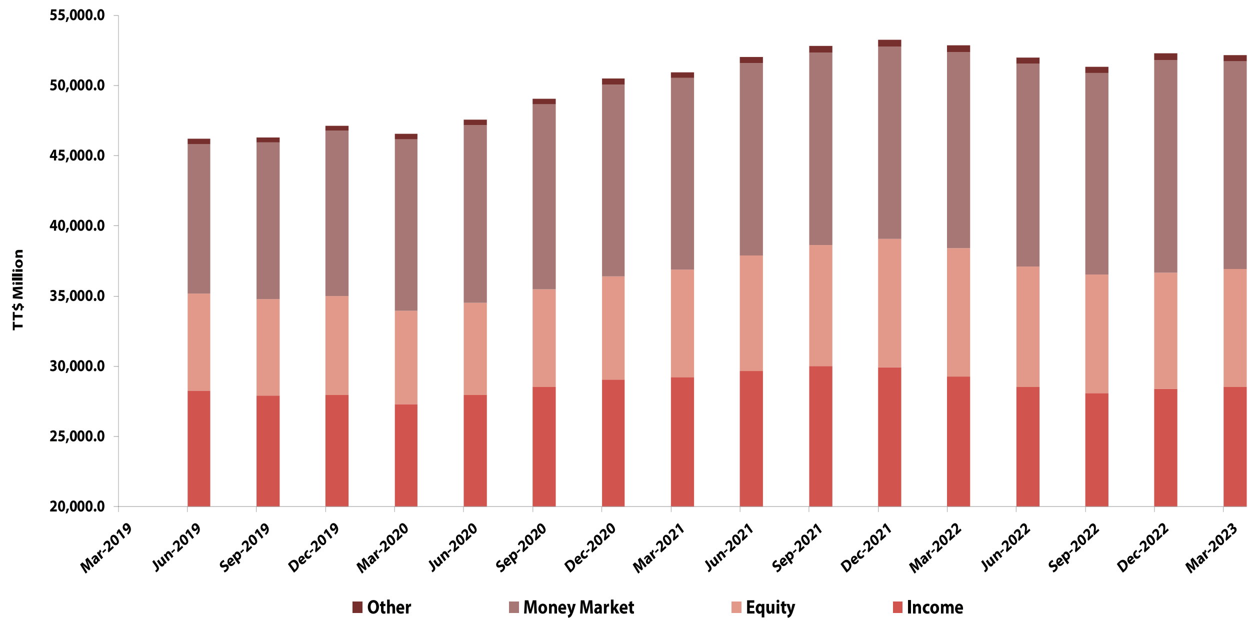
Overall fixed NAV funds observed $766.1 million in net sales while floating NAV funds recorded $371.7 million in net redemptions. Furthermore, Money Market funds registered $640.7 million in net sales, and fixed NAV Income funds logged $125.4 million in net sales, confirming that investors were seeking to protect investment principals. Conversely, the move away from floating NAV funds was evidenced by $230.5 million and $145.9 million in net redemptions from Equity funds and floating NAV Income funds, respectively, over the same period.

Collective Investment Scheme (CIS) data[15] published by the Trinidad and Tobago Securities and Exchange Commission (TTSEC) suggests that during the first quarter of 2023, the total value of Assets Under Management for all registered funds recorded a marginal improvement of 0.1 per cent to $62,129.2 million. On the other hand, the industry recorded net redemptions amounting to $346.5 million.

12 Aggregate funds under management refer to mutual fund information collected by the Central Bank of Trinidad and Tobago, including funds managed by the Trinidad and Tobago Unit Trust Corporation, Royal Bank of Trinidad and Tobago, Republic Bank Limited and First Citizens Bank Limited.
13 As at the end of June 2023, this value accounted for 84.0 per cent of the total industry assets under management as given by the TTSEC CIS data.
14 Other funds represent high yield funds and special purpose funds.
15 At the end of June 2023, CIS data from the TTSEC represents 79 registered funds from 16 issuers.

CHART 3.9

Trinidad and Tobago Mutual Funds Under Management by Fund Type



Source: Central Bank of Trinidad and Tobago

BOX 1
Implications of Monetary Policy Tightening in Advanced Economies on Domestic Macro-Financial Stability

To combat the surge in global inflation, several central banks engaged in rapid monetary policy tightening. Most started with gradual policy rate adjustments then progressively increased the magnitude of their rate hikes. Domestically, in the face of elevated inflation, the monetary policy stance remains accommodative, prioritising economic recovery efforts. However, trade and financial linkages exist connecting the local macro-financial system to international markets. As such, monetary policy tightening in Advanced Economies (AEs) in particular can have implications for the stability of the domestic financial system and economy. This Box discusses the impact of tighter AE monetary policies on funding costs, capital flows, public and private sector foreign currency holdings, asset valuations, external debt and commodity prices.

The series of highly synchronised central bank interest rate hikes have tightened global financial conditions. Sharp successive policy rate increases, aimed at tackling inflation, can endanger economic growth and financial stability in an already fragile environment. For 2023, among the main factors driving downside risks are developments in AEs – that is, the intensity and speed of future AE policy rate changes and the attendant impact on their economies. In light of recent outlook forecasts,[i] the performance of AEs, in particular, is hinged on successfully taming inflation and creditor and debtor resilience. The potential spillovers have implications for countries' monetary and financial conditions. Hence, tracing the likely feedback effects would assist policymakers in devising appropriate defensive measures to mitigate any excessive risks to the local financial system.

To cool inflation, most central banks began their monetary policy tightening with a conventional 25 basis point increase. However, when inflation proved to be more persistent than expected, several central banks intensified their efforts by increasing the magnitude and frequency of hikes. Consequently, the hikes have severely tightened global monetary and financial conditions[ii]. The failure of four US banks, Silicon Valley Bank, Silvergate Bank, Signature Bank and First Republic Bank, and the loss of market confidence in Credit Suisse, a global systemically important bank in Europe, are driving the risk outlook. Thus far, factors such as liquidity mismatches, concentration, interconnectedness and default risks have triggered new and/or pre-existing vulnerabilities in the financial, household and corporate sectors.

For Trinidad and Tobago, a small open energy-exporter, AE rate hikes mainly affect funding costs, capital flows, public and private sector foreign currency holdings, asset valuations and can indirectly affect commodity prices. Consequently, the effects of hikes on monetary and financial dynamics are tipped to the downside. For funding, the effects are multifold. Hikes have raised external borrowing costs for current (variable-rated) and future external borrowing, which can limit the attractiveness of external financing and increase foreign currency debt service burdens. Interest rate hikes can also affect investment portfolios due to adverse valuations, likely leading to portfolio rebalancing. Financial segments such as the mutual funds industry in Trinidad and Tobago have experienced some effects of negative valuations on financial performance, but remain resilient.

Foreign currency holdings have not been unduly affected. Domestically, a home bias exists; thus investment portfolios in the financial system are mainly held in local currency[iii]. Financial system foreign currency asset exposures are generally concentrated in government securities, privately-owned institution securities, equities (a larger portion as quoted stocks and shares) and time deposits (more notable for banks and general insurers). However, foreign currency liquidity has been impacted. Data for the period ending December 2022 suggest that the increase in demand for foreign currencies has affected liquid funds (20.6 per cent year-on-year decline in December 2022), with notable movements in the cash line item. Financial system exposure to Treasury bills have also increased when compared to December 2021 – spikes in the general insurance and pension sectors offset declines in the banking system and long-term insurance sector. Notwithstanding these exposures, based on financial soundness indicators (FSIs)[iv], the financial system appears stable and adequately resilient against shocks (Table 1).

In the public sector, the external debt portfolio is susceptible to valuation changes arising from interest rate hikes and exchange rate movements, which can impinge on fiscal and debt sustainability dynamics[v]. Interest rate hikes impact the cost of borrowing for debt instruments with variable interest rates and increase the overall debt burden. However, for Trinidad and Tobago, interest rate risk on the government external portfolio appears contained as 53.0 per cent of the external debt portfolio is structured along fixed interest rates. Additionally, the adjusted General Government debt portfolio is predominantly denominated in local currency, limiting its overall exposure. As at the end of March 2023, the stock of external debt stood at 16.3 per cent of GDP, down from 16.4 per cent recorded in December 2022 (Table 1).

Additionally, with already softening commodity prices, a recession (or severe slowdown) in AEs such as the US or Europe due to rate hikes is likely to weigh on prices. With energy prices having a large bearing on Government revenue and reserves, lower prices can dampen macroeconomic fundamentals. Furthermore, a slowdown in the AEs can also translate to lower inbound cross-border flows affecting non-energy activity, further dampening prospects. Both situations can lower foreign exchange (FX) inflows, reinforcing tightness in the domestic FX market.

As it stands, financial exposures are relatively limited; nevertheless, strong buffers that can cushion the negative fallouts from AE interest rate hikes are in place. The local financial system continues to be stable, financial exposures appear limited and external vulnerability indicators are above international benchmarksvi, acting as buffers to potential risks that may materialise. Looking ahead, forecasts are cautiously optimistic that inflation will moderate, suggesting that the frequency and magnitude of rate hikes will lessen, reducing domestic macro-financial stability concerns.

TABLE 1
Selected External and Banking System Financial Indicators

Indicators (per cent)	Dec-2022	Jan-2023	Feb-2023	Mar-2023
External Debt (share of Gross Domestic Product)	16.4	16.3	16.4	16.3
Banking System Capital Adequacy[1]				
Regulatory capital to risk-weighted assets	18.7	18.6	18.7	18.5
Regulatory Tier I capital to risk-weighted assets	18.4	18.4	18.2	17.9
Regulatory Tier II capital-to-risk-weighted assets	2.1	2.1	2.3	2.4
Banking System Asset Quality				
Nonperforming loans-to-gross loans	3.2	3.2	3.2	3.2
Nonperforming loans (net of provisions)-to-capital	3.6	3.7	3.7	3.8
Banking System Liquidity				
Liquid assets-to-total assets	19.3	19	18.5	17.8
Liquid assets-to-total short-term liabilities	25.1	24.7	24.2	23.3
Customer deposits-to-total (non-interbank) loans	157.1	155.3	155.8	154.2
Foreign currency liabilities-to-total liabilities	26.2	26.3	26.1	26.3

Source: Central Bank of Trinidad and Tobago
1 Effective August 2020, capital adequacy ratios (CARs) are reported based on the Basel II (and some elements of the Basel III) framework. All capital adequacy ratios prior to August 2020 are based on the Basel I framework. Adjustments related to the new framework seek to raise the quality and quantity of the regulatory capital base and enhance the risk coverage of the capital framework. For further information on Central Bank of Trinidad and Tobago's Basel II/III framework implementation, please view: https://www.central-bank.org.tt/core-functions/supervision/basel-ii-iii-implementation

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i According to the April 2023 World Economic Outlook forecasts, global economic activity will moderate to 2.8 per cent in 2023. In particular, output in the Advanced Economies is projected to grow by 1.3 per cent. (International Monetary Fund 2023)

ii The April 2023 Global Financial Stability Report highlighted that global financial stability risk has surged since its previous report in October 2022. (International Monetary Fund 2023)

iii Using the banking system, insurance sector and pension sector as a proxy for the financial system, as at December 2022, these three sectors account for 77.4 per cent of total financial system assets. Additionally, as at December 2022, approximately 14.0 per cent of total system assets are held in foreign currency investments.

iv The banking system has ample capital headroom; CARs are well above the 10.0 per cent regulatory benchmark. Regarding liquidity, asset quality and earning and profitability FSIs for all sectors of the financial system proxy, though no established benchmarks have been implemented, over the period of rate hikes dating 2020 to present, based on the latest available data (December 2022), no striking anomalies in ratio performance have been observed that warrants concern.

v As at December 2022, roughly 25.0 per cent of adjusted General Government debt outstanding was held by external creditors. Approximately 53.0 per cent of external debt outstanding is structured along fixed interest rates. Notwithstanding, approximately 70.0 per cent of the adjusted General Government debt portfolio is denominated in local currency, which limits the overall exposure to valuation adjustments due to exchange rate fluctuations.

vi At the end of March 2023, gross official reserves amounted to US$6,784.6 million (equivalent to 8.5 months of import cover), above the 6-month benchmark for commodity exporters.

4. MONETARY POLICY ASSESSMENT (NOVEMBER 2022 – MAY 2023)

Monetary policy continued to balance dealing with externally driven inflationary pressure, while advancing the post-pandemic recovery.

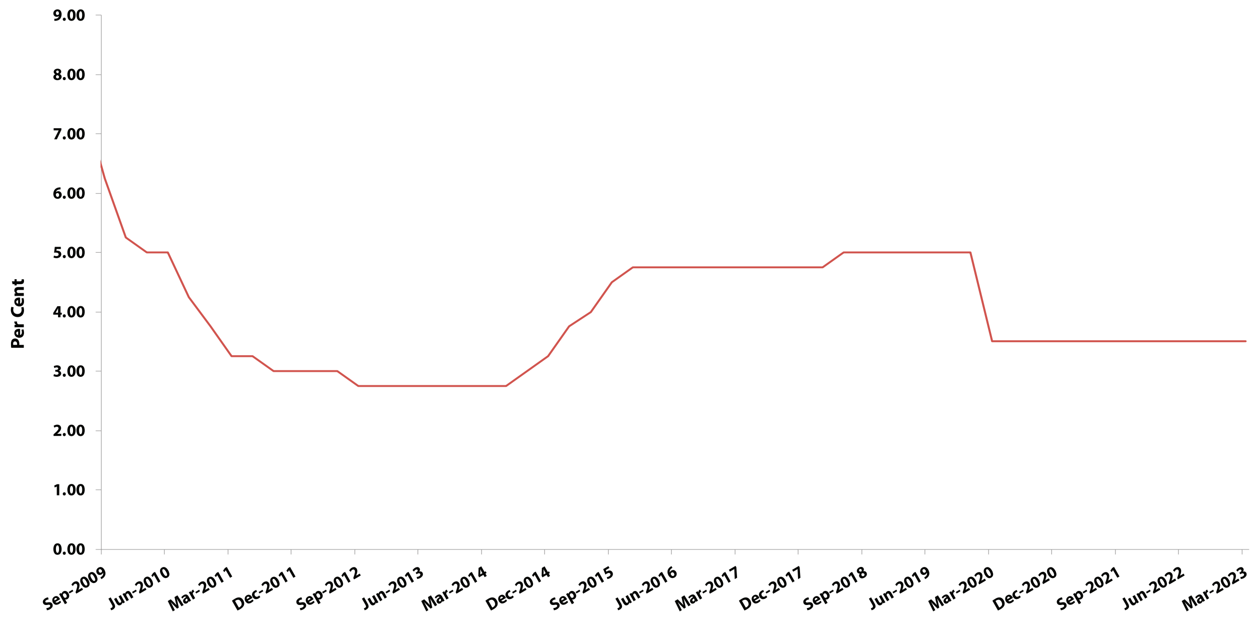
Monetary policy in late 2022 and early 2023 balanced advancing the post-pandemic recovery with externally-driven inflationary pressure. The main policy tool of the Central Bank, the Repo rate, remained at 3.50 per cent after being lowered by 150 basis points in March 2020, following the onset of the COVID-19 pandemic (Chart 4.1).

The Central Bank influences the economy by managing changes to the money supply, which affects the economy through real balances. The reserve requirement targets the creation of narrow money through the money multiplier effect and remained at 14.0 per cent since a 300 basis point decline in March 2020. Between May 2022 and May 2023, required commercial bank reserves with the Central Bank fluctuated around an average of $13.1 billion suggesting that narrow money remained stable. OMOs, however, tend to affect broader measures of the money supply than the reserve requirement. Changes in the money supply originating from adjustments to the reserve requirement and OMOs tend to manifest as changes to excess liquidity. Excess reserves have remained stable since November 2022 based on the Central Bank's active liquidity management strategy (Chart 4.2).

Bank lending rates remain responsive to policy

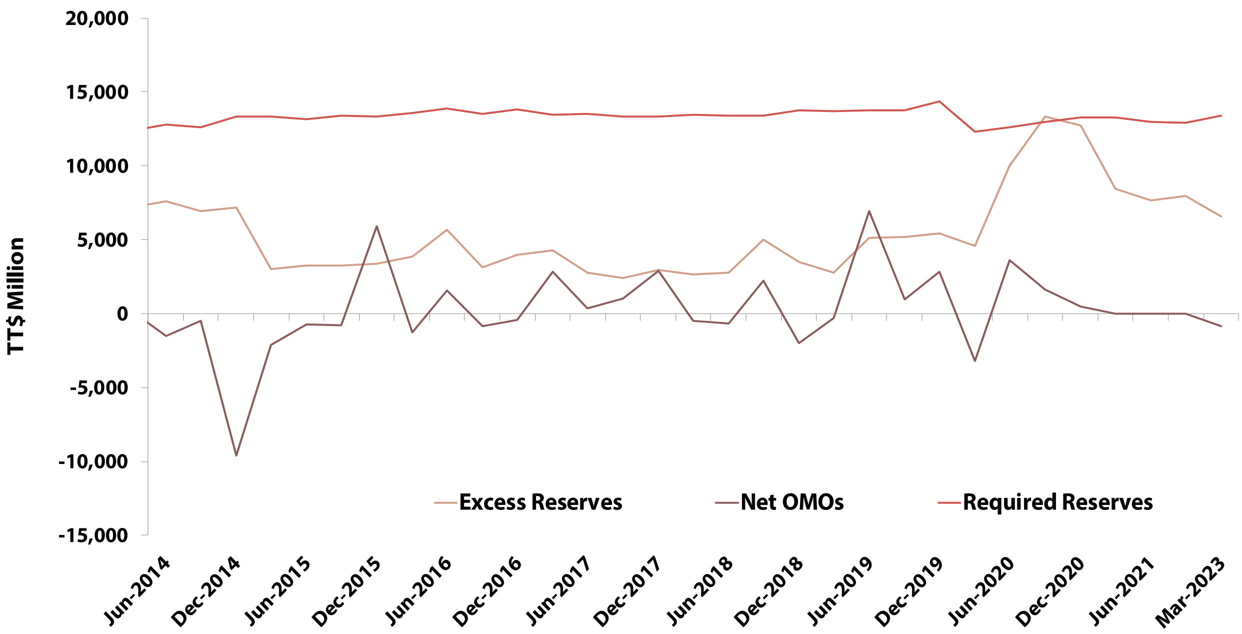
While growth in private sector credit emerged as an important feature of the post-pandemic recovery, excess liquidity remained ample thus far in 2023. In this context, increased competition among commercial banks meant the WALR decreased to 6.71 per cent in March 2023 from 6.94 per cent in September 2022.

CHART 4.1
Repo Rate



Source: Central Bank of Trinidad and Tobago

CHART 4.2
Liquidity Management



Source: Central Bank of Trinidad and Tobago

Based on the interest rate and money supply channels, the size and direction of the combined effect of the Central Bank's monetary policy tools on commercial banking rates can be demonstrated. Chart 4.3 shows the evolution of the historical forecast error variance decomposition (FEVD) derived from a model[16] estimating the effect of the Repo rate and excess liquidity on the WALR against the WALR itself. When the values of the FEVD are positive, policy exerts pressure on the WALR to increase and vice versa. After March 2020, the combined effect of the instruments of monetary policy on the WALR takes negative values, and thus exerts pressure on the WALR to decline. This shows that monetary policy has underpinned the declining trajectory in commercial banking rates observed after the pandemic. Regarding increasing banking rates in the second half of 2022, it should be noted that the effect of policy on the WALR is still negative and the increased WALR would have been driven by sources extraneous to the effects of the Central Bank's tools. Nevertheless, the reversion to a declining trajectory over early 2023 means the signalling properties of the Repo rate remain intact. It is important to note that rising policy and commercial interest rates can impede economic growth during recoveries based on expansions of private sector credit. Additionally, policy and commercial banking rates that rise in tandem quickly have the potential to generate financial instability.

Excess liquidity is expected to remain ample over 2023, while reflecting a baseline level closer to historic trends. Elevated energy revenues are expected to translate into increased medium-term expenditure, resulting in higher net fiscal injections. The Central Bank's liquidity management strategy will emphasise balancing support for the economic recovery against inflation containment.

Although the trajectory of commercial bank lending rates in 2023 is anticipated to be somewhat flat, it is possible that the interaction between credit demand and liquidity may alter that course. Treasury rates may experience some upward pressures given elevated inflation both domestically and internationally. Nonetheless, the potential for further widening of the TT-US long and short-term differentials still exists. However, the trajectory of increase of external benchmark rates is expected to slow following major bank collapses in the US in early 2023.

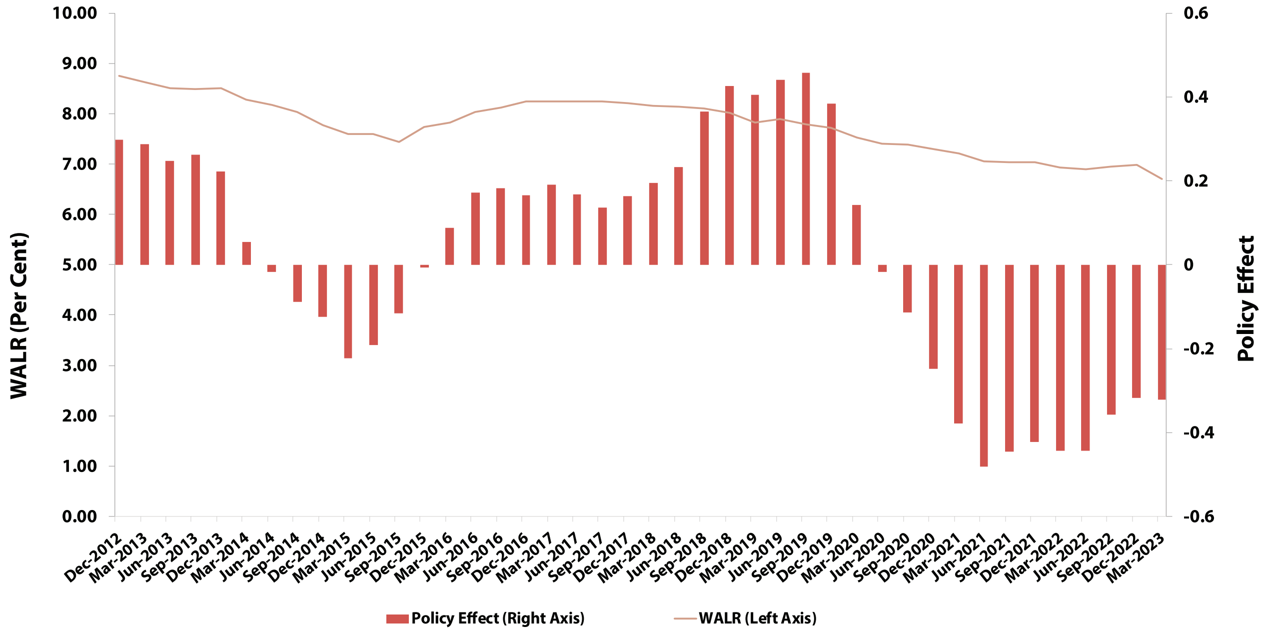
In summary, energy revenues as well as persistent expansion in private sector credit will likely support the post-pandemic economic recovery. Monetary policy will have to balance considerations about facilitating the still nascent economic recovery, against mitigating the pass-through

16 Vector autoregression utilising data from March 2006 to March 2023.

of externally-driven inflation. As evidenced during and after the pandemic, managing short-term policy rates as well as narrow and broad money channels serve as an effective approach in influencing conditions in the banking system. As such, the Central Bank will continue to closely review domestic and external market developments and remain data-driven in its policy considerations.

CHART 4.3

Forecast Error Variance Decomposition



Source: Central Bank of Trinidad and Tobago

FEATURE ARTICLE

THE IMPACT OF EXTERNAL FINANCIAL SHOCKS ON BANK CREDIT IN TRINIDAD AND TOBAGO

Tanisha Mitchell and Natalie Thomas[17]

Summary

Commercial bank credit is an essential funding source for local private and public sectors. In spite of the home bias shown in banks' financial portfolios, as a small and open economy, the local financial system is exposed to global financial shocks. As a result, recent events such as the spike in international interest rates have sparked interest in assessing the impact of external financial shocks on the local bank credit channel. Using a structural vector autoregressive model, for the period December 2002 to March 2023, shocks to bank credit from the global environment are minimal as domestic private sector credit is mainly influenced by domestic variables.

Introduction

Financial markets, particularly domestic credit markets, have been affected to varying degrees by several events. Within the last 20 years, several events impacting global financial conditions have occurred – the 2008/09 Global Financial Crisis (GFC); the 2019 coronavirus (COVID-19) outbreak and ongoing recession fears in major Advanced Economies (AEs) due to aggressive rate hikes to combat persistent inflation. Positive peripheral financial shocks generally foster more robust economic expansions and foreign capital inflows and encourage demand-following or supply-leading credit booms. In contrast, adverse financial shocks have caused the opposite to occur. For weaker economies (economies with unsustainable debt and ballooning fiscal and current account deficits), adverse external financial shocks have led to a deterioration of economic prospects. Key factors that have amplified these effects are countries' exchange rate regimes, state of financial development and economic and financial market openness. More recently, efforts to contain economic fallouts from COVID-19 have expanded countries' weak points, increasing their vulnerability to external shocks.

Domestically, the financial system is bank-based, with commercial bank credit playing a significant role in financing key stakeholders' economic activities. As of March 2023 the majority of total commercial banks' domestic credit ($93.7 billion) is granted to the domestic private sector ($67.1 billion or 71.6 per cent), while the remainder is allocated to the central government ($16.1 billion or 17.1 per cent) and public sector enterprises ($10.5 billion or 11.2 per cent). The high level of bank credit involved in domestic real sector activities makes a case for the study of external financial shocks on the bank lending channel. Analysing the effects of external

17 The authors are economists in the Research Department of the Central Bank of Trinidad and Tobago. The views expressed are those of the authors and not necessarily that of the Central Bank of Trinidad and Tobago.

financial shocks on commercial bank credit may uncover meaningful insights that could assist in monetary and financial stability policymaking.

The study is organised as follows. **Section 2** reviews the literature on bank credit as it relates to the impact of external shocks. **Section 3** outlines local bank credit trends. **Section 4** examines the effects of external financial shocks on local bank credit via a structural vector autoregressive model (SVAR) and its associated findings. Last, **Section 5** provides conclusions and policy recommendations.

Literature Review

Bank credit fuels economic activity by financing household, firm and government investments, working capital, and consumption. Due to the importance of banks, extensive studies have investigated the implications of banks' role, connections and stability in the economy. The popular view in the literature is that bank credit and economic growth are positively correlated and that credit (and financial development) influences economic growth.[18] Consequently, by analysing key areas such as macro-financial linkages, credit cycles and the state of financial development, studies found that shocks affecting bank credit have had systemically damaging effects on economies. Outside of domestic challenges, external transmission channels have been a key discussion in the credit-growth nexus literature; despite the prevalence of banks' home biases[19].

The likelihood of external shocks occurring with cross-border spillovers is rising. Due to financial globalisation, which has increased cross-border ownership of assets, securitisation and interdependencies of banking and credit markets, financial integration has deepened.[20] In the past, several factors have triggered external financial shocks. Via banks' net foreign assets and exchange rates, studies suggest that major triggers such as interest rates, asset prices and output were more likely to affect the credit supply of banks [(Carrasco, Hoyle and Nivín 2019), (Mimir and Sunel 2019) and (Chen, Chen and Huang 2021)].

For Trinidad and Tobago, a bank-centric, small, open, energy-exporting price taker, external shocks (via trade and financial linkages) have been a catalyst for macro-financial instabilities. Past events such as the failures[21] of a few local banks and non-bank financial institutions due to energy-led economic cycles, the collapse of two insurance companies[22] following the GFC have occurred locally. Despite this, studies have focused on trade dynamics,

18 Schumpeter (1911), Demetriades and Hussein (1996), Krishnankutty (2011), Ananzeh, Izz (2016), Ramlogan, Mitchell-Ryan and Cheong (2009) and Silva, Tabak and Laiz (2019).
19 Hodula and Deev (2016), Vlassopoulos and Andreeva (2016) and Thomas and Garcia-Singh (2019).
20 Bailliu (Bailliu 2000), Prasad et al (2003), Altunbas, et al. (2007) and Lane (2012).
21 International Trust Limited (1986), five non-bank financial institutions (1986), Workers' Bank (1989, 1993) and National Commercial Bank and Trinidad Cooperative Bank in 1993.
22 Colonial Life Insurance Company (Trinidad) Ltd. and British American Insurance Trinidad.

with few regional and domestic studies on financial shocks. A recent addition to the literature by Roopnarine, Bowrin and Ramirez (2019) posits that financial and non-financial external factors influence macroeconomic variables in Trinidad and Tobago, with financial factors having a progressively profound impact on domestic indicators. Since the study, legacy issues of the pandemic and more recently aggressive monetary policy tightening have changed market dynamics. Hence, adding to the literature and in light of recent developments, namely in the US banking system, this study assesses the implications of external shocks on local banks, with specific emphasis on the domestic bank lending channel.

Across the literature, market volatility, financial conditions (and/or stress) indicators, and foreign interest rates are widely used measures of external financial shocks. Globally, the VIX (Chicago Board Options Exchange Volatility Index)[23], an indicator of global risk aversion and uncertainty, has been used in several studies to assess the impact of external shocks, measure and trace global financial cycles[24] [Rey (2013), Özen, Sahin and Ünalmis (2013), Cerutti, Claessens and Rose (2017), Hallett and Chams-Eddine (2018) and Batten, et al. (2022)]. The studies found the VIX to be a key determinant of capital flows. According to Rey (2013), "the pattern of capital inflows and outflows follows a global financial cycle which is synchronised with fluctuations in world market risk aversion and uncertainty". Further, the author notes that credit creation in the banking sector and leverage follow the same pattern.

Studies measuring financial stress commonly found that stress in AEs appears to be a key driver of financial stress in emerging economies [Balakrishnan, et al. (2009) and Stolbova and Shchepelevab (2016)]. Synchronisation patterns were also a characteristic of external market dynamics. Given the dominance of larger (more developed) economies, instabilities tended to create ripple effects impairing several countries simultaneously. Regarding exchange rate implications, given the role the US and the USD (US dollar) play in international investment, debt and banking, foreign exchange reserves, and goods and financial asset pricing, the US interest rate has also been a key indicator used to assess the impact of external shocks, Agénor, Aizenman and Hoffmaister (2008) and Gourinchas, Rey and Sauzet (2019).

Domestically, several key indicators have been used to assess financial conditions. Following closely the work of Drehmann, Borio and Tsatsaronis (2012), Melville (2017) constructed Trinidad and Tobago's financial cycle,which mirrors major local macroeconomic developments.[25] Melville (2020) further expanded on his work by developing a local financial stress index which

23 A popular benchmark for stock market volatility, measures market expectations of 30-day volatility conveyed by S&P 500 stock index option prices.
24 "Common movements in asset prices, gross flows and leverage" Rey (2013).
25 According to Melville (2017), medium-term components of private credit-to-GDP, residential property prices, the Trinidad and Tobago Stock Exchange composite index and open market operation (OMOs) treasury bill issuances were used on the basis of their statistical properties for: volatility; persistence; and co-movement.

measures the intensity of domestic financial market stress. In 2018, the Trinidad and Tobago financial conditions index (TTFCI), which currently forms part of the Central Bank of Trinidad and Tobago's suite of early warning indicators, was introduced by Garcia-Singh and Persad (2018). The TTFCI indicates periods of overheating or deterioration in the local macro-financial system[26]. In 2019, based on work by Gruss, Nabar and Ribeiro (2018) and Blanchard et al. (2015), Roopnarine, Bowrin and Ramirez (2019) developed a regional external FCI. Their study investigated external conditions and local growth performance (for the period 1971-2014) using Gross Domestic Product (GDP) from Trinidad and Tobago's largest trading partner (the US), the ratio of capital inflows to CARICOM member-states as a share of their collective GDP, and crude oil prices as proxies. Using a SVAR, a popular method in the literature for assessing external shock transmissions, the paper concluded that external shocks could affect domestic macroeconomic variables. Hence, the SVAR will be used in this study.

Trends in Commercial Bank Credit in Trinidad and Tobago

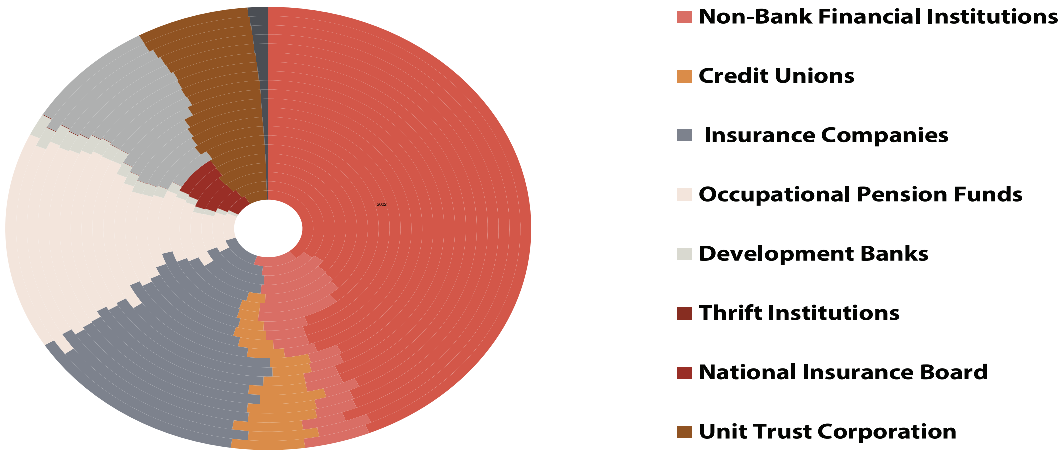
Commercial banks are a dominant force in the local financial sector. Over the past two decades, sector assets averaged just over 40.0 per cent of total financial system assets (Chart 1, Panel A). Also visible over the years is a strong home bias and small, but growing, foreign exposures (Chart 1, Panel B). Following bad (and uncertain) times, such as the GFC and the announcement of COVID-19 restrictions, banks' foreign currency exposures fell, strengthening their home bias. Of the fraction of foreign exposures, investments, loans and money due from banks, on average, dominate the asset-side of banks' foreign currency portfolio (Chart 1, Panel C). Exposures to foreign government(s) and related state entities and private non-financial institutions account for the lion share of foreign investment and loan exposures. For liabilities, corporate (incorporated and unincorporated businesses) and household deposits are leading, on average (Chart 1, Panel D).

26 According to Garcia Singh and Persad (2018), positive and increasing values are indicative of tightening financial conditions, while negative and decreasing values highlight accommodative conditions.

CHART 1

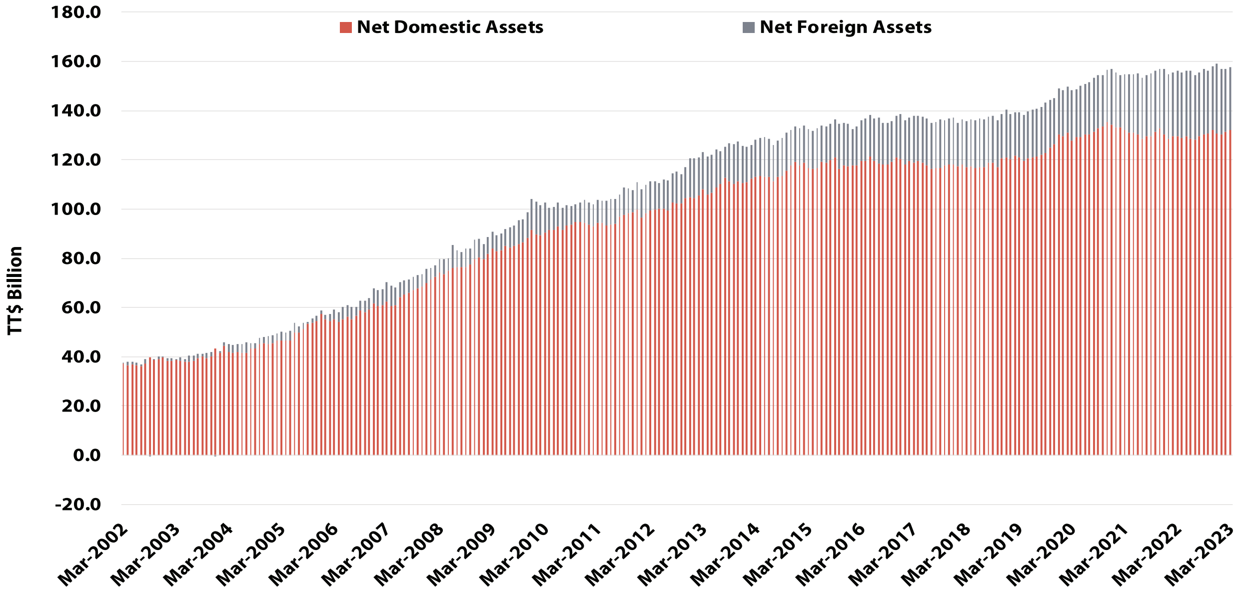
Panel A: Composition of Financial System Assets

March 2002 - December 2022



Panel B: Summary of Commercial Bank Accounts

January 2002 - March 2023

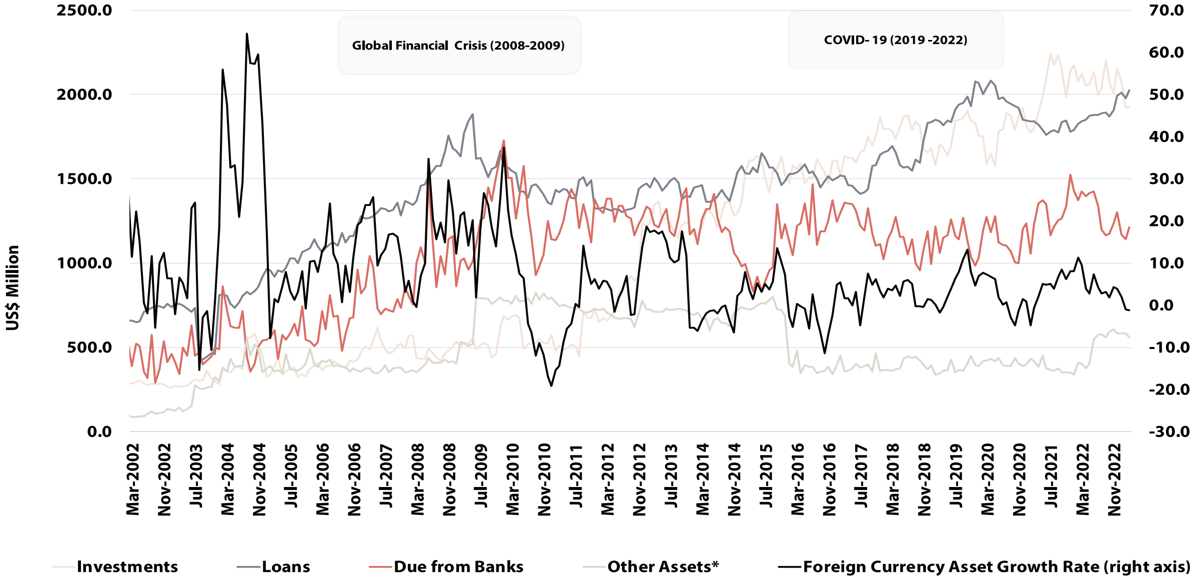


Source: Central Bank of Trinidad and Tobago
Note: * Includes Cash, Cash Items in the Process of Collection and Other Assets.

CHART 1 cont'd

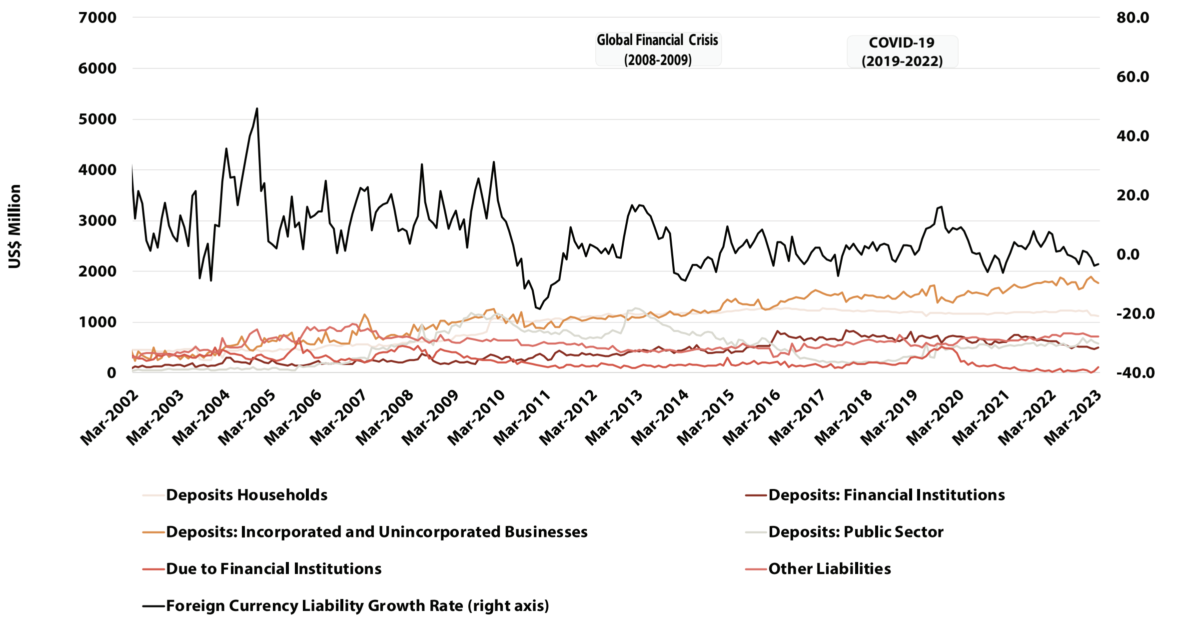
Panel C: Foreign Currency Assets

January 2002 - March 2023



Panel D: Foreign Currency Liabilities

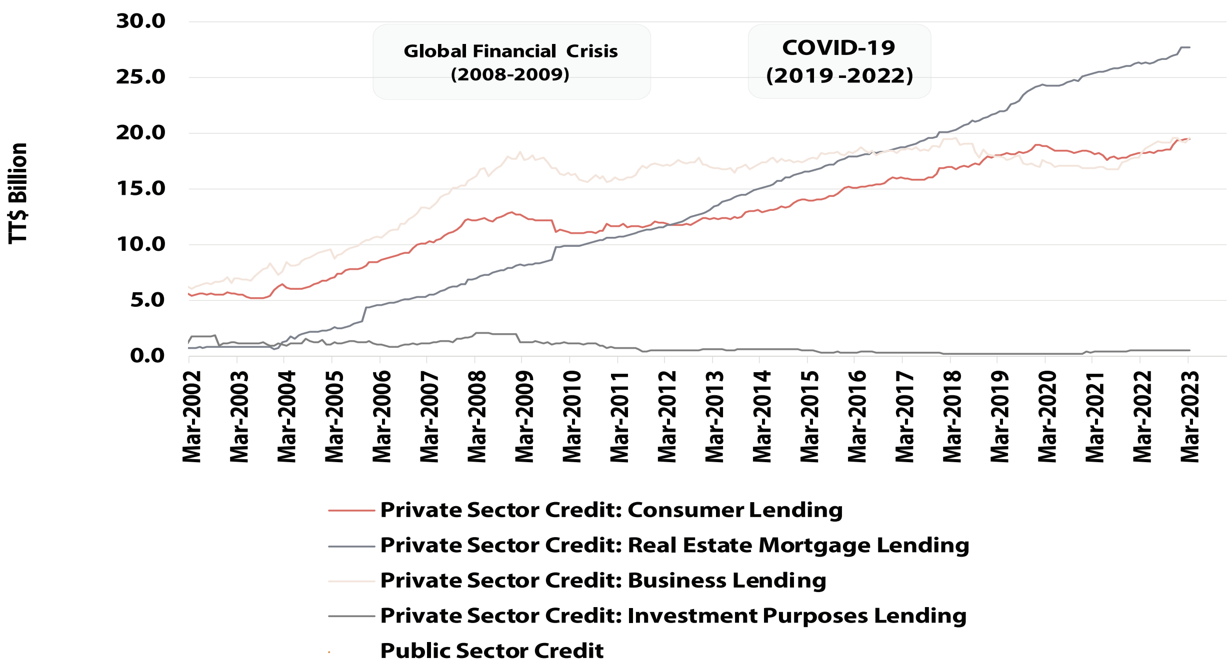
January 2002 - March 2023



Local financial conditions have been stable. The effects of COVID-19 and associated supply chain disruptions still linger, but has been joined by new supply challenges (due to geopolitical tensions in Eastern Europe) and rising global interest rates (to combat inflation). Nonetheless, the resumption of activity has boosted spending, helping local recovery efforts. With the Central Bank of Trinidad and Tobago policy stance still accommodative to support the recovery, local credit conditions remained loose, despite tightening external financial and monetary conditions. Hence, although credit dropped off following the implementation of local pandemic restrictions in early 2020, it has since rebounded. Lending to the business, consumer and real estate sectors, continue to support credit growth. On the asset side, on average credit to the private sector[27] is the largest component, with real estate mortgage lending emerging as the leading lending line in recent years (Chart 2, Panel A).

CHART 2
Local Credit Conditions

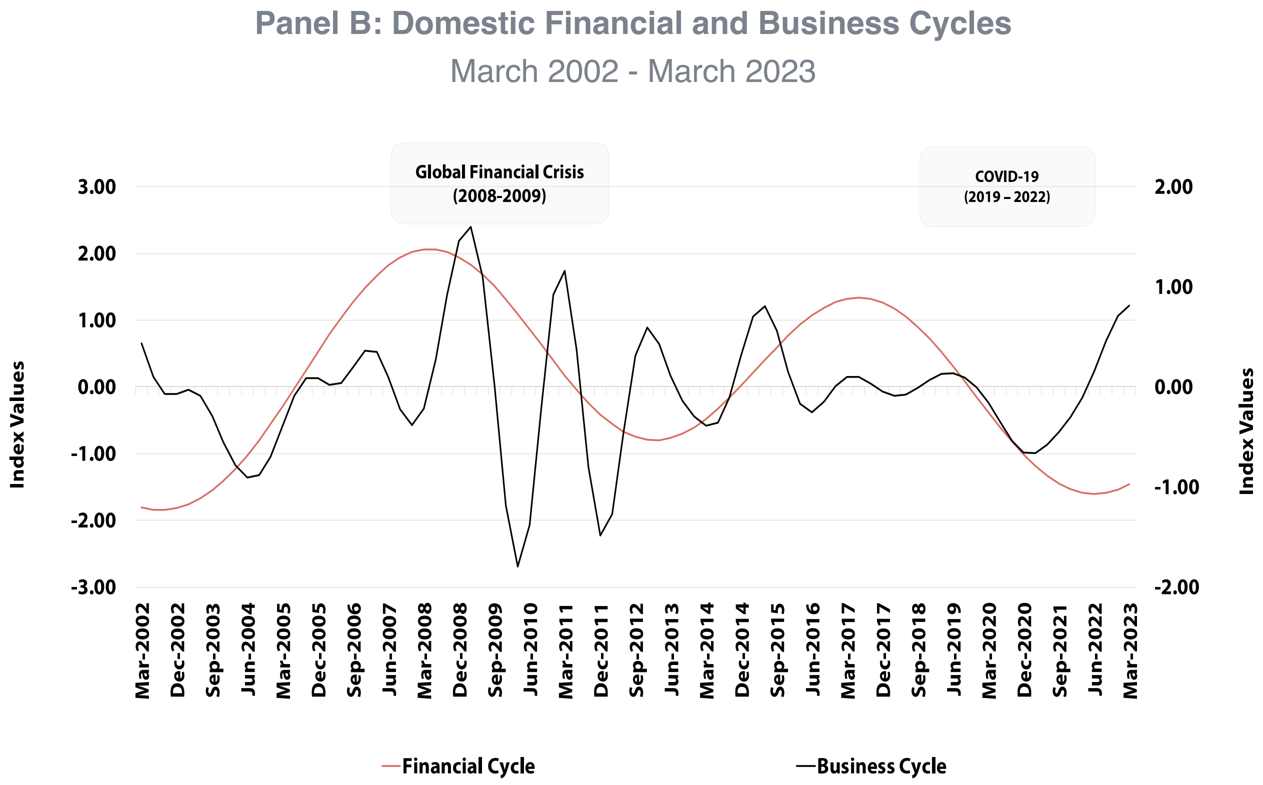
Panel A: Commercial Bank Credit
January 2002 - March 2023



Source: Central Bank of Trinidad and Tobago

27 A key variable used in this study.

CHART 2 cont'd
Local Credit Conditions



Source: Central Bank of Trinidad and Tobago

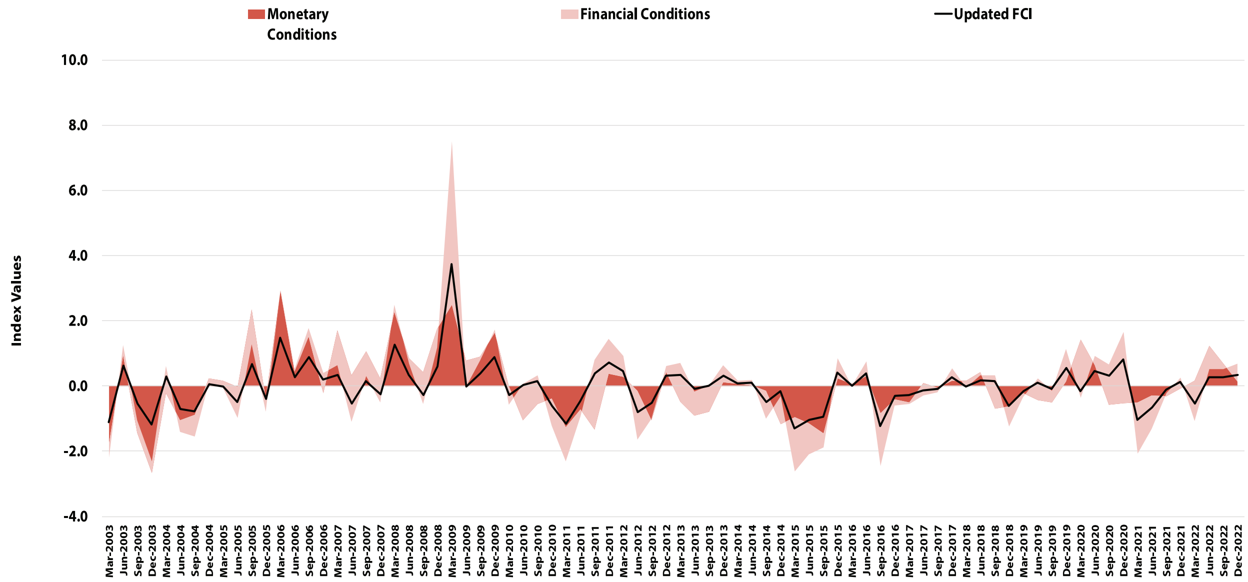
Evidence of the fallouts of global financial market conditions are visible in the local financial cycle.[28] Downturns succeeding selected major events illustrated on the Chart 2 (Panel B), reflect periods of a depressed financial climate. While, the business cycle's upturn showed signs of the reopening of the economy, the resurgence in energy prices and inflationary pressures from supply chain disruptions. For the TTFCI, as of December 2022, the low values indicate low financial stress, Chart 3. The local accommodative policy stance which was aimed at supporting market conditions has kept risks low.

28 Melville (2017).

CHART 3

Domestic Financial Conditions Index

December 2002 - December 2022



Source: Central Bank of Trinidad and Tobago

Notes: Positive and increasing values are indicative of tightening financial conditions, while negative and decreasing values highlight accommodative conditions. The interpretation of the values can be guided as follows: Index values ranging from 0 to ±0.4 (inclusive) indicate LOW levels of risk in funding conditions. Index values between ±0.4 and ±0.8 (inclusive) highlight MODERATE levels of risk. Index values between ±0.8 and ±1.0 (inclusive) highlight ELEVATED levels of risk. Index values between ±1.0 and ±1.5 (inclusive) highlight HIGH levels of risk. Index values greater than 1.5 or less than -1.5 highlight VERY HIGH levels of risk

Evidence of the fallouts of global financial market conditions are visible in the local financial cycle.[28] Downturns succeeding selected major events illustrated on the Chart 2 (Panel B), reflect periods of a depressed financial climate. While, the business cycle's upturn showed signs of the reopening of the economy, the resurgence in energy prices and inflationary pressures from supply chain disruptions. For the TTFCI, as of December 2022, the low values indicate low financial stress, Chart 3. The local accommodative policy stance which was aimed at supporting market conditions has kept risks low.

Dynamic Effect of External Financial Shock on Commercial Bank Credit

To identify the impact of foreign financial stress on domestic lending, a SVAR model was applied. SVAR models enable economic theory to inform the causal link between variables, to allow further analysis of the potential impact. Small, open economies like Trinidad and Tobago, where both financial and non-financial forces impact the macroeconomic environment, are ideal for SVARs. With commercial bank credit playing a dominant role in the economy, given how closely interconnected markets have grown, negative external financial shocks could potentially place contractionary pressure on domestic lending.

Based on the availability of some indicators, quarterly data spanning the period December 2002 to March 2023 was utilised. The impact on commercial bank private sector credit (PSC) was investigated through the examination of two data blocks—an external block made up of the Federal Funds Rate (FFR), Chicago Board Options Exchange Volatility Index (VIX), and a regional financial conditions index (RFCI) —and a domestic block. The domestic block of factors is anticipated to exert more influence on credit that banks offer, and as a result these include the Trinidad and Tobago financial conditions index (TTFCI), nominal Gross Domestic Product (GDP), inflation as measured by the retail price index (RPI), the Repo rate (REPO) and the weighted average lending rate (WALR), while the unemployment rate (UNEMP) was utilised specifically for consumer loans. Though commercial banks also lend to the Government, the focus of the research is on the private sector, which accounts for the majority of total credit, an average of 72.0 per cent over the review period.

$$\boldsymbol{\Gamma}(\mathbf{L})\boldsymbol{y_t} = \boldsymbol{y_{t-1}} + \boldsymbol{\sigma\varepsilon_t} \quad \textbf{(1)}$$

$$\boldsymbol{\Gamma_0^{-1}}\boldsymbol{\Gamma}(\mathbf{L})y_t = \boldsymbol{\Gamma_0^{-1}}\boldsymbol{y_{t-1}} + \boldsymbol{\Gamma_0^{-1}}\boldsymbol{\sigma\varepsilon_t} \quad \textbf{(2)}$$

$$(\mathbf{L})y_t = \boldsymbol{\Gamma_0^{-1}}\boldsymbol{y_{t-1}} + \boldsymbol{\Gamma_0^{-1}}\boldsymbol{\sigma\varepsilon_t} \quad \textbf{(3)}$$

Where:

$$\boldsymbol{e_t} = \boldsymbol{\Gamma_0^{-1}}\boldsymbol{\sigma\varepsilon_t} \quad \textbf{(4)}$$

SVAR Methodology

The SVAR model allows the analysis of the impact of external and domestic factors on domestic credit to be done separately. The block exogeneity feature allows the external variables to influence

$$e_t = \boldsymbol{\Gamma_0^{-1}} \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \tau_{21} & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ \tau_{31} & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ \tau_{41} & \tau_{42} & \tau_{43} & 1 & 0 & 0 & 0 & 0 \\ \tau_{51} & \tau_{52} & \tau_{53} & \tau_{54} & 1 & 0 & 0 & 0 \\ \tau_{61} & \tau_{62} & \tau_{63} & \tau_{64} & \tau_{65} & 1 & 0 & 0 \\ \tau_{71} & \tau_{72} & \tau_{73} & \tau_{74} & \tau_{75} & \tau_{76} & 1 & 0 \\ \tau_{81} & \tau_{82} & \tau_{83} & \tau_{84} & \tau_{85} & \tau_{86} & \tau_{87} & 1 \end{bmatrix} .\boldsymbol{\sigma} \begin{bmatrix} \sigma_{11} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \sigma_{22} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \sigma_{33} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \sigma_{44} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \sigma_{55} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \sigma_{66} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \sigma_{77} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \sigma_{88} \end{bmatrix} .\boldsymbol{\varepsilon_t} \begin{bmatrix} FFR \\ VIX \\ RFCI \\ REPO \\ WALR \\ RPI \\ GDP \\ PSC \end{bmatrix} \quad \textbf{(5)}$$

domestic variables while the domestic variables are restricted from impacting the external variables. Further, restrictions are placed on the relationship between the based on economic theory and Granger causality test. The general SVAR model is presented below:

Where Γ is a square matrix containing the relationships among the variables, Γ_0^{-1} is the inverse of the full rank matrix, $\mathbf{L}$ the lag operator, $\mathbf{y}_t$ is the matrix of exogenous and endogenous variables that are deemed to influence domestic commercial bank credit, σ is a matrix of diagonals and ε_t is a vector of structural innovations.

Analysis

The correlation matrix provides a preliminary evaluation of the link between domestic factors, external financial shocks, and domestic credit (Table 1). Importantly, correlation does not imply causation but indicates the general movement of variables. Thus, in order to assess causation, the impulse responses of the SVAR were investigated. A higher FFR could indirectly influence domestic markets through higher external borrowing rates and potential upward pressure on local interest rates resulting from contractionary monetary policies [FFR and REPO (0.58), FFR and TTFCI (0.16), FFR and WALR (0.13), FFR and PSC (-0.28) (Table 1)]. Although positive and increasing TTFCI[29] values (suggesting tighter domestic financial conditions) should limit private sector lending, the correlation matrix showed a positive but weak link between the TTFCI and PSC (0.02).

In Trinidad and Tobago, some categories of credit are characterised as demand-following (Ramlogan, Mitchell-Ryan and Cheong 2009) suggesting that macroeconomic fundamentals influence credit. Moreover, research has inferred that credit demand traditionally shows low interest rate sensitivity[30]. Nonetheless, in an attempt to investigate further, the correlation between the weighted average lending rate (WALR) (one variable used to compute the TTFCI) and PSC was analysed. The WALR had a relatively stronger inverse relationship to PSC (-0.74) and was retained in the analysis. On the other hand, the VIX and PSC had a minimal but positive link (0.07). The VIX measures stock market volatility; therefore, the weak correlation was expected.

Economic growth is anticipated to boost private sector credit, while upward pressure on the price level expands nominal credit but adversely affects real credit (Guo and Steepanyan 2011). In Trinidad and Tobago, Ramlogan, Mitchell-Ryan and Cheong 2009 established a positive

29 The index considers pure financial shocks and incorporates monetary condition, banking and financial variables.
30 Caribbean Economic Research Team. 2010. The Challenge of Low Interest Rates in the Caribbean. Newsletter, CERT. https://cert-net.com/files/publications/newsletter/Vol3No3.pdf
31 Manufacturing and construction sectors were found to be supply leading (Ramlogan, Mitchell-Ryan and Cheong 2009).
32 The year-on-year percentage change in the retail price index gives the anticipated negative correlation between PSC and inflation, however the model utilises the index due to minimal data transformation requirements.

relationship between GDP and private sector credit, the demand-following relationship suggests that PSC responds to economic expansions. Further analysis disaggregating PSC by the authors revealed a 'supply-leading' relationship in some sub-sectors[31] of business credit.

TABLE 1
Correlation Matrix

	FFR	VIX	RFCI	TTFCI	REPO	WALR	RPI	GDP	PSC
FFR	1.00								
VIX	-0.23	1.00							
RFCI	0.74	-0.16	1.00						
TTFCI	0.16	0.22	0.02	1.00					
REPO	0.58	0.15	0.56	0.31	1.00				
WALR	0.13	0.26	0.39	0.21	0.64	1.00			
RPI	-0.36	-0.01	-0.75	-0.07	-0.57	-0.81	1.00		
GDP	-0.19	0.08	-0.63	0.06	-0.32	-0.52	0.75	1.00	
PSC	-0.28	0.07	-0.72	0.02	-0.42	-0.74	0.97	0.79	1.00

Source: Stata 15

The correlation matrix indicates that higher inflation, RPI[32], results in higher PSC (0.97) as inflationary pressures mount, nominal credit tends to increase (Guo and Steepanyan 2011) though the authors explain that real credit is adversely impacted. On the other hand, Kiss et al 2006 found inflationary pressures to hold back credit. The authors explained that inflation volatility adversely impacts financial markets through uncertainty coupled with the limits placed on borrowing terms and conditions. Theoretically, as inflationary pressures rise, monetary authorities tend to respond with contractionary measures. However, in Trinidad and Tobago, increases in the retail price index are typically propelled by the food component which is subjected to import pressures or unavoidable weather hazards.

The reaction of PSC to a change in the external (FFR, VIX, and RFCI[33]) and internal (WALR, GDP, RPI, and REPO) block of variables is determined by evaluating the impulse response functions of the SVAR model. Generally, an increase in the FFR would have unfavourable consequences.

33 Interpolated Regional Financial Conditions Index (Appendix Table 1).

Higher FFR rates could lead to increased capital outflows, a drawdown on reserves, higher debt loads, and a wider TT/US interest rate differential. Monetary authorities may tighten monetary policy to avoid the negative effects of FFR hikes. This implies that while FFR adjustments may not directly affect PSC, they may indirectly impact the monetary policy stance and consequently PSC. However, the recent economic recovery from the COVID-19 pandemic has shown that domestic monetary authorities are balancing the recovery while closely monitoring external financial shocks.

The severity of FFR hikes are also influenced by the cause for the increase. When compared to increases implemented as a result of greater GDP expansion, higher FFR rates in response to inflationary pressures have a more severe impact (Hoek et al 2021). While Chart 4 does suggest an atheoretical response of PSC to a shock to the FFR, changes in domestic private sector credit tend to be closely related to domestic economic variables such as the repo rate, domestic interest rates and GDP. Nonetheless, if the domestic monetary authority responds to the external shocks with contractionary policy measures, the FFR could indirectly impact PSC.

The VIX, a real-time index of the stock market's expectation of volatility, is estimated to have a weak correlation with PSC (0.07), given shallow domestic capital markets. The underdeveloped state of the domestic capital market means firms may have limited access to capital funding via the sale of equity. Businesses generally prefer to seek financing from the banking sector and as such, occurrences in the stock exchange appear less likely to impact overall private sector credit. Notably, the VIX has a marginally stronger correlation with investments (securities issued locally) and discount loans (commercial bills maturing in 180 days), CREDIT (0.21) (Appendix Table 5), two of the five subcategories of PSC.[34] Despite this relationship, investment and discount loans only account for a small percentage of overall PSC, just under 1.0 per cent by March 2023. A shock to the RFCI, indicating financial volatility among CARICOM trading partners, results in initial volatility in PSC followed by a decline over the long-term.

Impulses to domestic variables result in changes in PSC consistent with economic theory. Tighter financial conditions such as higher domestic lending rates will adversely impact credit. From the impulse response, a one standard deviation shock to the WALR will immediately lead to a decline in PSC and a downward trend over the forecast horizon (Chart 5). A priori, the supply-leading and demand-following hypothesis can be used to explain the relationship between the PSC and GDP. The granger causality tests suggest that PSC granger causes GDP, implying a supply-leading relationship, however for the purpose of the study PSC was listed after GDP in the SVAR equation.

34 PSC consists of five main categories: consumer lending, business lending, real estate mortgage lending, lending for investment purposes (securities issued locally) and discount loans-(commercial bills maturing in 180 days).

35 According to the Central Bank May 2020 Monetary Policy Report "the transmission of monetary policy actions to general financial conditions in many economies is notoriously slow. In Trinidad and Tobago, it has been estimated that a change in the Repo rate can take about 12 to 18 months to fully pass through. In the short run nonetheless, the Repo rate acts as a signal to economic agents as to where the Central Bank believes interest rates should be".

This may contribute to the response of PSC to a shock to GDP (Chart 5), which shows an immediate increase in PSC followed by a decline over the longer-term. On the other hand, a shock to REPO results in a lagged decline[35] in PSC over the medium-term, while PSC rebounds over the longer-term as market players realign to the rate change (Chart 5).

An analysis of the impulse responses of the various categories of private sector credit assesses the response of business lending and consumer lending to domestic macroeconomic conditions (Charts 6 and 7). Business sentiment may be influenced by external financial stresses as this can delay borrowing for investment by the business community. Business and Consumer lending respond with a lag to a one standard deviation shock to the Repo rate, as mentioned previously, research suggests a 12 to 18-month lag for Repo changes to fully transmit, the model suggests a decline in consumer and business lending from the fourth quarter, with the decline in business lending more pronounced. Additionally, a one standard deviation shock to the WALR results in a falloff in consumer lending with the declines abating in the medium-term. On the other hand, business lending was less responsive to a shock to the WALR and concessionary lending practices by banks may explain the response of business lending. Other domestic factors such as the unemployment rate is expected to have a greater impact on consumer lending. The correlation matrix in Appendix Table 6 shows a strong negative correlation between the unemployment rate (UNEMP) and consumer lending. Additionally, a one standard deviation shock to the unemployment rate results in a sharp fall in consumer lending by the first period. In the long-run consumer lending has an overall downward trend following a shock to the unemployment rate (Chart 7).

The system must be evaluated as a whole to see the direct and indirect effects of external stresses, even though analysing the effects of single shocks on PSC provides useful information. Since higher prices in the US may increase import spending in Trinidad and Tobago, impulses to the FFR intended to mitigate price increases in the US could transmit to ease the local price level. Additionally, the US's contractionary monetary policy would likely have an impact on its own GDP (US GDP), which will result in a decline in imports from Trinidad and Tobago, since the US is Trinidad's major trading partner. The latter adversely impacts productive capacity and domestic investment, eventually leading to a decline in Trinidad and Tobago's GDP over the long-term (Chart 4). The monetary authorities, charged with balancing the domestic macroeconomic fundamentals and the external pressures, must decide on the most appropriate policy action to address the fragilities that arise. If the domestic macroeconomy is in recovery from a crisis such as the GFC or the recent COVID-19 health crisis, authorities may take a more accommodative stance to facilitate the rebound.

A more thorough examination of the foreign currency borrowing was conducted due to the significance of external volatility for this portion of commercial bank private sector credit. Foreign currency credit accounts for approximately 6.1 per cent ($4.1 billion) of all private sector credit lending by commercial banks, with foreign currency business loans accounting for about 87.8 per cent ($3.6 billion) of total foreign currency credit by March 2023. The US dollar will gain strength relative to other currencies as the FFR rises as investors continue to seek higher yields. Although Trinidad and Tobago has a managed float and depreciation pressures may not be felt, domestic enterprises' ability to compete internationally could be affected. Lacoviello and Navarro 2018 suggest that a tightening of the FFR reduces growth in emerging markets and advanced economies, this is reflected in the inverse correlation between the FFR and GDP (-0.19) Table 1. The impulse response suggests a one-time shock to the FFR, results in an immediate increase in the weighted average lending rate on foreign currency loans and an instantaneous decline in foreign currency business loans - as banks may opt to increase investments in US securities thereby reducing foreign currency business loans (Appendix Chart 1).

Conclusion and Policy Recommendations

Commercial bank credit plays a vital role in the macroeconomic environment of Trinidad and Tobago. Credit stimulates the economy by enabling production, employment, and facilitates demand for goods and services. It is imperative to analyse the factors that influence commercial bank lending. Hence, this research looks at external financial shocks and the effect on commercial bank private sector lending. The analysis used a structural vector autoregressive (SVAR) model that was predicated on allowing the domestic variables to be influenced by the foreign financial stress factors without the reverse. The Federal Funds Rate (FFR), Chicago Board Options Exchange Volatility Index (VIX), and a regional financial conditions index (RFCI) were identified as external financial shock factors.

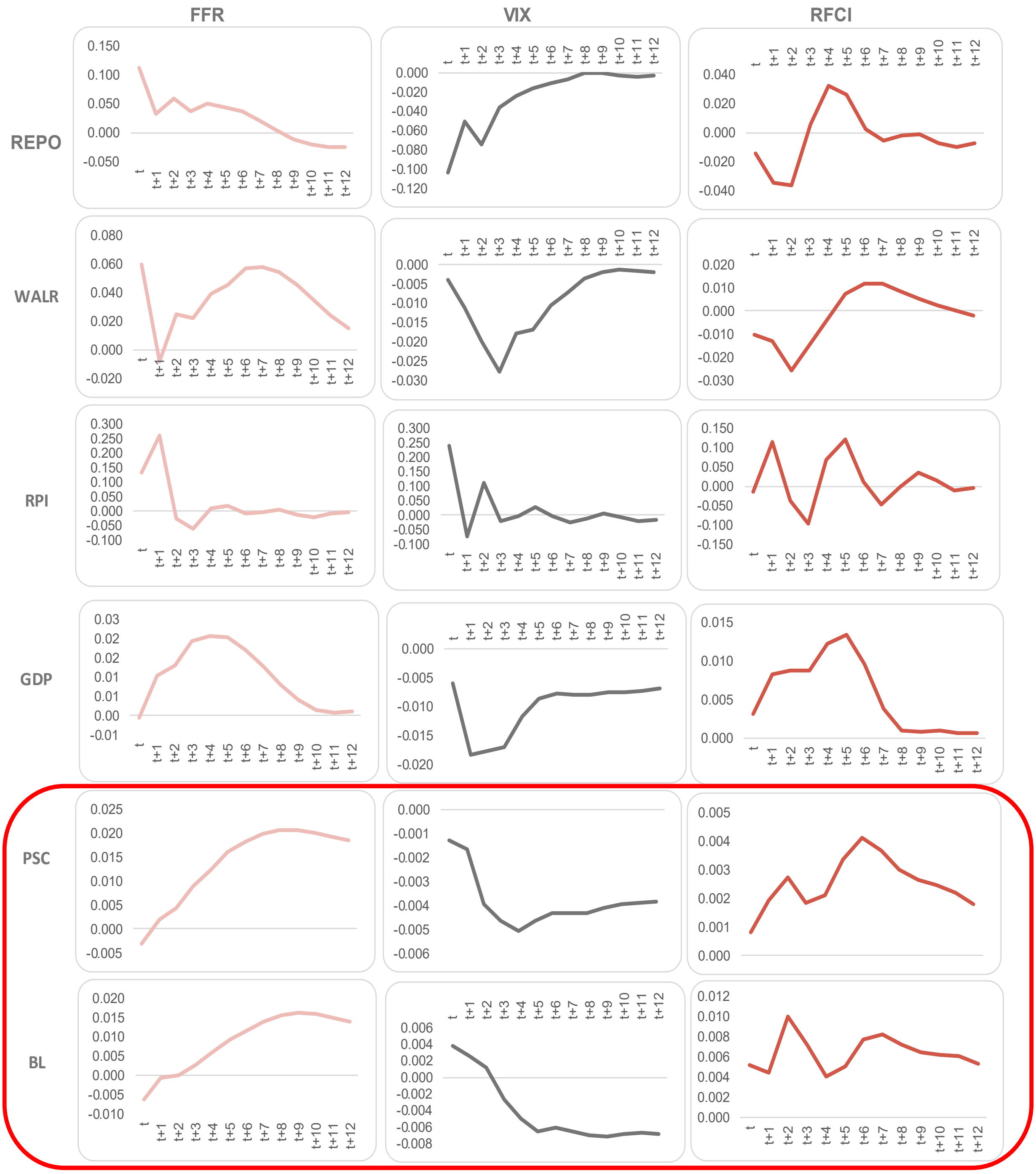
The results of the study suggest that domestic private sector credit (PSC) is less susceptible to direct changes in external financial shock indicators. However, specific components of overall commercial bank PSC are more sensitive to external financial fragilities; in particular, foreign currency business lending and lending for investment purposes were more reactive to external financial pressures. One recommendation is that monetary authorities pay close attention to the effects of external pressures on the business sector specifically. This can be done through surveying business sentiment regarding domestic and external financial conditions. In the current environment, the business community could require further support from policymakers, particularly regarding borrowing in foreign currency, to aid the expansion in the economy's productive potential. Policymakers can aim to assist banks in channelling productive lending to businesses by reassessing regulatory requirements for Small and Medium Enterprise (SME) lending (Garcia-Singh 2022). More importantly, the model emphasised the importance of domestic monetary policy in response to external forces, which is critical in deciding the course of an economic recovery.

Isolating the effects external financial stress indicators have on commercial bank private sector credit must be considered in the context of macroeconomic fundamentals. While external financial stress may not directly affect PSC, the indirect impact is plausible. External financial stress in the form of FFR hikes could impact capital outflows and increase debt financing, while increased financial volatility among regional trading partners will likely affect domestic markets. Another recommendation is that a regional financial conditions index be continuously updated and monitored to alert the monetary authority to any potential regional financial fragilities that may impact Trinidad and Tobago's corporate lending. This would make it easier to evaluate external pressures on regional trading partners and foresee the consequences of shocks.

The Central Bank is charged with assessing the domestic and external macroeconomic condition and remains committed to balancing the fallout from external financial stresses while supporting the domestic recovery.

CHART 4

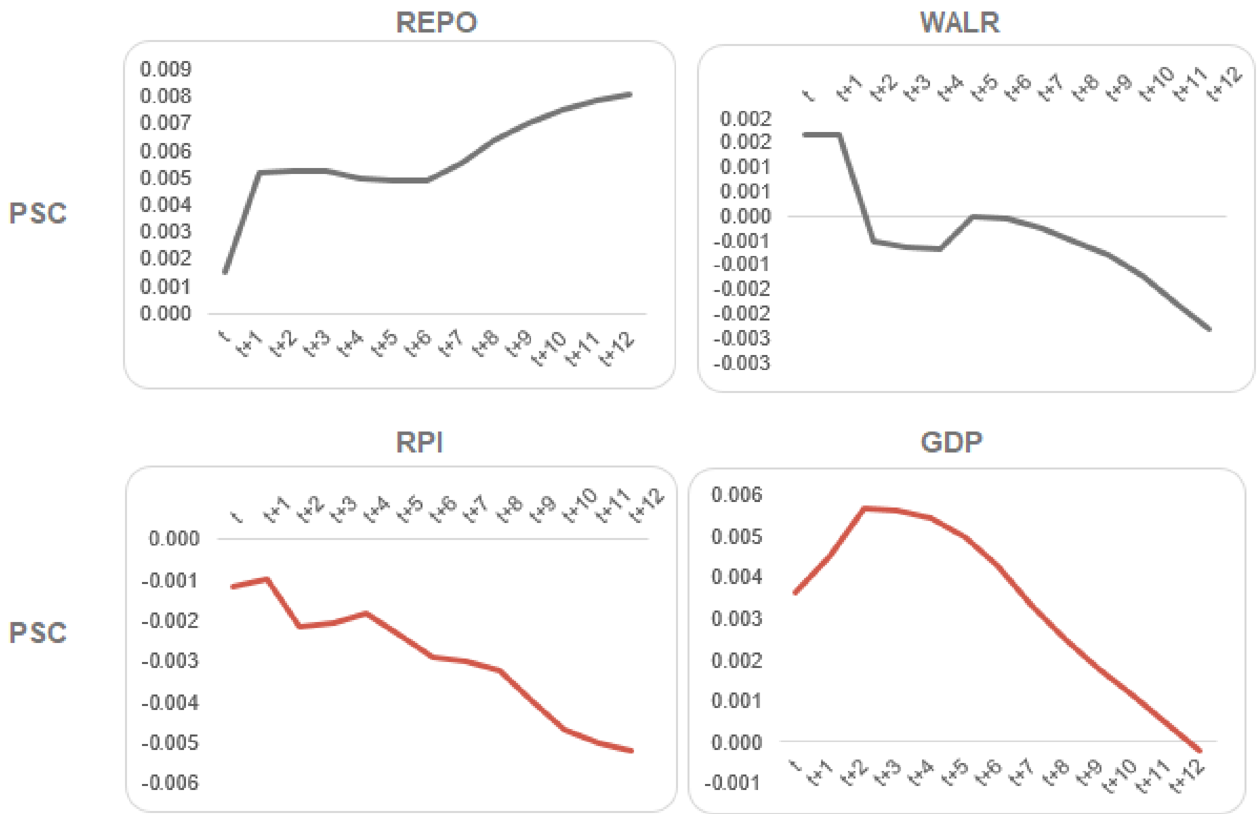
Impulse Response of Domestic Variables (REPO, WALR, RPI, GDP, PSC and BL) to External Variables (FFR, VIX and RFCI)



Source: Stata 15

CHART 5

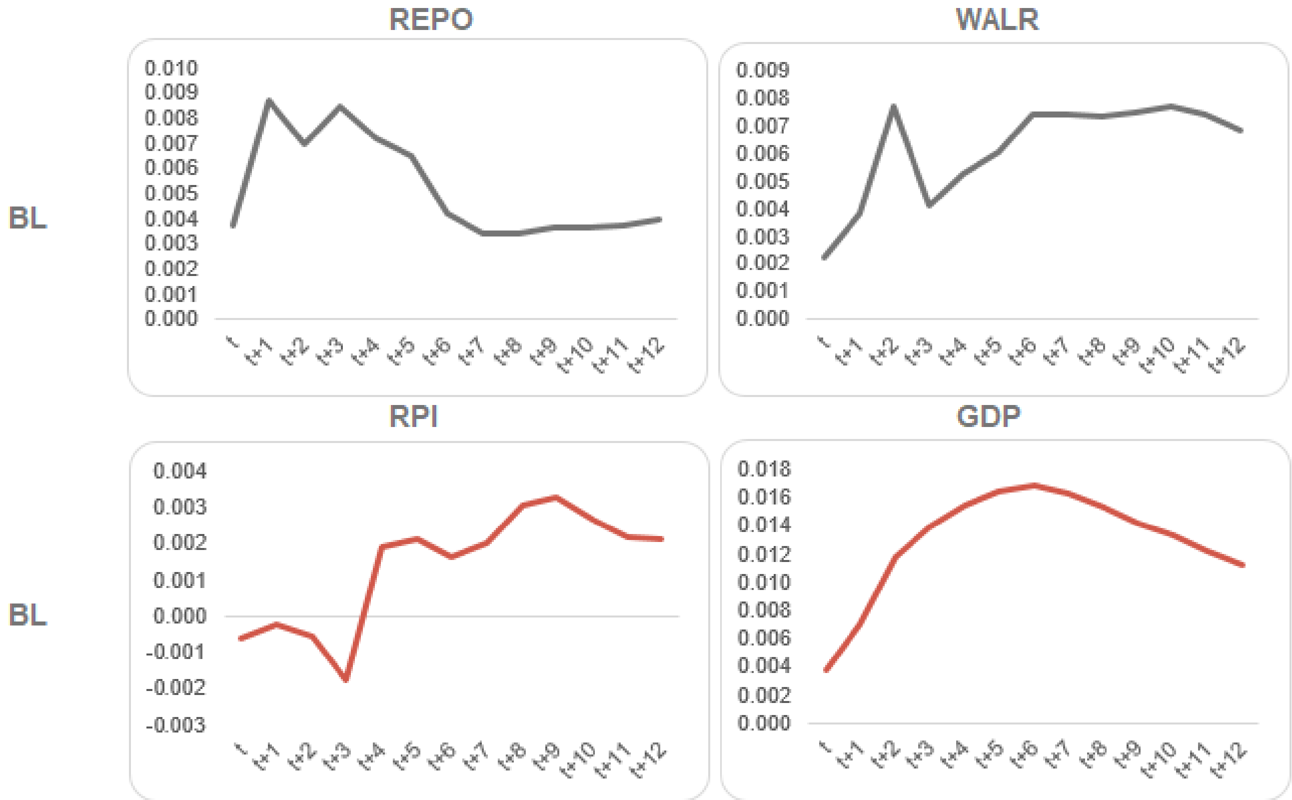
Impulse Response of Private Sector Credit (PSC) to Domestic Variables (REPO, WALR, RPI and GDP)



Source: Stata 15

CHART 6

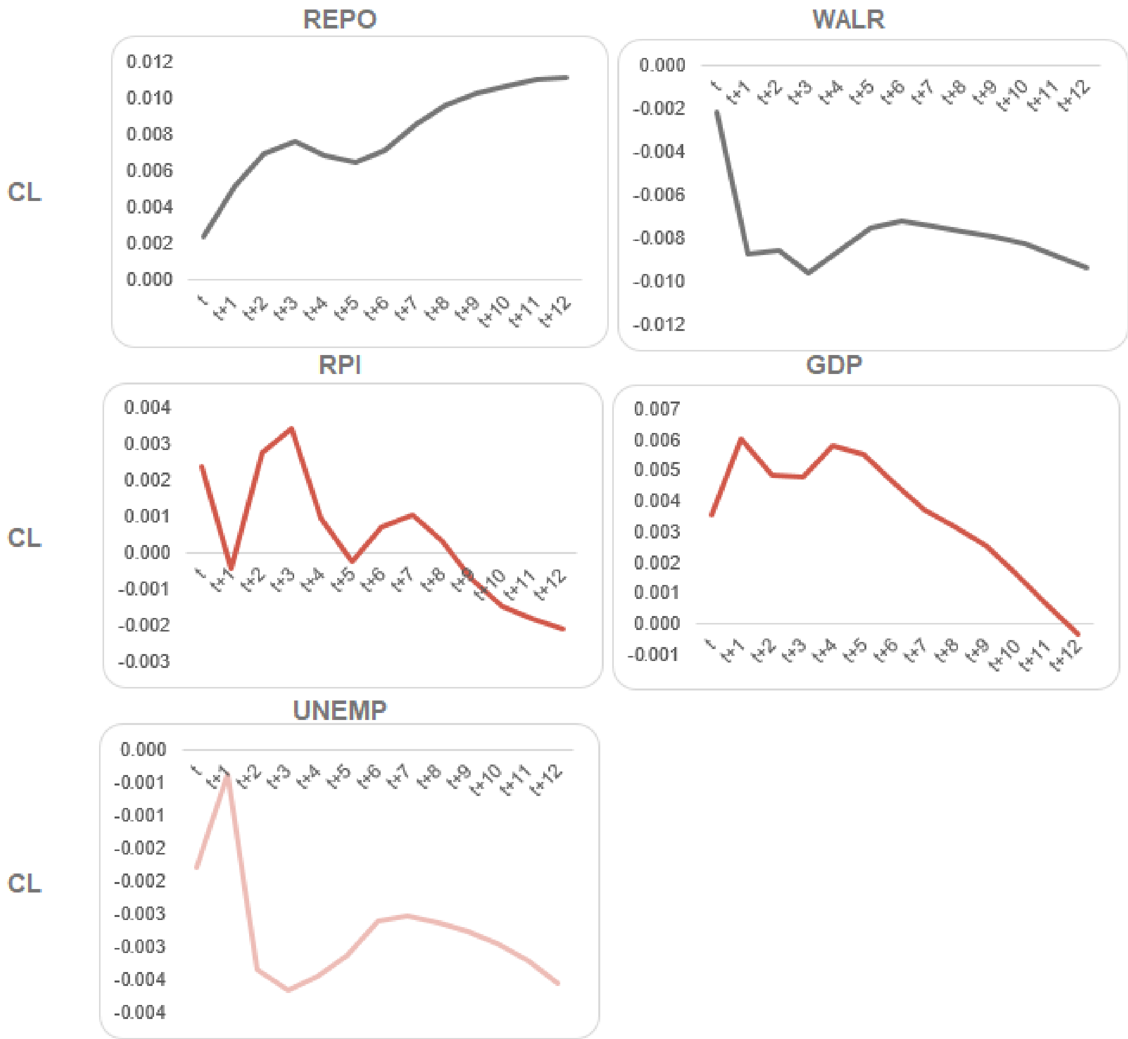
Impulse Response of Business Lending (BL) to Domestic Variables (REPO, WALR, RPI, GDP)



Source: Stata 15

CHART 7

Impulse Response of Consumer Lending (CL) to Domestic Variables
(REPO, WALR, RPI, GDP and UNEMP)



Source: Stata 15

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Appendix

Appendix Table 1: Data Frequency and Treatment

Data	Frequency	Treatment
Federal Funds Rate (FFR)	Daily	-
Volatility Index (VIX)	Daily	-
Reginal Financial Conditions Index (RFCI)	Annually	Interpolation
Trinidad and Tobago Financial Conditions Index (TTFCI)	Quarterly	-
Repurchase Rate (REPO)	Quarterly	-
Weighted Average Lending Rate on TT Dollar Denominated Loans (WALR)	Quarterly	-
Weighted Average Lending Rate on Foreign Currency Denominated Laons (WALRFC)	Monthly	-
Retail Price Index (RPI)	Annually/Quarterly	Interpolation[36]
Nominal Gross Domestic Product (GDP)	Quarterly	-
Unemployment Rate (UNEMP)	Quarterly	-
Foreign Currency Business Loans (FXBL)	Monthly	-
Private Sector Credit (PSC)	Monthly	-

36 Interpolation methods are used to convert low frequency data in this case annual data into higher frequency data (quarterly). For this study the preferred choice of interpolation was the quadratic-match sum method as this approach is less sensitive to outliers (Grossman and Mack 2014).

Appendix Table 2: Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
FFR	82	1.37	1.65	0.04	5.34
VIX	82	19.27	8.87	0.00	53.54
RFCI	82	0.39	0.15	0.21	0.70
TTFCI	82	0.00	0.70	-1.30	3.73
REPO	82	4.84	1.71	2.75	8.75
WALR(TT)	82	8.98	1.50	6.70	12.46
WALR(FC)	82	6.41	1.04	4.85	8.43
RPI	82	84.14	24.92	43.40	123.20
GDP	82	10.45	0.27	9.65	10.80
UNEMP	82	5.46	1.92	3.10	11.00
CL (LOG)	82	9.42	0.36	8.55	9.87
BL (LOG)	82	9.62	0.29	8.82	9.88
CREDIT (LOG)	82	6.41	0.69	5.11	7.63
FXBL (LOG)	82	8.26	0.19	7.61	8.57
PSC (LOG)	82	10.59	0.42	9.54	11.10

Appendix Table 3: Data Transformation[37]

Variable	Stationary	First Difference = Stationary
FFR	x	-
VIX	✓	-
RFCI	x	✓
TTFCI	✓	-
WALR	x	✓
RPI	x	✓
GDP	✓	-
UNEMP	x	✓
REPO	x	✓
PSC	✓	-

Note: ✓means the series is stationary, while x means the series is non-stationary.

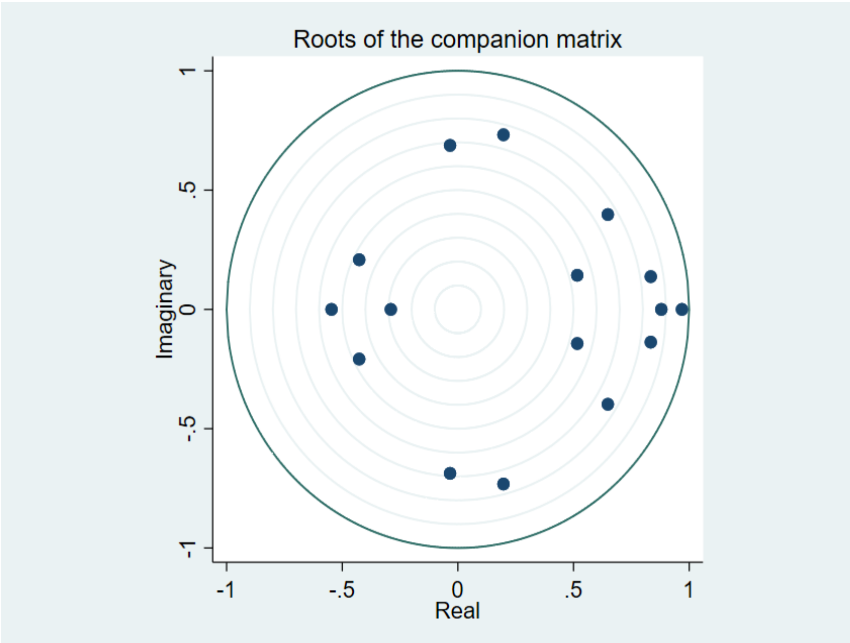
Appendix Table 4: Lagrange-Multiplier Test

Lag	chi^2	df	Prob > chi2
1	74.896	64	0.1657
2	72.509	64	0.2179
3	56.491	64	0.7363
4	69.767	64	0.2899

Source: Stata 15
HO: no autocorrelation at lag order

37 The Augmented Dickey-Fuller Stationarity test was employed.

Appendix Figure 1: Stability Graph for Underlying VAR



Source: Stata 15

Appendix Table 5: Correlation Matrix of External and Internal Variables with Credit (Investments and Discount Loans)

	FFR	VIX	RFCI	TTFCI	REPO	WALR	RPI	GDP	CREDIT
FFR	1.00								
VIX	-0.23	1.00							
RFCI	0.74	-0.16	1.00						
TTFCI	0.16	0.22	0.02	1.00					
REPO	0.58	0.15	0.56	0.31	1.00				
WALR	0.13	0.26	0.39	0.21	0.64	1.00			
RPI	-0.36	-0.01	-0.75	-0.07	-0.57	-0.81	1.00		
GDP	-0.19	0.08	-0.63	0.06	-0.32	-0.52	0.75	1.00	
CREDIT	0.33	0.21	0.56	0.17	0.70	0.80	-0.81	-0.36	1.00

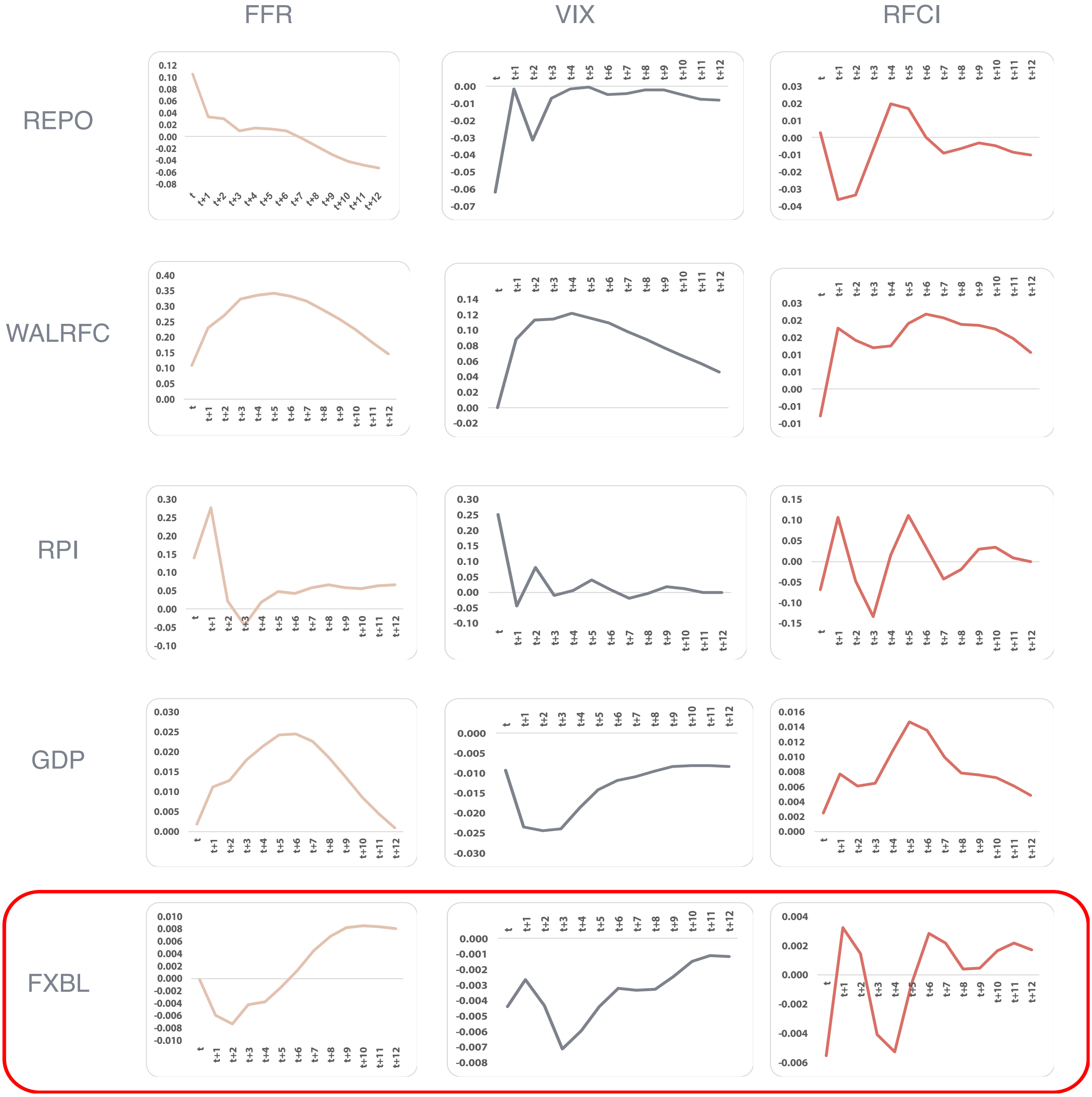
Source: Stata 15

Appendix Table 6: Correlation Matrix of External and Internal Variables with Consumer Loans

	FFR	VIX	RFCI	TTFCI	REPO	WALR	RPI	GDP	UNEMP	CL
FFR	1.00									
VIX	-0.23	1.00								
RFCI	0.74	-0.16	1.00							
TTFCI	0.16	0.22	0.02	1.00						
REPO	0.58	0.15	0.56	0.31	1.00					
WALR	0.13	0.26	0.39	0.21	0.64	1.00				
RPI	-0.36	-0.01	-0.75	-0.07	-0.57	-0.81	1.00			
GDP	-0.19	0.08	-0.63	0.06	-0.32	-0.52	0.75	1.00		
UNEMP	0.24	0.02	0.64	-0.07	0.20	0.47	-0.70	-0.83	1.00	
CL	-0.20	0.09	-0.64	0.05	-0.33	-0.72	0.95	0.74	-0.70	1.00

Source: Stata 15

Appendix Chart 1: Impulse Response of Domestic Variables (REPO, WALRFC[38], RPI, GDP, and FXBL[39]) to External Variables (FFR, VIX and RFCI)



Source: Stata 15

38 Weighted average lending rate on foreign currency loans.
39 Foreign currency business loans.

Central Bank of
Trinidad & Tobago