AMRO Country Report
ACR/23-01

AMRO Annual Consultation Report

Thailand – 2022

ASEAN+3 Macroeconomic Research Office (AMRO)

January 2023

Acknowledgments

1. This Annual Consultation Report on Thailand has been prepared in accordance with the functions of AMRO to monitor and assess the macroeconomic status and financial soundness of its members; identify relevant risks and vulnerabilities; report these to member authorities; and if requested, assist them in mitigating these risks through the timely formulation of policy recommendations. This is being done in accordance with Article 3 (a) and (b) of the AMRO Agreement.
2. This Report is drafted on the basis of AMRO's Annual Consultation Visit to Thailand from 18 August to 1 September 2022 (Article 5 (b) of the AMRO Agreement). The AMRO Mission team was headed by Dr Sumio Ishikawa, Group Head and Lead Economist. Members included Mr Ming Han (Justin) Lim (Desk Economist), Dr Tanyasorn Ekapirak (Back-up Economist), Ms Marthe Hinojales (Economist), Dr Andriansyah (Fiscal Specialist) and Mr Hoai Viet Le[1] (Associate). AMRO Director Dr Kouqing Li and Chief Economist Dr Hoe Ee Khor also participated in key policy meetings with the authorities. This AMRO Annual Consultation Report on Thailand for 2022 was peer reviewed by Dr Jae Young Lee, Group Head and Lead Economist, and Ms Wanwisa (May) Vorranikulkij, Senior Economist, and approved by Dr Hoe Ee Khor, AMRO Chief Economist.
3. The analysis in this Report is based on information available up to October 31, 2022.
4. By making any designation of or reference to a particular territory or geographical area, or by using the term "member" or "country" in this Report, AMRO does not intend to make any judgments as to the legal or other status of any territory or area.
5. On behalf of AMRO, the Mission team wishes to thank the Thai authorities for their comments on this Report, as well as their excellent meeting arrangements and hospitality during our visit.

[1] Up to December 2022.

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Executive Summary

1. Thailand's recovery has regained momentum on the back of strengthening domestic demand and a stronger rebound in international tourist arrivals. The Thai economy grew at a faster pace of 2.4 percent (yoy) in 1H 2022, after growing by 1.5 percent in 2021, underpinned by strengthening domestic demand and a stronger rebound in tourist arrivals. Overall, GDP is expected to expand by 3.2 percent in 2022 and 4.8 percent in 2023.

2. Inflation rose sharply due to the surge in global oil and commodity prices. Headline inflation is projected to rise to 6.2 percent in 2022 from 1.2 percent in 2021 due to the surge in global oil and commodity prices, as well as from the higher cost pass-through to consumers as broad-based diesel and cooking gas subsidies, as well as electricity tariff discounts are rolled back.

3. The external position remains strong given ample reserve buffers, notwithstanding a weakening current account. Despite the higher tourism earnings, the current account deficit widened further in H1 2022 due to the soaring energy import prices. Gross international reserves declined but remain high, sufficient to cover more than 2.5 times the short-term external debt. Depreciation pressure on the Thai baht as a result of the strengthening U.S. dollar amidst tightening U.S. monetary policy, was partly alleviated by the Bank of Thailand's (BOT) policy rate hikes.

4. The banking sector has weathered the pandemic well, and the BOT has expanded its credit relief measures and extended partial regulatory forbearance to support the enhanced debt restructuring efforts. New measures were rolled out to help liquidity-constrained SMEs and viable but indebted retail borrowers. The BOT also implemented long-term debt restructuring measures to reduce the debt burden of affected borrowers, supported by partial easing of regulations on banks that will last until end-2023. Commercial banks' capital buffers are strong, and banks continue setting aside provisions for NPLs to buffer against any further deterioration in asset quality. Despite the tighter financial conditions, corporate bond issuances and bank lending activities remain robust, in part due to the ample liquidity in the banking system.

5. More fiscal support was introduced to mitigate the impacts of the pandemic and alleviate the high cost of living. The authorities extended their co-payment and "We Travel Together" schemes to support consumer spending and businesses affected by the pandemic, while introducing additional fiscal measures to address the high cost of living for lower-income households by granting diesel and cooking gas subsidies, electricity discounts, and a lower diesel excise levy. Notwithstanding the higher fiscal spending and lower excise tax revenue, The budget deficit narrowed to 3.5 percent of GDP in FY2022 from 4.8 percent in FY2021, mainly due to stronger tax revenue collection.

6. Downside risks to the near-term outlook remain high. Risks to growth stem mainly from a protracted global slowdown, further supply chain disruptions, and the emergence of more virulent strains of COVID-19. A prolonged and sharper rise in U.S. interest rates would heighten the risk of capital outflows and exchange rate depreciation while further increasing borrowing costs. Inflation may stay elevated for longer due to the withdrawal of price subsidies and higher wages.

7. Thailand will need to address its long-term structural challenges. Government-linked institutions are bearing the high costs of providing the subsidies through their quasi-fiscal operations, which will increase total public debt. At the same time, the significant economic scars from the pandemic can be a drag on growth in the long run. Thailand will also need to address structural challenges stemming from a rapidly aging population, digital transformation and climate change.

8. Authorities should continue supporting vulnerable groups while accelerating efforts to drive Thailand's post-pandemic recovery. AMRO supports the tapering of subsidies while increasing support for lower-income earners during this period of heightened economic uncertainty. Continued government spending for public infrastructure investments should at the same time facilitate structural reforms which will also be crucial in helping Thailand accelerate its post-pandemic recovery and prevent further economic scarring. Greater efforts should be made to speed up the implementation of public infrastructure projects.

9. Fiscal consolidation focusing on revenue enhancement should be accelerated to rebuild fiscal space, while expenditure consolidation can be more gradual, complemented by effective allocation and management of public resources that will aid infrastructure development and structural reform. To rebuild fiscal space, AMRO supports the proposed tax measures; however, the authorities should also consider stepping up tax efforts by broadening the tax base, enhancing tax administration, adopting a carbon tax, and restoring the VAT rate from 7 percent to 10 percent gradually.

10. A further normalization of monetary policy is appropriate in tandem with the economic recovery. Monetary policy should be normalized given the risk of the elevated inflation becoming entrenched as the recovery gains momentum. Monetary policy normalization would also help rein in excessive buildup of leverage in the economy.

11. While BOT's financial measures have reduced the pandemic's scarring impacts on the economy, banks' loan restructuring activities need to be closely monitored. The BOT's sustainable and time-bound debt resolution measures are welcomed, in particular, an enhanced credit limit on retail borrowers and relaxed regulations on new long-term restructured loans. The loan restructuring activities of banks should be closely monitored to ensure that the restructuring is properly applied to affected borrowers.

12. Authorities are encouraged to remain vigilant over the high household debt burden. The strengthening of the debt management programs, including financial institutions' long-term debt restructuring and the BOT's debt clinic, and the authorities' efforts to continue raising financial literacy are welcomed. The authorities are also encouraged to establish a debt service ratio (DSR) framework to rein in excessive borrowing by households.

13. Ongoing implementation of the central bank's new foreign exchange ecosystem would facilitate Thailand's efforts in addressing structural issues in its FX market. Despite external headwinds, Thailand's strong external position has enabled the country to continue developing its domestic financial markets and facilitate residents' outward investments. AMRO supports the BOT's new FX ecosystem plan, which provides greater flexibility to domestic residents in conducting outward portfolio transactions and in managing their FX exposure.

14. Efforts to boost public investments should be accelerated, while financial digitalization can raise productivity and promote financial inclusion. To bolster Thailand's growth potential, key public infrastructure projects which were delayed by the pandemic should be swiftly implemented. Concerted efforts to improve the educational attainments and technical skills of Thai graduates, and a push to attract highly skilled foreign workers, are welcomed. AMRO supports the further development of four new economic zones, which will promote inclusive growth and deepen Thailand's trade and investment links with neighboring countries. Financial digitalization, together with safeguards and sound risk management practices, can promote a more efficient and resilient payment system while raising productivity.

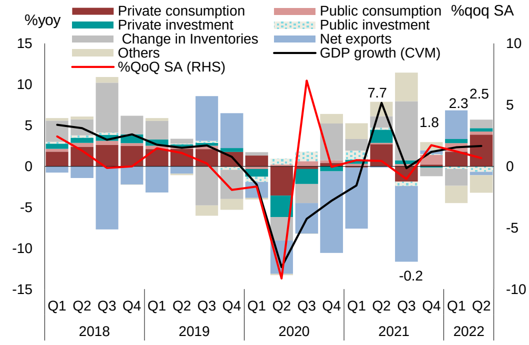
15. Targeted and well-communicated incentives, combined with coherent policy support, will accelerate Thailand's transition to a greener economy. Thailand's progress in implementing climate change policies and the introduction of the new Climate Change Act is commendable. To achieve its climate change goals, however, Thailand requires massive resources in technology and domestic technical expertise, with support from external partners.

A. Recent Developments and Outlook

A.1 Real Sector Developments and Outlook

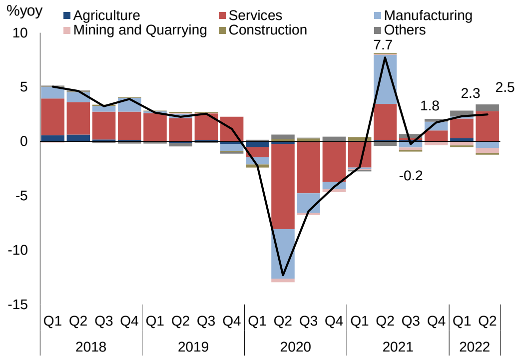
1. Thailand's economic recovery gained momentum in H1 2022 and is expected to recover more firmly through the rest of 2022 and in 2023. The Thai economy grew at a faster pace of 2.4 percent year on year in H1 2022, after growing by 1.5 percent in 2021 (Figure 1). The recovery was underpinned by strengthening domestic demand and a stronger rebound in tourist arrivals following the further relaxation of border restrictions in Thailand and other countries since end-2021. The faster reopening boosted recovery in the service sector, particularly accommodation and food services (Figure 2). On the demand side, private consumption grew strongly, supported by robust tourism spending, labor market recovery (Figure 3) and rising farm income. Private investment was also supported by improving business sentiment and continued expansion in manufacturing activities. However, the contribution of net exports to GDP growth is moderating as the growth of merchandise exports slowed while imports rose at a faster pace. Slow public investment disbursements in 2022 have weighed on construction activities. Overall, GDP is expected to expand by 3.2 percent in 2022 and 4.8 percent in 2023, driven mainly by a continued recovery in tourist arrivals and private consumption.

Figure 1. Contribution to Real GDP Growth: Demand Side



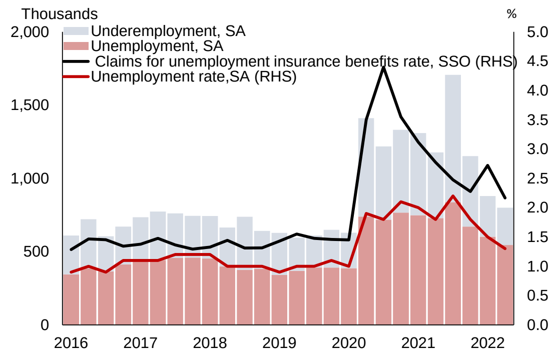
Source: National Economic and Social Development Council

Figure 2. Contribution to Real GDP Growth: Supply Side



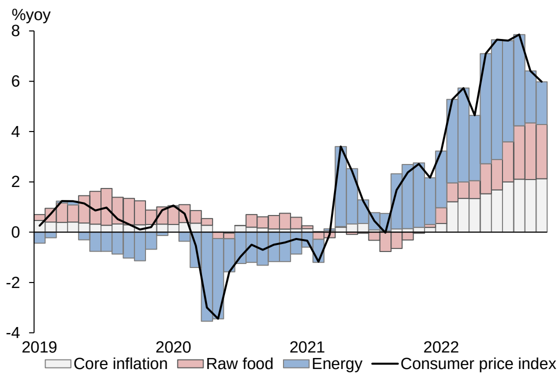
Source: National Economic and Social Development Council

Figure 3. Labor Market



Note: Claims for unemployment benefits rate refer to the percentage of the number of people claiming unemployment benefits divided by the number of people who contribute to the social security system (Section 33).
Source: National Statistics Office, Bank of Thailand, Ministry of Labor, AMRO staff calculations

Figure 4. Inflation



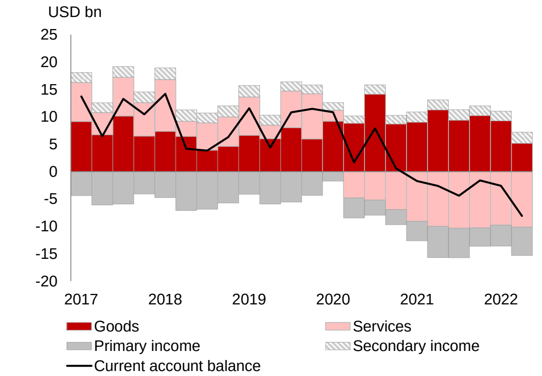
Source: Bureau of Trade and Economic Indices

2. Headline inflation rose sharply in 2022, while core inflation picked up. Headline inflation climbed to an average of 6.2 percent in the first ten months of 2022 from 1.2 percent in 2021 due to the surge in global oil, pork and commodity prices (Figure 4). Meanwhile, core inflation increased to 2.3 percent in September 2022 year-to-date from 0.2 percent in 2021, reflecting mainly higher prices in the prepared and cooked food categories. Going forward, headline inflation is projected to remain high due to the higher cost pass through of the elevated global oil and commodity prices. Demand-pull inflationary pressures may start to materialize, in line with the stronger recovery in H2 2022 and 2023. Headline inflation is forecast to rise to 6.2 percent in 2022, which exceeds the upper bound of the Bank of Thailand's (BOT) target range, while core inflation is expected to rise steadily to 2.5 percent in the same year.

A.2 External Sector and Balance of Payments

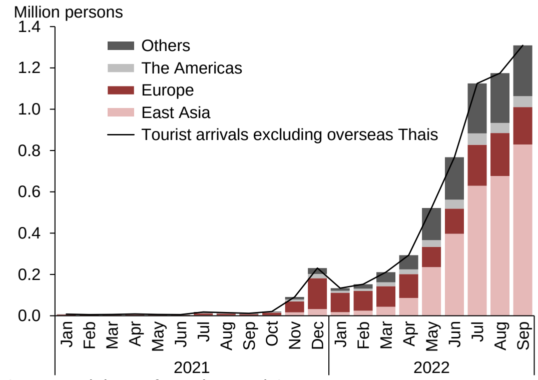
3. The current account deficit widened in H1 2022, but is expected to improve from the second half onward on the back of stronger international tourism activities. Thailand's current account deficit widened to USD10.7 billion (-4.3 percent of GDP) in H1 2022 from USD6.0 billion in H2 2021, reflecting a smaller trade surplus due to strong imports, and notwithstanding an improvement in the tourism services account (Figure 5). The trade surplus narrowed in H1 2022 as imports continued to grow faster than exports, driven by soaring energy, commodity and fertilizer prices. Goods exports were negatively affected as supply chains were further disrupted by chip shortages, rising shipping costs, and the repeated lockdowns of major cities in China since March 2022. Thailand received 5.7 million tourists in the first nine months of 2022 and could reach more than 8.0 million for the whole year, and 24.0 million in 2023, thereby contributing to a narrower services trade deficit going forward (Figure 6).

Figure 5. Current Account



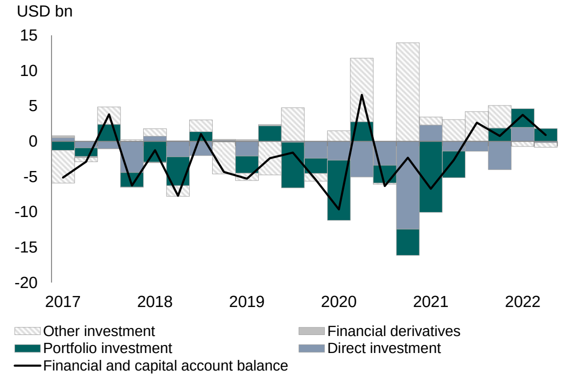
Source: BOT

Figure 6. International Tourist Arrivals



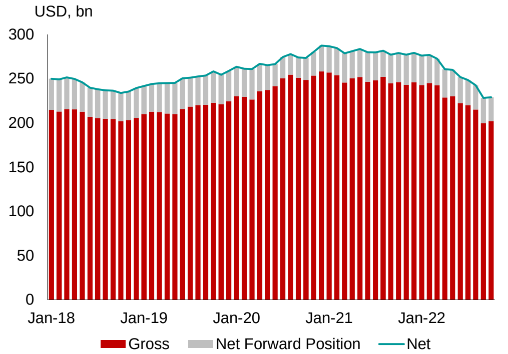
Source: Ministry of Tourism and Sports

Figure 7. Financial Account



Source: BOT

Figure 8. International Reserves

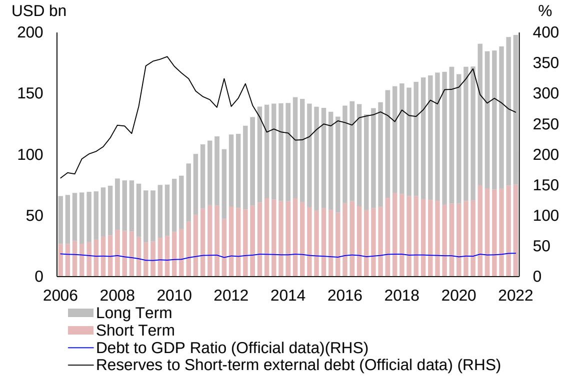


Source: BOT

4. The financial account deficit narrowed sharply in 2021 and is expected to turn into a surplus in 2022. The financial account turned positive in H2 2021 and remained in surplus in H1 2022 as market sentiments improved, albeit easing slightly (Figure 7). A large capital outflow was experienced in March 2022 when the war in Ukraine started; nevertheless, non-resident portfolio investment net inflows rose by USD4.7 billion in H1 2022, driven by a rebound in investor confidence as Thailand's economic prospects improved. Meanwhile, the higher foreign direct investments into Thailand in Q1 2022 have offset the continued steady outward direct investments by residents. The strengthening recovery is expected to support higher foreign direct and portfolio investment inflows in 2022, pushing the financial account into a surplus amidst still-subdued outward investments by residents.

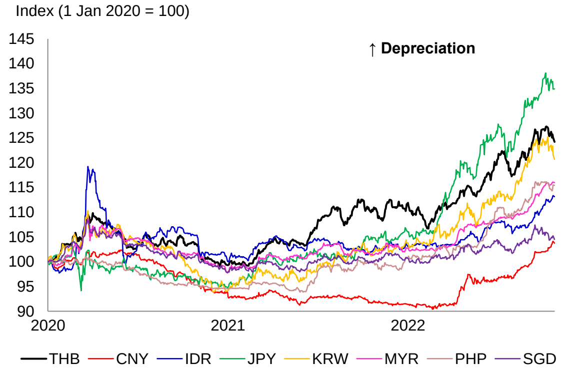
5. The external position remains strong given the ample reserve buffers, despite the weakening in the current account. By October 2022, gross international reserves had declined to USD201.9 billion from USD246.0 billion at end-2021, in part due to valuation effects from the strong U.S. dollar (Figure 8). The net forward position remained stable at USD26.8 billion as of October 2022. Nonetheless, the reserves are still at a high level and are sufficient to cover more than 2.4 times the country's short-term external debt (Figure 9). On the other hand, gross external debt remained low at 37.9 percent of GDP as of June 2022, although it had edged up from 35.6 percent of GDP in March 2021. Since the start of 2022, the Thai baht had depreciated by 14.1 percent at end-Oct on the back of the strengthening U.S. dollar amidst tightening U.S. monetary policy, though the depreciation pressure eased following the BOT's policy rate hikes (Figure 10).

Figure 9. External Debt



Source: BOT

Figure 10. Regional Exchange Rates



Source: Haver; national authorities

A.3 Monetary Conditions and Financial Sector

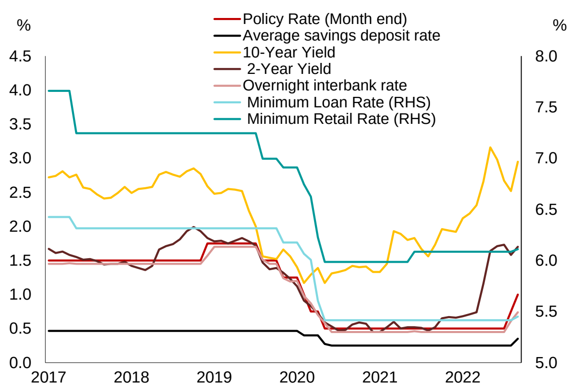
6. Financial conditions have tightened but remain supportive of domestic financing needs. Reflecting the significant tightening of global financial conditions, the yields of Thai Treasury bills and government bonds rose sharply in 2022 (Figure 11). Domestic financing conditions have also tightened, with the overnight interbank rate rising slightly since August in tandem with the BOT's policy rate hikes. Notwithstanding the tighter financial conditions, the corporate bond market expanded at a faster pace of 10.7 percent (yoy) in Q3 2022 from 10.4 percent in 2021. Moreover, the well-diversified domestic bond market remains sufficiently deep to absorb the government bond issuances, with other depository corporations continuing to play a larger role in 2022 (Figure 12).

7. Recognizing the prolonged impacts of the pandemic, BOT has expanded its credit relief measures and further extended partial[2] regulatory relaxation in support of the enhanced debt restructuring efforts. Building upon the existing financial rehabilitation

[2] The restructured debts are classified as either blue or orange scheme. The orange scheme only entails extending the principal or interest repayment period, whereas restructured loans under the blue scheme aim to further reduce the debt burden of borrowers and help them during the difficult period, and are thus subject to less stringent regulations on the asset classification and provisioning requirements. Borrowers under this scheme are accorded additional debt restructuring support such as interest rate adjustments, and principal or interest rate haircut. Borrowers that are part of the asset warehousing scheme are also considered to fall under the blue scheme.

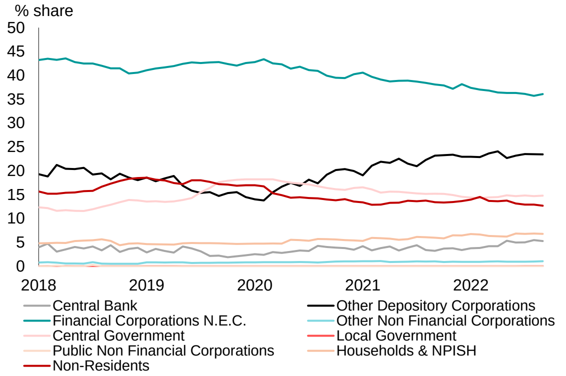
measures[3], the authorities and banks have implemented new measures[4] to help liquidity-constrained small and medium enterprises (SMEs) obtain new loans and to support viable but indebted retail borrowers, by temporarily increasing their borrowing limits on credit cards and personal loans and lowering the credit card's minimum payment. The BOT also implemented long-term debt restructuring measures to alleviate the debt burden in line with the reduced income of borrowers. To accelerate such preemptive long-term debt restructuring, the BOT temporarily eased some regulations for banks until end-2023[5]. The asset warehousing scheme, started in April 2021, has also seen a good take-up rate, with the value of transferred assets amounting to more than half of the total facility as of August 2022.

Figure 11. Interest Rates and Bond Yields



Source: BOT

Figure 12. Government Bond and Treasury Bond Holders



Source: BOT

8. Bank lending rose, driven by higher corporate loans. Overall loans at commercial banks increased 5.3 percent (yoy) in Q3 2022, driven by higher corporate loans, after growth of 6.5 percent in 2021 (Figure 13). After a long period of credit crunch during 2016-2020, loans to SMEs continued to expand for four consecutive quarters since Q2 2021, primarily because of special loan facilities (soft loan and rehabilitation credit schemes). However, in Q3 2022, SME loans slightly contracted due to the scheduled repayment of soft loan facility. Consumer loans grew at a slower pace as mortgage loan growth slowed while auto loans remained stable (Figure 14). Credit card loans expanded in tandem with the stronger private consumption. Credit-card loan growth continued an upward trend due to lower household incomes and higher costs of living, and partly resulting from last year's low base of credit card spending during lockdown.

9. Commercial banks' capital buffer is strong and liquidity remains ample. The BIS capital adequacy ratio (CAR) and Common Equity Tier 1 ratio remained high at 19.2 percent and 15.8 percent, respectively, as of Q3 2022 (Figure 15). The liquidity coverage ratio also continued to be high, at 186.5 percent, while the loan-to-deposit ratio increased as loans grew at a faster pace than deposits. As a result of the financial assistance measures and banks' loan portfolio management, non-performing loans (NPLs) ratio remained stable at 2.8 percent as of Q3 2022, broadly unchanged from 3.1 percent in 2020, while the NPL ratio of SME loans

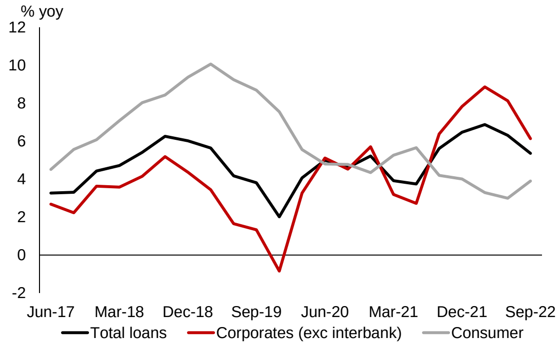
[3] The financial rehabilitation measures, launched in April 2021, comprise an expanded special loan facility for SMEs with additional support from credit guarantee schemes, and the asset warehousing program, which allows debtors to repurchase eligible collateral from financial institutions at an agreed price. https://www.bot.or.th/English/AboutBOT/Activities/Pages/JointPress_COVID19.aspx

[4] In September 2021, the BOT issued additional measures which were designed to maintain and expand existing liquidity support for SMEs and retail debtors, and to make the existing debt restructuring facilities more sustainable. https://www.bot.or.th/English/AboutBOT/Activities/Pages/JointPress_03092021.aspx

[5] The regulations that were temporarily relaxed are the asset classification and provisioning criteria for affected borrowers.

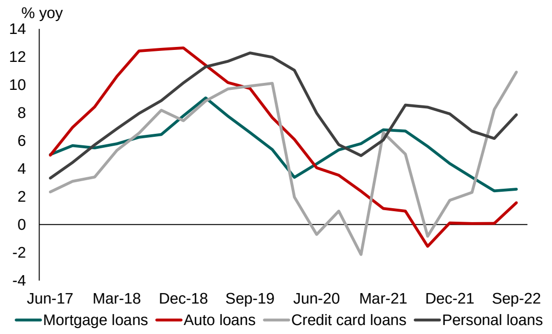
remained elevated at 6.8 percent (Figure 16). Nevertheless, banks have continued to increase NPL provisions, albeit at a slower pace, in keeping with the ongoing debt restructuring efforts.

Figure 13. Commercial Banks' Loan Growth



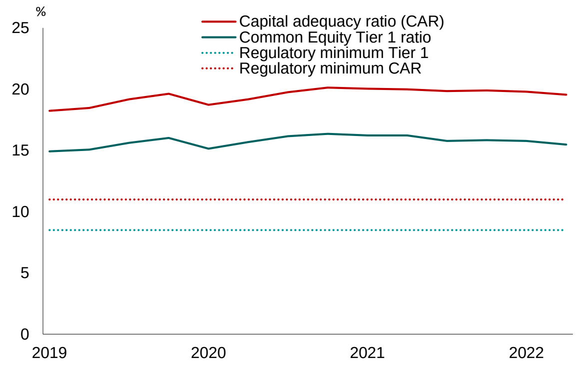
Source: BOT

Figure 14. Consumer Loan Growth



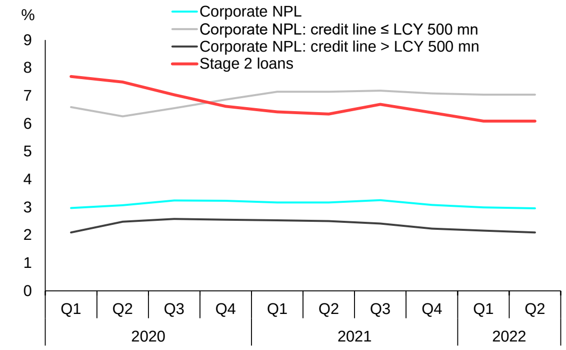
Source: BOT

Figure 15. Capital Adequacy



Source: BOT

Figure 16. Loan Quality



Note: The new accounting regulations (TFRS 9), introduced in Q1 2020, define stage 2 loans as those with significantly more credit risk (SICR), which have a wider coverage than the previously used Special Mention (SM) loan definition. NPL refers to Stage 3 loans.
Source: BOT

10. **Lending activities at specialized financial institutions (SFIs) grew steadily and capital buffers remained stable.** During the pandemic, financial support provided through SFIs was mainly in the form of debt moratoriums and low-interest-rate loans for lower-income retail borrowers and SMEs. Loans from SFIs grew at 5.7 percent in Q1 2022. Overall asset quality is still manageable with an NPL ratio of 4.0 percent. Reflecting the higher credit risk of SFI loans, the share of SFI loans under assistance remained high at 17.2 percent as of May, which is way above the 12.2 percent recorded at commercial banks. Capital adequacy ratio of SFIs remained stable at 14.9 percent as of Q2 2022, above the minimum 8.5-percent regulatory level.

11. **Thailand is moving toward a cashless society, which is evident in the rapid expansion of digital payment**. The National e-Payment Master Plan has created a foundation for continuous development of digital payment infrastructure and services. PromptPay and QR Payment, which started in 2017, have been vital in facilitating digital payments during the pandemic. By June 2022, PromptPay has registered 71.1 million users, up 22.1 percent (yoy), while transactions per day have risen sharply in both volume and value, recording 59.3 percent and 37.6 percent increases, respectively. Initiatives on cross-border payment have also been introduced to link businesses and individuals in Thailand with Singapore (in 2021) and several other countries.[6] On central bank digital currencies (CBDCs),

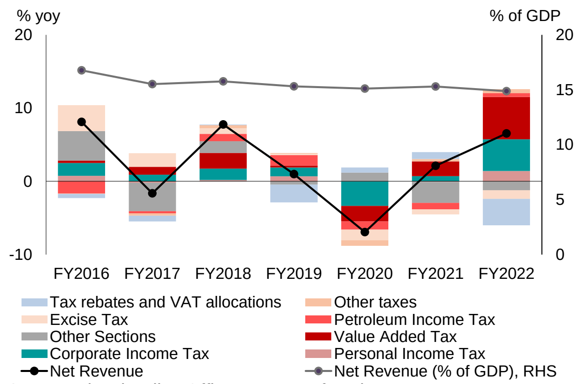
[6] Cross-border payment links were set up with Japan in 2018, Cambodia (2020), Vietnam (2021), Malaysia (2021), Indonesia (2021) and Singapore (2021).

among ASEAN countries Thailand is one of the leading economies with both retail and wholesale CBDC projects. Following the “proof of concept” of the Inthanon-Lionrock and mBridge wholesale CDBC projects, the BOT is also exploring the introduction of retail CBDC.

A.4 Fiscal Sector

12. Fiscal policy remains expansionary as the authorities continue rolling out fiscal support to mitigate the impacts of the pandemic and provide more support to counter the higher cost of living. The authorities rolled out phases 4 and 5 of the co-payment and “We Travel Together” schemes, totaling THB67.7 billion, to continue supporting consumer spending and businesses affected by the pandemic. As of 2 August 2022, the remaining 8.8 percent of THB500 billion emergency loan decrees is expected to be fully disbursed by the end of the first quarter of FY2023. The authorities have also introduced additional on-budget and off-budget measures totaling about THB85.0 billion to mitigate the high cost of living. For lower-income households, the cost-of-living measures include on-budget social assistance programs, such as increasing the cooking gas subsidy from THB45 to THB100 per welfare cardholder every three months for six months between April and September 2022. In addition, the government also rolled out quasi-fiscal operations by government-backed institutions such as the State Oil Fund, which the Cabinet has approved to subsidize half of any further increases of the diesel market price above the latest capped price of THB35 per liter.

Figure 17. Budget Revenue



Source: Fiscal Policy Office; Bureau of Budget

Figure 18. Budget Expenditure

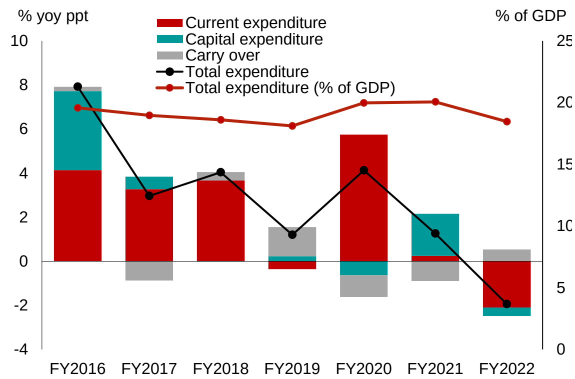
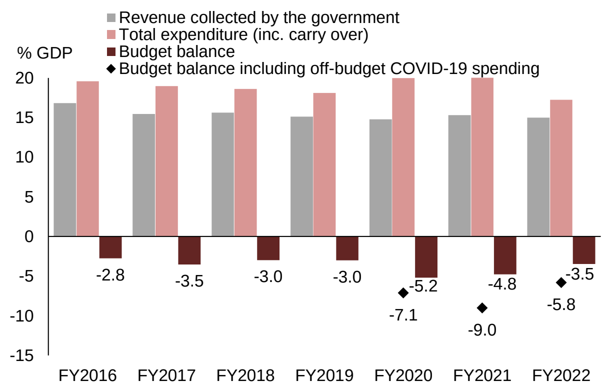
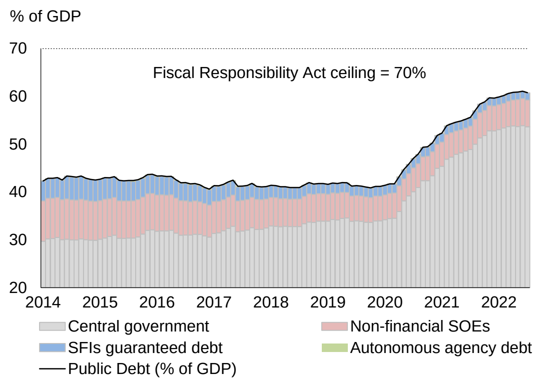


Figure 19. Fiscal Position



Source: Fiscal Policy Office; Bureau of Budget

Figure 20. Public Debt



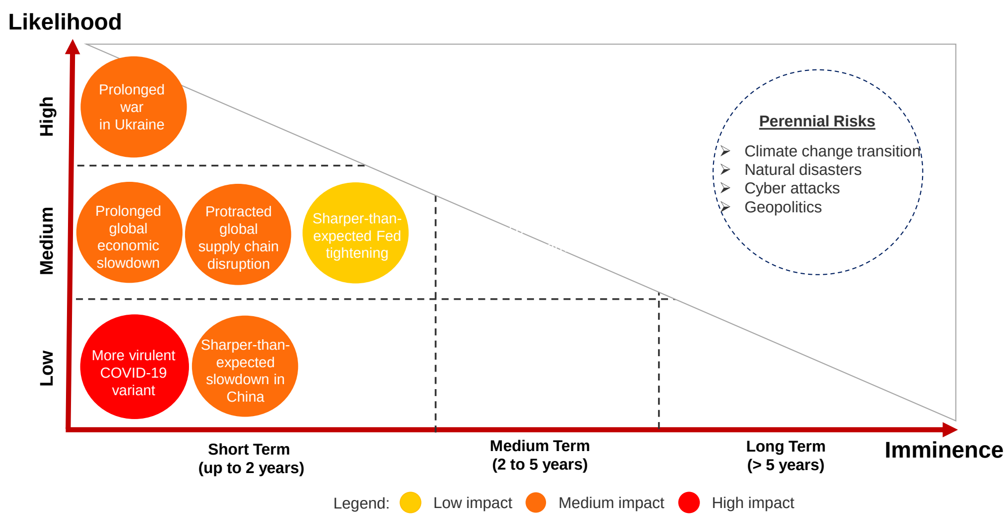
Source: Public Debt Management Office

13. Stronger tax revenue collection has offset the lower revenue from reduced diesel excise duty while supporting higher capital spending. In FY2022, net revenue collection rose by 6.5 percent (yoy) to 14.9 percent of GDP, boosted by higher-than-estimated corporate income taxes and value-added tax, in line with the economic recovery (Figure 17). Meanwhile, higher energy prices have driven a significant increase in petroleum income tax, but the reduced excise levy on diesel has led to less revenue collection. Total government expenditure fell by 1.5 percent (yoy) to 18.5 percent of GDP (Figure 18). The authorities disbursed capital expenditure more quickly to support the economic recovery.

14. The FY2022 budget deficit is projected to narrow, while public debt will continue increasing but remain below the 70 percent debt ceiling in the medium term. The budget deficit to narrow to 3.5 percent[7] of GDP in FY2022 from 4.8 percent in FY2021, mainly due to the stronger tax revenue collection (Figure 19). However, including the off-budget COVID-19 spending, the central government deficit is expected to reach 5.8 percent of GDP in FY2022, down from 9.0 percent in FY2021.[8] The FY2023 budget, with a deficit of 3.9 percent of GDP, has passed the final reading in parliament. Although public debt and debt service payments have increased further, the debt repayment and interest burden are still sustainable (Figure 20). Public debt is projected to reach 61.1 percent of GDP in FY2022 and increase further to 64.4 percent of GDP in FY2026. The public debt dynamics will be driven mainly by off-budget spending, at least until end-2022, and by the budgetary primary deficit and GDP growth.

B. Risks, Vulnerabilities and Challenges

Figure 21. Thailand Country Risk Map



Source: AMRO

15. Risks to the near-term outlook remain elevated, and Thailand's longer term growth prospects face multiple structural challenges (Figure 21). Downside risks to growth would stem mainly from a protracted global slowdown, further supply chain disruptions, and the emergence of more virulent strains of COVID-19. A prolonged and sharper rise in U.S. interest rates would heighten the risk of capital outflows, exchange rate depreciation, and higher borrowing costs. Inflation may stay elevated for a longer period due to the withdrawal of price subsidies and higher wages. In the medium term, the high subsidy costs of quasi-fiscal operations borne by the government-linked institutions will increase public debt. The significant economic scars from the pandemic can be a drag on growth in the long run.

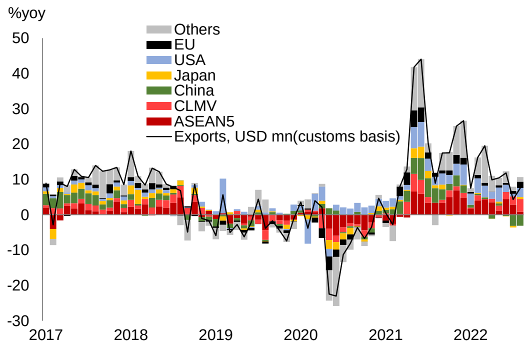
[7] AMRO has calculated that the budgetary balance according to GFSM 2014 - in which the principal repayment, purchase of equity, replenishment of Treasury account balance, and reimbursement of reserve funds are classified as financing - would be -3.0 percent of GDP in FY2022. Thailand's budget is based on a cash-based system.
[8] Using the fiscal cash balance and excluding extra-budgetary funds and the social security fund.

Thailand will also need to address structural challenges arising from its rapidly aging population, digital transformation and climate change.

B.1 Near-term Risks to the Macroeconomic Outlook

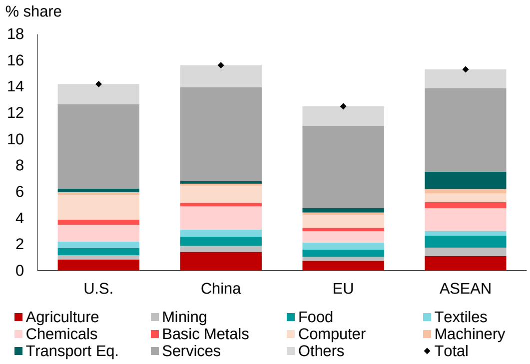
16. The emergence of new vaccine-resistant and transmissible strains of COVID-19 remains a key risk that could derail recovery. Notwithstanding Thailand's achievement of having fully vaccinated more than 75 percent of the population since early 2022, several Omicron sub-variants are reported to be more transmissible and capable of avoiding antibodies. Although the symptoms from these sub-variant infections have been mild, the potential emergence of a more virulent strain can overwhelm health care in various countries and lead to a reimposition of strict containment measures in Thailand and elsewhere. This would derail Thailand's economic recovery, further delaying the return of international tourists and amplifying Thailand's economic scars.

Figure 22. Goods Exports by Country



Source: Ministry of Commerce

Figure 23. Thailand's Share of Value-added in Exports



Source: 2021 OECD Trade in Value-Added (TiVA) database

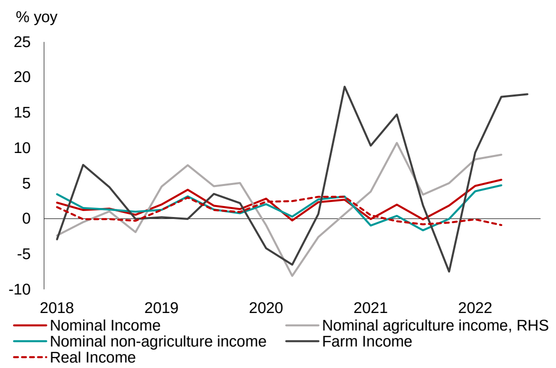
17. A prolonged global economic slowdown and further supply chain disruptions would weigh on Thailand's outlook. A sharp slowdown in the U.S. and EU due to the elevated energy prices and aggressive monetary policy tightening would lead to greater dampening of export demand and tourist arrivals from these countries (Figure 22). Thailand's goods exports would also be hit by a sharper-than-expected slowdown in mainland China due to the repeated lockdowns and weaker consumption. On the supply side, the global and regional supply chain disruptions resulting from the pandemic, the war in Ukraine and repeated lockdowns in key mainland Chinese cities would continue to disrupt the import of key inputs used to produce Thai manufacturing exports, particularly electronics and electrical equipment, and automotive. Nevertheless, the strong agricultural production and exports, and the robust exports growth to regional countries, which make up about 15 percent of value-added in Thai exports (Figure 23), have partly cushioned the impact of these external headwinds.

18. Inflation may stay elevated longer due to the withdrawal of price subsidies and higher wages. Although the prices of global oil and commodities have eased from their recent peaks, Thailand's inflation is still subject to further upside risks as the rolling back[9] of broad-based diesel and cooking gas subsidies and electricity discounts would contribute to higher cost pass-through to consumers (see Selected Issue 1: Impact of High Commodity Prices on Inflation and Public Debt). The rise in nominal incomes, which has gathered pace since the start of 2022, have risen above its longer-term average, led by farm income as a result of the surge in global commodity and food prices (Figure 24). As the labor market recovers further

[9] The cap on the diesel price has been progressively raised from THB30 per liter to THB35 since May 2022. The cooking gas price was increased from THB18.9 to THB24.9 per kg starting March 2022. The electricity fuel tariff was also progressively raised from THB3.61 per unit as of end-2021 to THB4.72 between September and December 2022.

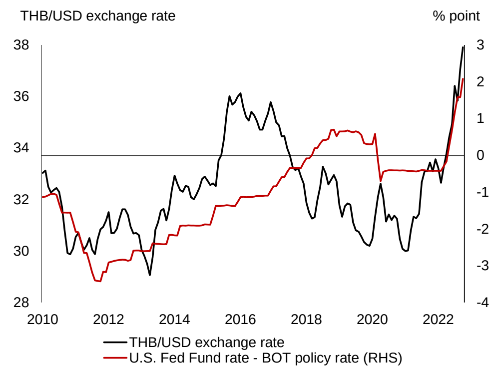
amidst the improving growth prospects, persisting price pressures can also affect wage-setting behavior and drive up labor costs.

Figure 24. Income Growth



Source: Bank of Thailand

Figure 25. Exchange Rate and Policy Rates



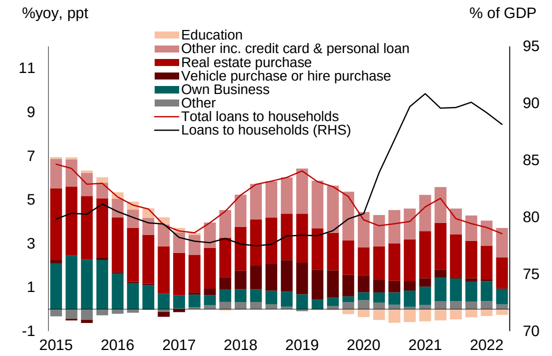
Source: BOT, Federal Reserve Board

19. A prolonged and sharper rise in U.S. interest rates would heighten the risk of capital outflows, exchange rate depreciation, and further increases in borrowing costs. A sharper Fed rate hike can lead to more capital outflows in emerging markets, including Thailand. The higher long-term rates would make it more challenging for corporates, particularly those with weaker credit ratings, to raise funds or refinance existing debt obligations. Any widening of the interest rate differential between the U.S. and Thailand's short-term rates would put further downward pressure on the Thai baht in the short term and lead to higher import prices and inflation (Figure 25). That said, the low levels of non-resident holdings in Thai equity and government bonds, low reliance on external funding, large international reserves and ample domestic liquidity can mitigate these risks.

B.2 Longer-term Challenges and Vulnerabilities

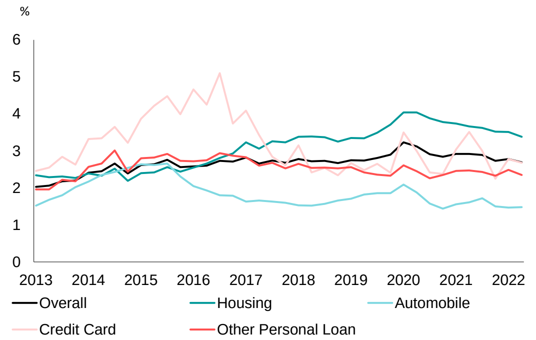
20. Although Thailand still has fiscal space, the high subsidy costs of quasi-fiscal operations borne by government-linked institutions will increase medium to long-term public debt. To combat the impacts of the higher prices of liquefied petroleum gas (LPG), diesel and electricity on the cost of living, the authorities have relied mostly on off-budget measures undertaken through the quasi-fiscal operations of government-linked institutions. The on-budget measures, such as the excise tax cut on diesel, will lead to a decline in revenue collection, while the off-budget measures will not affect the budgetary balance but will increase public debt. For instance, if fuel prices continue to rise and the government maintains its cap on fuel prices, the State Oil Fund may need to borrow to finance its deficit, which has accumulated to THB128.7 billion as of 30 October 2022.

Figure 26. Household Debt



Source: BOT

Figure 27. Consumer Loan NPLs



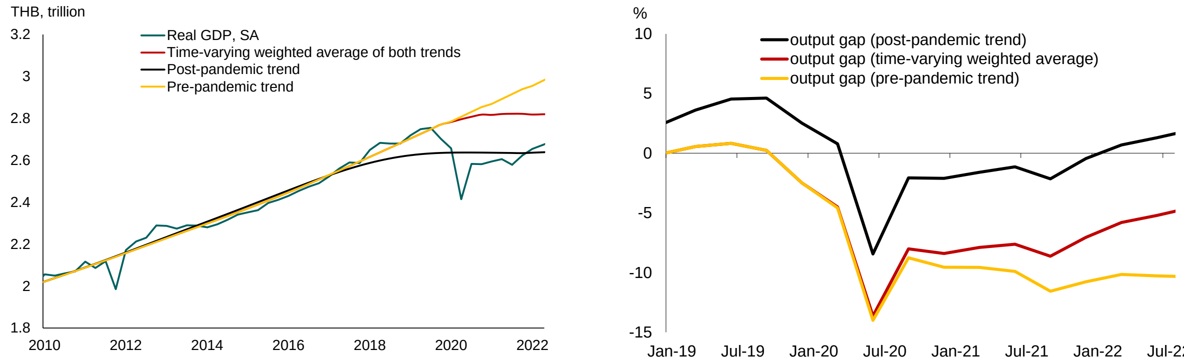
Source: BOT

21. While high household debt may have limited implications on systemic financial stability, lower-income households continue to face significant financial challenges. Thailand's household debt-to-GDP ratio, which was already high compared to regional peers prior to the pandemic, have started to ease to 88.2 percent in Q2 2022, driven mainly by higher mortgages, unsecured loans including credit cards and personal loans, and business loans (Figure 26). However, the NPL ratio of households remains relatively low and stable (Figure 27), and the debt does not pose systemic risks to financial institutions, which have strong capital buffers and increased provisions. Overall household debt ratio is expected to gradually decline due to an increase in GDP in tandem with the recovery of the Thai economy**.** That said, the debt burden of low-income households, which has increased rapidly during the pandemic, is likely to continue constrain their spending while raising their vulnerability to further income shocks.

22. Growth potential has weakened due to significant economic scars from the COVID-19 pandemic (Figure 28). Thailand's recovery prospects are constrained by the loss in capacity of businesses and workers during the pandemic. Despite the tourism rebound, hospitality businesses are less able to rehire workers or re-expand their businesses due to their impaired balance sheets and labor shortage. Business closures and layoffs have resulted in the erosion of skills of the labor force. Although the easing of border measures has facilitated the rehiring of migrant workers, the hospitality, labor-intensive manufacturing, and construction sectors are still facing labor shortages. The pandemic-induced shift of workers from the hospitality and other services sectors to agriculture and other lower-productivity sectors, has dragged down total factor productivity and lower potential growth and output. Amid a rising interest rate environment, the higher household and business debt burden would further constrain private consumption and private investment growth. The resulting smaller output gap due to the scarring effect may necessitate an earlier-than-expected normalization of fiscal and monetary policy support (Figure 28, Panel b).

Figure 28. Potential Output

(a) **(b)**

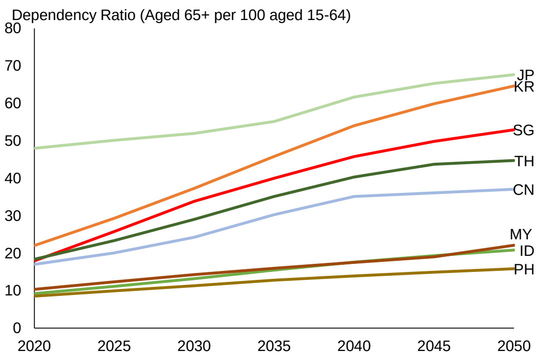


Note: In assessing Thailand's growth potential, AMRO took into consideration the scarring effects of COVID-19 that would increase over time as the pandemic drags on but would diminish as the pandemic fades and stringent border and movement restrictions are lifted. As such, a time-varying weighted approach is used to gauge the dynamics of the pandemic's impact on the economy over time, particularly on the job market, investments and aggregate productivity. To do so, the time-varying weight of the post-pandemic trend, w_t, is calculated based on the deviation of three indicators from their pre-pandemic trends over a three-year rolling period, namely, the number of own-account workers, the number of employees enrolled in the social security system, and the hotel occupancy rate. These indicators are proxies for productivity, labor and capital accumulation, respectively. The computation of the time-varying weight is as follows: $w_t = 0.15 \times MA_t\left(1 - \frac{Post.PDM\ Own\ account\ worker\ trend}{Pre.PDM\ Own\ account\ worker\ trend}\right) + 0.15 \times MA_t\left(1 - \frac{Post.PDM\ employment\ trend}{Pre.PDM\ employment\ trend}\right) + 0.7 \times MA_t\left(1 - \frac{Post.PDM\ hotel\ occupancy\ trend}{Pre.PDM\ hotel\ occupancy\ trend}\right)$. The potential output, PO, is the time-varying weighted average of the pre-pandemic and post-pandemic potential growth trends, which are based on the standard one-sided HP filter with λ=1600. The potential output is calculated as follows: $PO_t = (1 - w_t)Pre.Pandemic\ Trend_t + w_t Post.Pandemic\ Trend_t$. To handle the endpoint problem, the SA-adjusted real GDP series was extended to Q4 2023 in order to compute the post-pandemic potential growth trend. A capital share of income of 0.7 is assumed, while the remaining income share is split equally between productivity and labor.
Source: AMRO staff calculations

23. The rapidly aging population would entail not only higher fiscal spending for elderly care but also lower productivity growth. Based on the 2019 Revision of World Population

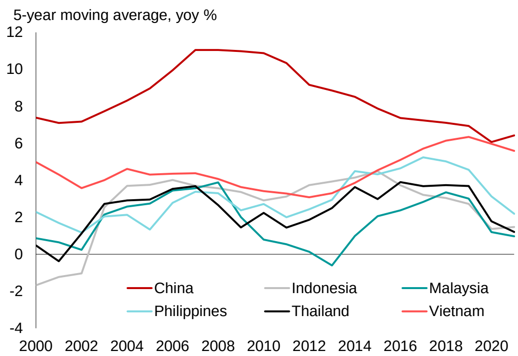
Prospects forecast, Thailand's old-age dependency ratio (share of persons aged 65 and above to working age population) is projected to increase rapidly from 18.4 percent in 2020 to 29.6 percent in 2030 and 44.7 percent in 2050 (Figure 29). An aging society will have implications for long-term fiscal sustainability, as the pace of spending on pensions and healthcare will rise significantly while the productivity of the shrinking and aging work force will tend to decline over time. (Figure 30).

Figure 29. Old-age Dependency Ratios



Source: World Travel and Tourism Council

Figure 30. Labor Productivity



Source: Conference Board Total Economy Database

24. The long-term growth outlook for Thailand will be affected by how it responds to climate change risks. The economy is recognized as highly vulnerable to the impacts of climate change and natural disasters, particularly floods, droughts and tropical storms. An Asian Development Bank study in 2021 suggests that in the next two decades, an additional 2.7 million people could be exposed to extreme flooding, which would also put at risk agricultural productivity and employment, agricultural exports, as well as critical infrastructure in key economic and business centers. Apart from the physical impacts of climate change, Thailand faces spillover and other transition risks from changing global climate policies, such as the E.U.'s Carbon Border Adjustment Mechanism. The country would also need to significantly increase its investment in green energy in order to reduce its greenhouse gas emissions to achieve carbon neutrality by 2050 under its commitments to the Paris Agreement.

C. Policy Discussions and Recommendations

C.1 Deploying Targeted Fiscal Support while Ensuring Medium-term Debt Sustainability

25. AMRO supports the phasing out of pandemic-related fiscal spending and the move toward targeted subsidies for lower-income earners. The unwinding of COVID-19 fiscal support is appropriate as Thailand has achieved a high vaccination rate while growth prospects have improved significantly. AMRO supports tapering subsidies while increasing support for lower-income earners, which ensures that the more vulnerable segments can better cope with the higher living costs. The additional support provided for welfare cardholders should be provided temporarily during this period of heightened economic uncertainty, and then reviewed and reallocated to other emerging priorities. Continued government spending on public infrastructure investments should facilitate structural reforms, such as digitalization and climate change transition, which are also crucial in helping Thailand accelerate its post-pandemic recovery and prevent further economic scarring. Greater efforts should be made to speed up the implementation of public infrastructure construction projects.

26. Fiscal consolidation focusing on revenue enhancement should be accelerated to rebuild fiscal space, while expenditure consolidation can be more gradual, complemented by effective allocation and management of public resources in favor of

infrastructure development and structural reform. Tax reform should aim at making the tax system greener and more equitable. AMRO supports the proposed tax measures, such as a stock transaction tax and capital gain taxes on cryptocurrency and digital asset transactions (see Box A: Tax Measures in 2022). The authorities should consider stepping up their taxation efforts by broadening the tax base, enhancing tax administration, adopting a carbon tax and restoring the VAT rate from 7 to 10 percent gradually. The efforts to rebuild the fiscal buffers also need to be complemented by increasing the efficiency of quasi-fiscal operations through more targeted subsidies. Taking greater account of the long-term perspectives, such as the need to enhance the social security system to address the aging population, an integrated public financial management system is needed to balance various policy priorities and their fiscal implications.

C.2 Gradual Monetary Policy Normalization to Promote Price Stability and Growth

27. A further normalization of monetary policy is appropriate in tandem with the economic recovery. The accommodative monetary policy stance during the pandemic was necessary to support the economy, given the severe impact of COVID-19 on the economy and the weak recovery. The BOT raised the policy rate gradually from 0.50 percent to 1.00 percent at the August and September MPC meeting in view of the strengthening momentum of the recovery and the sharp rise in inflation. AMRO supports the further normalization of monetary policy, given the risk of the elevated inflation becoming entrenched as the recovery continues to gain pace. Monetary policy normalization, conducted in close policy coordination with other government agencies, would also rein in excessive buildup of leverage in the economy. On the external stability front, BOT's rate hikes have also resulted in a narrower interest rate differential between the U.S. and Thailand's short term rates, which has helped reduce the depreciation pressure on the exchange rate.

C.3 Providing Targeted and Temporary Credit Support while Ensuring Financial Stability

28. The central bank has been providing financial assistance in response to COVID-19 to support the funding needs of hard-hit borrowers and businesses, and to cushion the scarring impacts on the economy. The BOT issued policies to support debtors affected by the pandemic, including debt restructuring, asset warehousing, special rehabilitation loans, and household debt mediation, which balances the need between supporting the ongoing economic recovery and maintaining financial stability. AMRO welcomes the BOT's sustainable and time-bound debt resolution measures, in particular an enhanced credit limit for retail borrowers and relaxed regulations on new long-term restructured loans. AMRO also welcomes the BOT's close monitoring of the loan restructuring activities of banks to ensure that the restructuring method is properly applied to affected borrowers.

29. Authorities are encouraged to remain vigilant over the high household debt burden. Given the high household debt, authorities are encouraged to continue raising financial literacy awareness among households, especially among the poorer income groups. AMRO also supports the strengthening of debt management programs, including FIs' long-term debt restructuring and the BOT's debt clinic, to ensure that debt repayments by households are manageable. The authorities are encouraged to establish a debt service ratio (DSR) framework to rein in excessive household borrowing and promote prudent lending practices, which can be rolled-out once the Thai economy recovers more firmly.

30. Notwithstanding the external headwinds, the strong external position continues to facilitate Thailand's efforts to address structural issues in its FX market. The flexible exchange rate has helped shield the economy against external shocks. Foreign exchange (FX) intervention should be used judiciously to dampen excessive exchange rate volatility. In the past decade, Thailand's external position has strengthened sharply on the back of large current account surpluses. The surpluses have been reflected in the buildup of foreign reserves and domestic resident investment abroad. AMRO supports the BOT's new FX ecosystem plan, which provides greater flexibility to domestic residents in conducting outward portfolio transactions and in managing their FX exposure (see Selected Issue 2: The shift of Thailand Towards a Digital Economy Continues at Pace and Has Been Accelerated by the Pandemic). Progress in the third pillar, on improving the service provider landscape, can be supported by digital technology and financial innovation, but would also increase the need for supervision and monitoring, especially of new service providers that are non-banks.

C.4 Structural Reforms to Support Post-Pandemic Recovery and Green Growth

31. Efforts to boost public investments and enhance labor productivity should be accelerated to raise Thailand's growth potential and promote inclusive growth. As Thailand embarks on its next phase of economic restructuring led by Eastern Economic Corridor (EEC) 2.0 (see Box B: Thailand's Sustainable Future: the Eastern Economic Corridor), key public infrastructure projects which were delayed by the pandemic should be swiftly implemented in order to strengthen the country's growth potential, enhance business competitiveness, and attract FDIs that are crucial for Thailand's industrial upgrading drive. Given the demand for human capital of higher quality, concerted efforts to raise the educational attainments and technical skills of Thai graduates, and the push to attract highly skilled foreign workers, are welcomed. The four new economic zones,[10] which build on current initiatives to promote inclusive growth, will also enhance the economic development of regions across the borders of Thailand and deepen Thai trade and investment links with neighboring countries.

32. Targeted and well-communicated incentives and coherent policy support will be crucial in accelerating Thailand's transition toward a greener economy. Under its updated Nationally Determined Contributions (NDCs), Thailand intends to reduce its greenhouse gas emissions by 20 percent from the projected business-as-usual level by 2030. This target could be raised to 40 percent, but would entail higher investment costs to aid the transition, especially in the energy sector, for example, through energy technology switching, energy efficiency improvements and carbon capture (see Box C: Steady Progress in Climate Action). A timely achievement of these commitments, at the minimum, would require massive extra resources in technology and domestic technical expertise, with support from external partners. AMRO commends Thailand's progress in implementing climate change policies, such as providing electric vehicle subsidies and enhancing its carbon market. Substantial progress toward transition will be further achieved under the new Climate Change Act after it is approved, through the provision of clearer incentives and regulatory guidance to the private sector, fast-tracking access to advanced technology, and encouraging FIs to fund climate mitigation projects.

33. Financial digitalization, together with safeguards and sound risk management practices, can promote a more efficient and resilient payment system. The rollout of the e-wallet and continued adoption of digital payments have improved business efficiency, raised productivity and promoted financial inclusion. In view of these benefits, authorities are encouraged to further promote the usage of digital payments, for example, through e-money handouts and rebates (see Selected Issue 3: FX liberalization: What Does it Mean for

[10] In May 2022, the Special Economic Zone Policy Committee approved four new special economic corridors that were modeled after the flagship Eastern Economic Corridor (EEC), to stimulate the economy and decentralize income. These were named Northern Economic Corridor (NEC), Northeastern Economic Corridor (NEEC), Central-Western Economic Corridor (CWEC) and Southern Economic Corridor (SEC).

Thailand's Capital Flows). Wholesale CBDC projects can be broadened to involve a larger number of institutions and financial instruments. However, the authorities will need to prepare for potential risks associated with greater financial digitalization, such as cyberattacks, scams and money laundering.

Authorities' Views

34. Reforms are in progress on multiple fronts to promote an innovation-based, sustainable, inclusive, digital and resilient Thai economy. Under the Thailand 4.0 strategy, the 13th National Economic and Social Development Plan (2023-2027) will further propel Thailand toward becoming a developed country by 2029, underpinned by value-based and innovation-driven economic activities. The five goals of this five-year plan aim to: restructure the manufacturing and service sectors to help build an innovation-based economy; upskill and improve the livelihoods of Thais; achieve an inclusive and fair society; transition toward sustainable growth; and strengthen the country's resilience to changing global macroeconomic and geopolitical trends. The Bio-Circular-Green (BCG) economy model will further drive Thailand's green and sustainable growth agenda. Under EEC 2.0, the targeted THB2.2 trillion new investments in the new "S-curve" industries and green economy projects are aimed at raising the nation's growth potential to 5.0 percent per annum over the next five years, catalyzed by the construction of four main EEC infrastructure projects that have started in 2022. Investments in financial technologies will not only raise productivity but also help the unbanked and underbanked population, as well micro, small and medium enterprises, make use of banking and digital payment services. The introduction of a new 10-year long-term resident visa for foreigners would also support Thailand's goal of attracting highly skilled foreign talent and address the skills mismatches in the key growth sectors.

Box A. Tax Measures in 2022[11]

Thai authorities introduced several tax measures in 2022 to stimulate the economy and increase revenue. Tax stimulus measures have been adopted or are being considered to stimulate purchasing power and reduce the economic burden on businesses and people. At the same time, revenue enhancement measures are in place to collect more revenue and make the tax system fairer.

Tax relief and stimulus measures

A shop-and-pay-back scheme was relaunched in 2022 to stimulate domestic spending for one and a half months.[12] The scheme offered tax deduction on the individual taxpayer-assessed income of up to THB30,000 to buy goods and services between January 1, 2022 and February 15, 2022 from businesses that had registered for value-added tax (VAT). The scheme did not cover the purchase of alcohol, cigarettes, vehicles, vehicle gasoline, tourism and hotel expenses, utilities, or insurance premiums.

Tax and fee exemptions to support debt restructuring have been extended.[13] The exemptions apply to debtors and creditors who derive income from transactions related to debt restructuring –

[11] This box is prepared by Andriansyah, Fiscal Specialist.
[12] The scheme previously ran from October 23, 2020 to December 31, 2020, and the tax deduction was applied to the year of assessment 2020.
[13] The first tax benefits were available for income derived from transactions related to debt restructuring, such as the transfer of assets, sale of goods and provision of services, during January 1, 2020 to December 31, 2021.

such as the transfer of assets, sale of goods, provision of services, and debt forgiven by financial institutions – from January 1, 2022 to December 31, 2026.

Personal income tax is waived for foreigners who hold long-term residence visas[14] and invest in Thailand's financial and real assets; the tax is reduced for skilled foreign professionals. Three groups of foreign taxpayers are eligible for this stimulus package. The first group comprises high-income earners who have a cumulative income of more than USD80,000 over the past two years and USD1 million in assets, and invest at least USD500,000 in government bonds, properties or foreign direct investments. The second group consists of foreign retirees who are 50 years old and above, have an annual income of at least USD40,000 and invest a minimum of USD250,000 in government bonds or properties. The third group is made up of professionals who are interested in working remotely from Thailand, have an annual income of at least USD40,000, hold a master's degree or higher qualification, or hold intellectual property rights. In addition, there is a fourth group, of skilled foreign professionals in targeted industries or economic zones, who will pay a fixed personal income tax (PIT) rate of 17 percent, lower than the standard 35 percent for the highest income bracket.

Tax incentives are being offered to promote electric vehicles (EVs). Under the incentive schemes, there are tax and non – tax measures. Import duties on fully built EVs priced under THB2 million and between THB2 million and THB7 million have been reduced by 40 percent and 20 percent, respectively, for 2022 and 2023. The excise tax has also been cut from 8 percent to 2 percent for imported EVs during the same period. This package complements subsidies of THB70,000-THB150,000 offered for each electric car and THB18,000 for each electric motorcycle manufactured domestically.

Other stimulus packages are also in place to support entrepreneurs and tourism. Businesses that sell liquor, tobacco and playing cards are exempted from paying license fees for 2022. Meanwhile, a 95 percent cut in aviation fuel excise tax from THB4.73 per liter to THB0.20 was extended until December 31, 2022. A withholding tax (WHT) for resident corporations imposed on payments of goodwill, copyright and any other rights is reduced from 3 percent to 2 percent between September and December. This reduction applies only when the WHT is paid online through the e-withholding tax system via a bank. To promote investment in data centers and elevate Thailand to the status of a regional digital hub, VAT is exempted for data centers that offer hosting services and related support services such as cloud computing and information security. Lastly, Thai authorities support the health sector by providing a tax cut of 1.5 times the amount spent buying COVID-19 test kits for employees.[15]

Revenue enhancement measures

Foreign e-service providers and e-platform operators had to start paying VAT on 1 September 2021, similar to the tax levied on their Thai counterparts. Overseas businesses providing online services in Thailand must register for a 7 percent VAT liability if their annual income exceeds THB1.8 million. The scope of the VAT covers e-service providers of online games, movie and music streaming, mobile applications, online advertising, online software sales or licensing, and web hosting.[16] Companies that act as intermediaries, such as by offering a complete suite of e-services from presentation to delivery and payment collection, are classified as e-platform operators.

[14] The long-term residence visa will initially be valid for five years and may be extended for an additional five years.
[15] This tax deduction will lower a company's taxable income by increasing the allowed deduction by 1.5 times the amount spent to buy COVID-19 test kits for employees.
[16] Some e-services are excluded from this new e-service VAT rule, including telecommunications, online payment, live teaching services, and sales of e-books and e-magazines.

A planned stock transaction tax has been postponed. Initially, the authorities wanted to levy a financial transaction tax of 0.1 percent in 2022 on individual investors selling shares on the Stock Exchange of Thailand, but have delayed to 2023. The transaction tax was enacted 31 years ago but is yet to be implemented. In the plan, investors will be also subject to a related local tax, which brings the total tax chargeable to 0.11 percent of a share sale. However, on 29 November 2022, the cabinet has approved a financial transaction tax on the Stock Exchange of Thailand (SET) at 0.055% from the first year and then 0.11%.

Capital gains on digital asset transactions, such as cryptocurrency or digital tokens, are taxed. Thailand levies three types of tax on cryptocurrencies and digital tokens. The first is a PIT imposed on incomes derived from five types of digital asset transactions: trading, mining, remuneration, gift, and return on investment. The PIT rate ranges from 0 percent to 35 percent, and taxpayers can claim any WHT as tax credits. The second is a WHT imposed on two kinds of income: income from holding assets, and net capital gains from transactions conducted through licensed exchanges. The income from cryptocurrency and digital asset investment is classified in the same category as income from interest or dividends. The WHT rate is 15 percent, imposed at the source where the payments are made. This measure, however, has been postponed due to protests from traders and investors. The third type of tax is a VAT of 7 percent on cryptocurrency or digital token trading on authorized exchanges. It is exempted from April 1, 2022 to December 31, 2023. Digital currencies issued by the BOT are also exempted from the VAT.

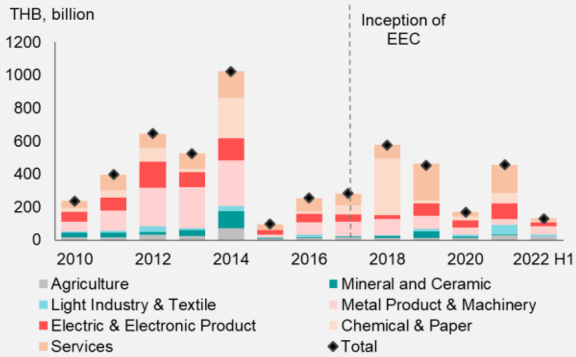
Other measures include a fee payable by foreign tourists. The authorities will impose a THB300 fee per tourist visiting the country. The fee was to start on April 1, 2022, but will now begin in the fourth quarter. It is to be charged together with airline tickets and will be used to develop attractions and cover accident insurance for foreigners.

Box B. Thailand's Sustainable Future: the Eastern Economic Corridor[17]

The Eastern Economic Corridor (EEC) is a strategic plan under Thailand 4.0 and is an area-based development initiative of the country's Eastern Seaboard. The EEC project is a significant investment driver in infrastructure, industrial projects, and social projects, which will in turn strengthen the country's long-term sustainable economic and social development. It is integrated into the 20-year National Strategy[18] and initially focused on the three eastern provinces, namely Rayong, Chonburi and Chachoengsao. The EEC development plan envisages a significant transformation of both physical and social development in six areas: fundamental infrastructure, digital infrastructure, smart cities and financial centers, targeted industries that utilize advanced technology, promotion of tourism, and human resources.

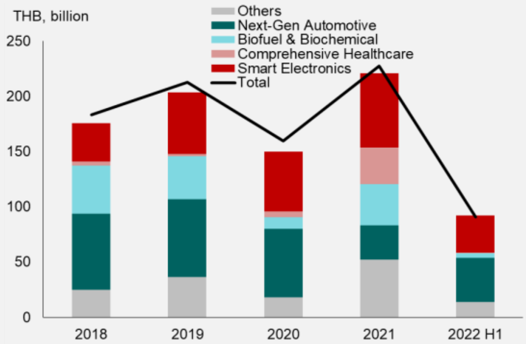
The EEC project has significantly attracted investors. Under a 2018-2022 plan, investment in the EEC has reached THB1.7 trillion, 80 percent of which is private investment and 20 percent public investment. Targeted industries through BOI certificates attracted THB925 billion, while public-private partnership infrastructure projects accounted for THB655 billion and area-based integrated projects among state agencies contributed THB82 billion. The FDI investment applications have more than doubled the number recorded in 2017 right after the project was implemented in 2018 (Figure B1). Average FDI contribution to EEC from 2018-2022 H1 accounted around 50 percent of total FDI into Thailand while average investment through BOI certificates from 2018-2021 amounted to THB260 billion a year and recorded THB90 billion in the first half of 2022. Smart electronics and next-gen automotive are the main FDI contributors to EEC (Figure B2).

Figure B1. FDI Applications across Thailand



Source: CEIC; Board of Investment (BOI)

Figure B2. Approved FDI Value in EEC



Source: CEIC; Board of Investment (BOI)

The EEC is expected to be a major investment destination and will play a key role in helping Thailand overcome the middle-income trap. Thailand is aiming for THB2.2 trillion of investment in the EEC over the next five years of 2022-2026 as the country attempts to boost long-term economic growth. Of the targeted total, about THB200 billion is expected to come from investment in the extension of infrastructure, comprising the Eastern Aviation City, urban development around U-tapao airport, and development around the main high-speed rail stations linking the three international airports: Don Mueang, Suvarnabhumi and U-tapao. Investment in targeted industries is estimated at THB400 billion a year, of which THB250 billion would be recurrent annual investment, with the remainder coming from new S-curve industries such as electric vehicles, digital operations, medical services, logistics, smart agriculture, and food. The EEC policy committee expects to hit an average of THB500 billion in investment per year and predicts a contribution of 1.5 percentage points per year to national economic growth.

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[17] This box is prepared by Tanyasorn Ekapirak, Back-up Economist.

[18] The National Strategy (2017-2036) is the country's first national long-term strategy developed pursuant to the Constitution. It shall be pursued to ensure that the country achieves its vision of becoming "a developed country with security, prosperity and sustainability in accordance with the Sufficiency Economy Philosophy" with the ultimate goal being all Thai people's happiness and well-being.

Box C. Steady Progress in Climate Action[19]

Thailand is highly vulnerable to the effects of climate change. Like its neighbours in ASEAN, Thailand's geography greatly exposes it to a variety of climate-related natural disasters; the country's climate risk profile is dominated by high exposure to floods, droughts and storms. The increasing frequency and severity of these weather events have had significant repercussions on economic activity and livelihoods, and are expected to continue to do so. For example, rising sea levels caused by climate change is a major threat to the capital Bangkok as its terrain, coupled with the heavy concentration of industrial activity and real estate, makes it susceptible to sinking (The ASEAN Post, 2019). In the ASEAN+3 region, Thailand appears to be more resilient to the physical impacts of climate change than peers such as Indonesia and Vietnam, but seems to lag behind Malaysia and Singapore (Figure C1) (University of Notre Dame, 2022). It is likely for this reason that Thailand has been very active in recent years to improve its ability to adapt to climate change and mitigate the impacts (Figure C2).

Figure C1. ASEAN+3: ND-GAIN Index, 2020
(Lower = less resilient to climate change)

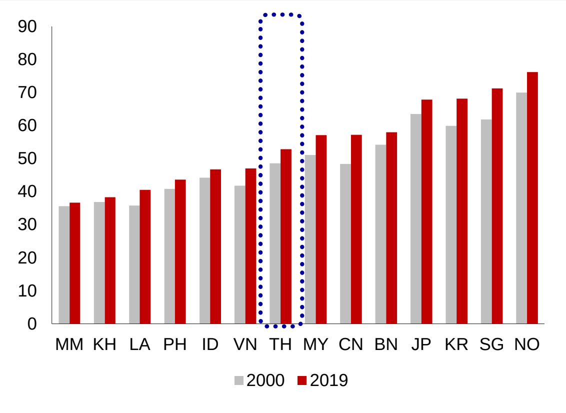
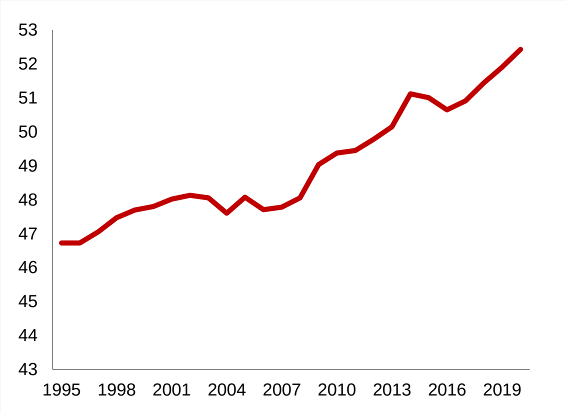


Figure C2. Thailand: ND-GAIN Score
(Lower = less resilient to climate change)



Source: Notre Dame Global Adaptation Initiative, University of Notre Dame
Note: BN = Brunei; CN = China; ID = Indonesia; JP = Japan; KH = Cambodia; KR = Korea; LA = Lao PDR; MM = Myanmar; MY = Malaysia; NO = Norway; PH = Philippines; SG = Singapore; TH = Thailand; VN = Vietnam. The ND-GAIN Index summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. Norway, which is the most highly ranked economy, is included for benchmarking purposes.

The Prime Minister's speech at the 26th United Nations Climate Change Conference (COP26) in November 2021 gave a strong indication of Thailand's commitment to climate action. Indeed, COP26 saw Thailand increase its climate change commitments, bringing forward its target schedules on carbon neutrality and net-zero emissions by at least 15 years. In October 2021, Thailand's Long-term Low Greenhouse Gas Emission Development Strategy (LT-LEDS), the national strategy to guide the economy toward becoming a low-carbon society, cited a greenhouse gas (GHG) reduction plan of 20 percent against business-as-usual levels, and that could further increase to 25 percent subject to enhanced access to technology, expertise and financial resources (UNFCC, 2021). The target was raised to 40 percent in COP26—conditional on additional support—effectively shortening Thailand's carbon neutrality and net-zero emissions timelines to 2050 from 2065, and to 2065 from 2090, respectively. The Office of Natural Resources and Environmental Policy and Planning (ONEP), which is the overseer of climate change issues, published its revised LT-LEDS in November 2022 that aligns with the adjusted target of 40 percent (UNFCC, 2022). Major changes are anticipated in transportation, especially on the adoption of electric vehicles, and the energy sector, particularly as regards the upscaling renewable energy use.

The economy's progress in meeting these commitments is, in significant part, driven by the private, large-corporate sector. Big companies in Thailand are combatting climate change as part of their corporate social responsibility or compliance with regulatory authorities, such as by making ESG disclosures. Some that are engaged in fossil fuel-related operations are also increasingly looking at greening their businesses to minimize the potential for regulatory disruptions. Additionally,

[19] This box is prepared by Marthe Memoracion Hinojales, Economist.

most multinationals are required to align with the climate change commitments of their headquarters, which are most often overseas, although the extent of concern across companies varies depending on their type of business. Some also make climate-related policies or announcements in response to growing pressure from their own customers. However, the same level of activity has yet to happen in other segments of the private sector, where an appropriate assessment or sufficient understanding of climate risks, including emissions, remains a challenge, especially for small and medium enterprises, households, and individuals. To address this initial barrier, the authorities offer schemes to improve knowledge and encourage awareness, along with voluntary programs to facilitate reduction and mitigation.

The draft Climate Change Act could be yet another game-changer for Thailand on top of its ongoing pilot programs on emissions and carbon trading. Existing carbon market programs, including the Voluntary Emission Reduction Program (T-VER, developed in 2014) and the Voluntary Emission Trading Scheme (T-VETS, launched in 2010), have generated considerable traction, reflecting the growing interest of various sectors of the economy to address climate risks (Tables C1 and C2). However, a fully implemented legislation in the form of the Climate Change Act, with mandatory elements such as a carbon tax or compulsory reporting of emissions by the private sector, could further accelerate the path to climate action (Triteeyaputranonta and Tomkiewicz, 2022). The ONEP was tasked in 2018 to draft the Act, which is now with the parliament. Once fully implemented, the Act will provide a highly welcome legal support to the authorities' initiatives to fast-track Thailand's climate efforts, which now include a pilot emissions trading scheme begun in 2021 in the Eastern Economic Corridor, as well as a forthcoming carbon credit trading platform jointly developed by the Thailand Greenhouse Gas Management Organization and the Federation of Thai Industries this year (ICAP, 2022).

Table C1. Thailand's Voluntary Carbon Market Statistics, 2021

	Trading volume (tCO_2e)	**Trading value**	**Average price per tonne** (THB)
2015	5,641.0	846,000.0	149.97
2016	33,468.0	1,006,000.0	30.06
2017	144,697.0	3,090,520.0	21.37
2018	131,028.0	3,246,980.0	24.78
2019	169,806.0	4,375,686.0	25.77
2020	286,580.0	9,714,193.0	33.9
2021	15,979.0	559,950.0	35.04

Note: tCO2e = tonnes of carbon dioxide equivalent. Data as of 2 December 2021.
Source: Thailand Greenhouse Gas Management Organization

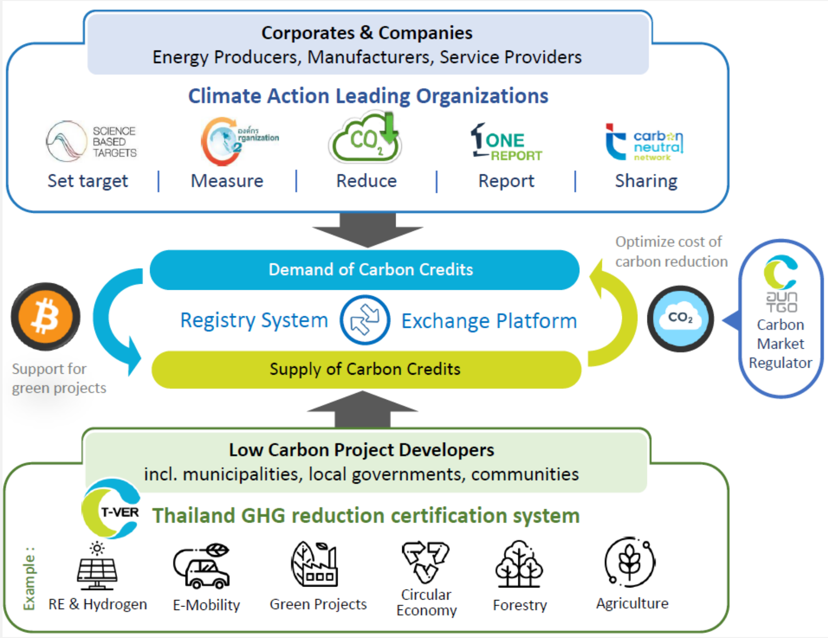
Table 2. Thailand's Carbon Offsets Market Statistics, 2021

	Total	**Offsetting volume** (tCO_2e)
Product	55 products (16 companies)	1,360
Organization	112 organizations	715,361
Event	116 events	21,187
Person/Individual	1,387 persons	6,638
Total offsetting credits (tCO_2e)	744,456	

Note: tCO2e = tonnes of carbon dioxide equivalent. Data as of 2 December 2021.
Source: Thailand Greenhouse Gas Management Organization

While many programs are in place, appropriate policy incentives will be crucial in achieving Thailand's climate targets. Authorities have identified various incentives under their public-private cooperative model to encourage wider private-sector participation in climate change efforts, especially in GHG mitigation (Figure C3). These include economic incentives, investment promotion, value-added from carbon trading, and the use of "climate awards" (TGO, 2022). Additionally, financial or fiscal support—for example, through innovative green instruments (e.g. green bonds) or encouraging financial institutions to direct more lending for transition purposes—would be helpful, as adaptation and mitigation activities also incur fairly significant operational expenses. For example, those who wish to receive carbon credits would have to engage in and spend on the validation and verification process. Some companies would also have to undertake capacity building and technological upgrading, for example, to comply with company climate impact disclosures or changes in tax reporting requirements, if any. To this end, the forthcoming "green taxonomy" by the Bank of Thailand, scheduled to be released next year, will provide a helpful compass for lenders and borrowers alike, helping drive fundings more efficiently across the economy towards appropriate projects and investments, while minimizing the risk of greenwashing. Additional special incentives targeted at small and medium enterprises could be particularly useful, as this segment of the economy tends to have minimal access to financing or capabilities that would help them quickly adapt to these changes.

Figure C3. Public-private Model to Achieve Carbon Neutrality



Source: Thailand Greenhouse Gas Management Organization

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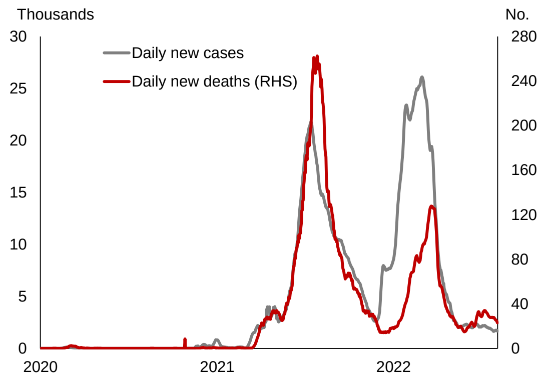
Appendices

Appendix 1. Selected Figures for Major Economic Indicators

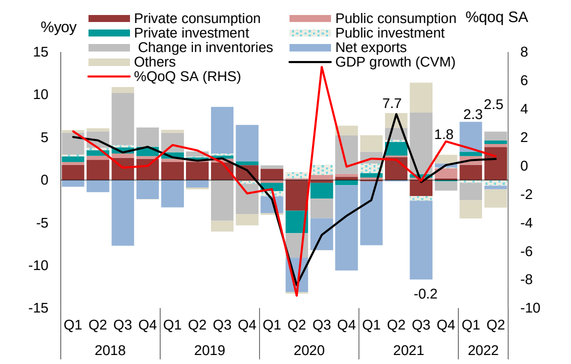
Figure 1.1. Real Sector

The surge in daily new cases and deaths from the Omicron wave has subsided.



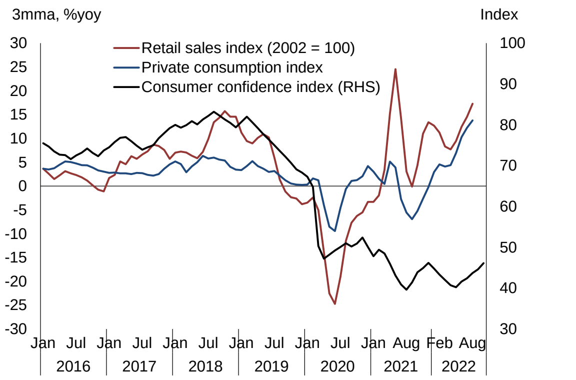
Source: World Health Organization (WHO)

Growth started to recover in 2021 and expanded at a faster pace in 2022 due to higher private consumption.



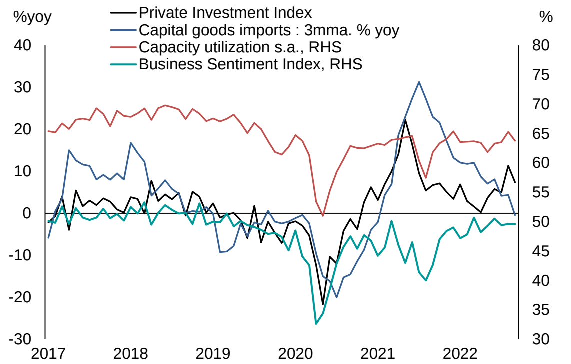
Source: National Economic and Social Development Council

Private consumption rose despite subdued consumer confidence.



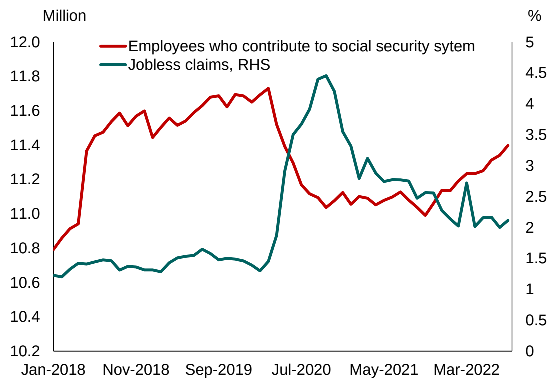
Source: CEIC; BOT; University of the Thai Chamber of Commerce

Investment activities continued to expand steadily.



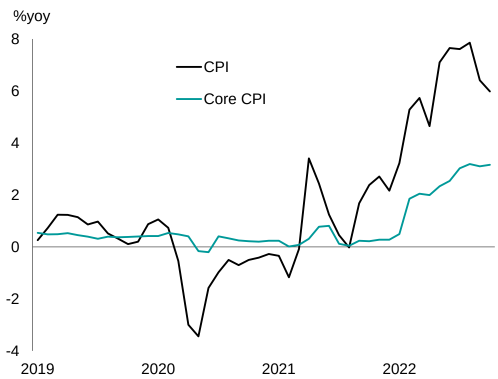
Source: CEIC; BOT; Office of Industrial Economics, Ministry of Commerce

The rate of jobless claims continued to fall steadily.



Source: Haver; Ministry of Labor

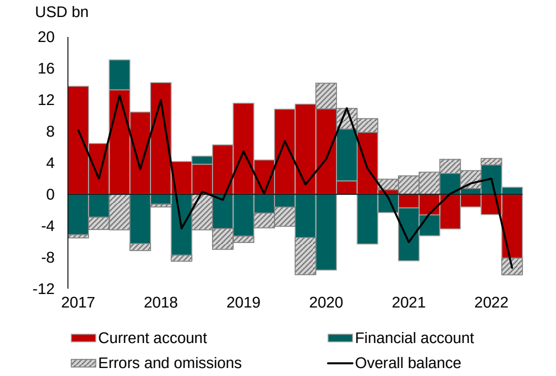
Headline inflation rose sharply but is stabilizing, while core inflation continues to increase.



Source: Ministry of Commerce; BOT

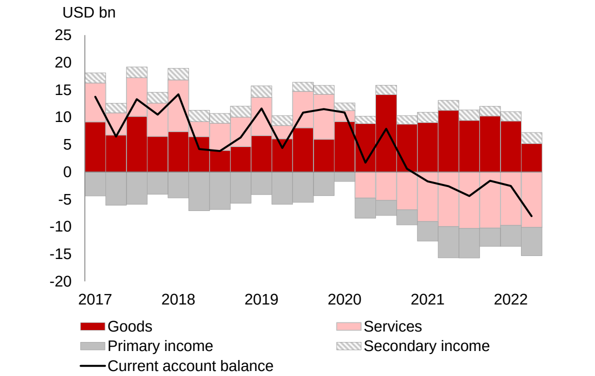
Figure 1.2. External Sector

The overall balance of payments turned negative due to the widening current account deficit…



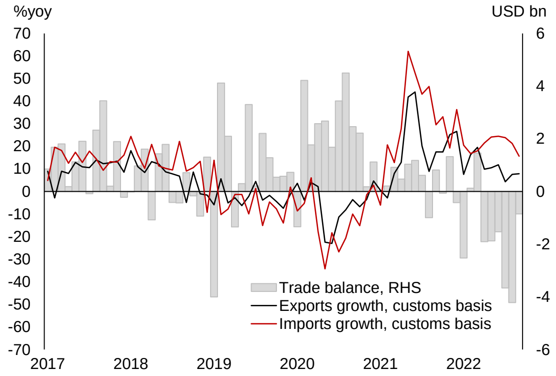
Source: CEIC; BOT

… which has been exacerbated by the narrowing trade surplus.



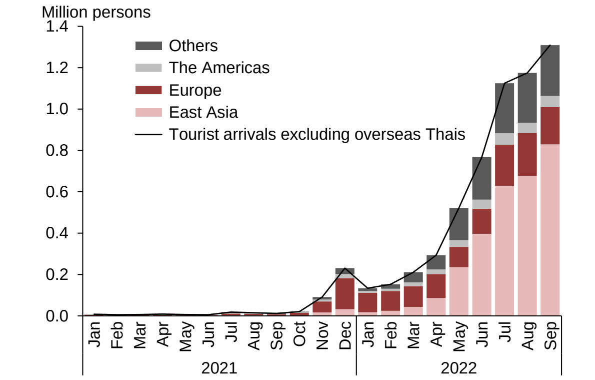
Source: CEIC; BOT

Burgeoning imports amidst lukewarm exports have weighed on the goods balance…



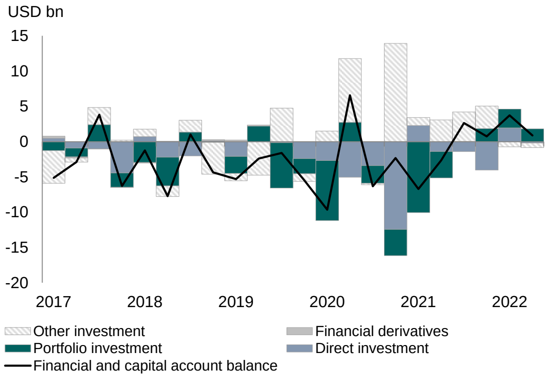
Source: CEIC; BOT; AMRO staff calculations

…while the gradual return of tourists is helping cushion the services account.



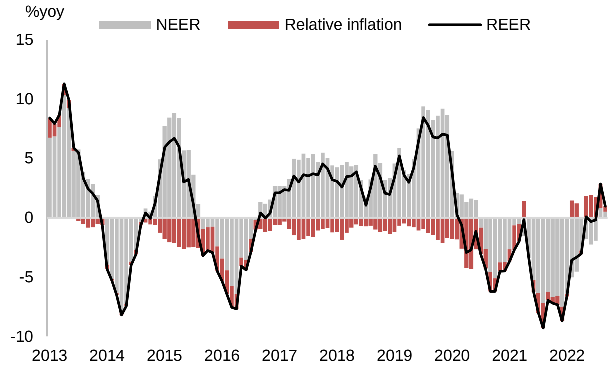
Source: Ministry of Tourism and Sports

The financial account deficit narrowed sharply in 2021 and is expected to turn into a surplus in 2022.



Source: CEIC; BOT

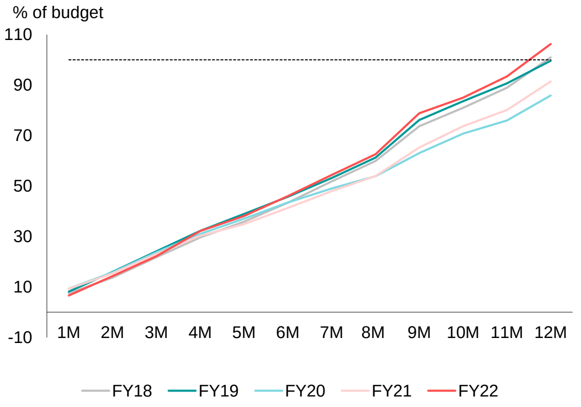
Thailand's REER depreciated sharply but remained broadly stable in the recent period.



Source: CEIC; BOT; AMRO staff calculations

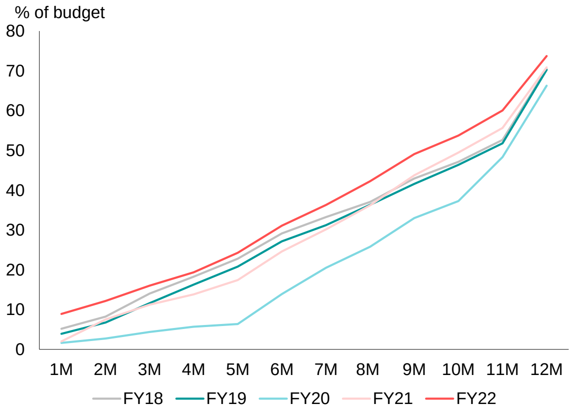
Figure 1.3. Fiscal Sector

The better-than-expected revenue collection in FY2022 was due to the economic recovery.



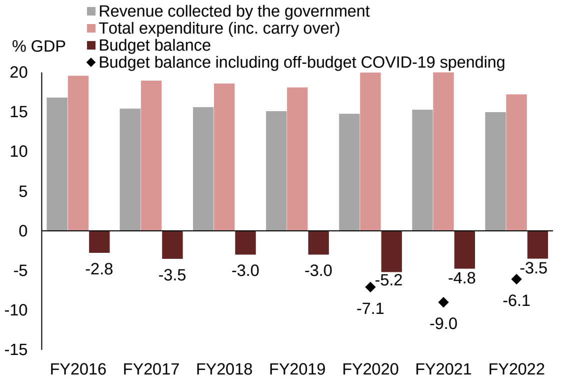
Source: CEIC; Fiscal Policy Office; AMRO staff calculations

To support the economic recovery, capital expenditure disbursement has been accelerated.



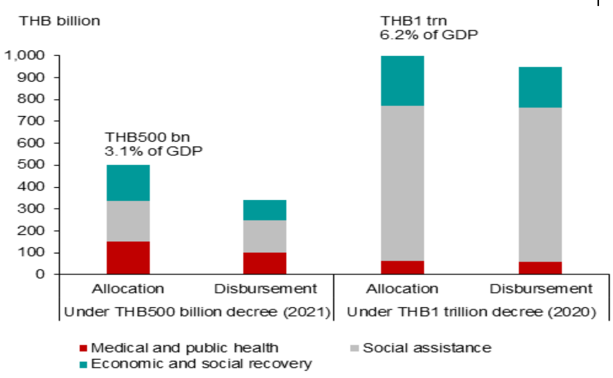
Source: CEIC; Fiscal Policy Office; AMRO staff calculations

The FY2022 fiscal deficit is decline from FY2021 due to the narrowing budget deficit and smaller off-budget COVID-19 spending.



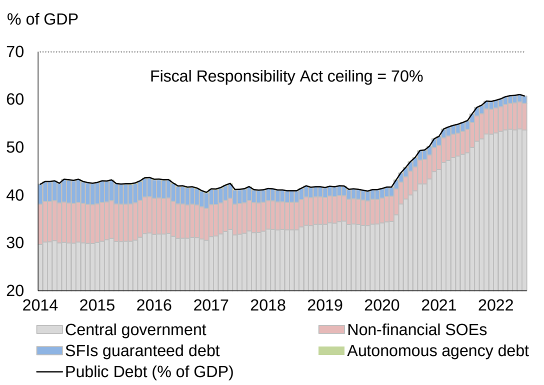
Source: CEIC; Fiscal Policy Office; AMRO staff calculations

The remaining funds under the two emergency loan decrees are expected to be fully disbursed by end-2022.



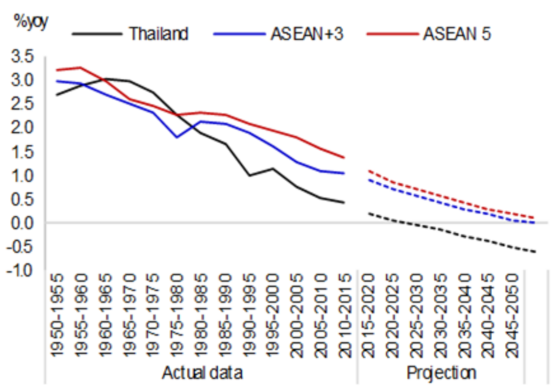
Source: CEIC; Fiscal Policy Office; NESDC; AMRO staff calculations

The public debt-to-GDP ratio rose sharply but is starting to stabilize.



Source: CEIC; Public Debt Management Office; AMRO staff estimates

Fiscal sustainability would also need to be safeguarded to address population aging and increasing expenses on pensions and health.



Source: CEIC; United Nations

Figure 1.4. Debt Sustainability Analysis

Public debt as of May 2022 was still sustainable under the government's fiscal sustainability framework.

Public debt to GDP ≤ 70% (61.1%)

Debt service to Gov't revenue ≤ 35% (9.8%)

Foreign-denominated debt to total debt ≤ 10% (1.7%)

Foreign-denominated debt to revenue from exports ≤ 5% (1.8%)

Principal repayment to total budget: 2-3% (2.1%)

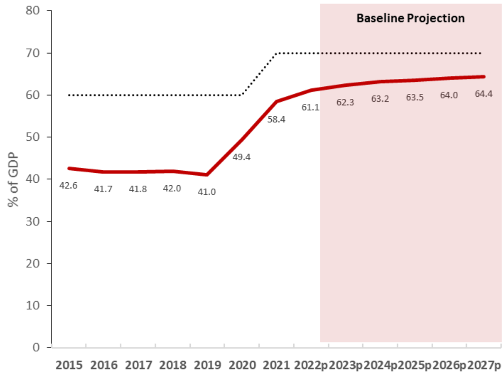
Source: CEIC; PDMO; AMRO staff calculations

The budgetary fiscal balance is projected to decline further over the medium term under the baseline scenario.

	FY22	FY23	FY24	FY25	FY26
Macroeconomic indicators					
Real GDP growth (% change)	2.7	4.0	5.6	3.3	3.7
GDP Deflator (% change)	3.6	0.9	-0.6	2.4	1.5
Exchange rate (THB/USD)	35.5	35	34.5	34	33.5
Fiscal indicators (% of GDP)					
Revenue	15.0	14.4	14.1	13.7	13.4
Expenditure	18.5	17.5	17.2	16.7	16.4
Budgetary Fiscal balance	-3.5	-3.2	-3.1	-3.0	-2.9

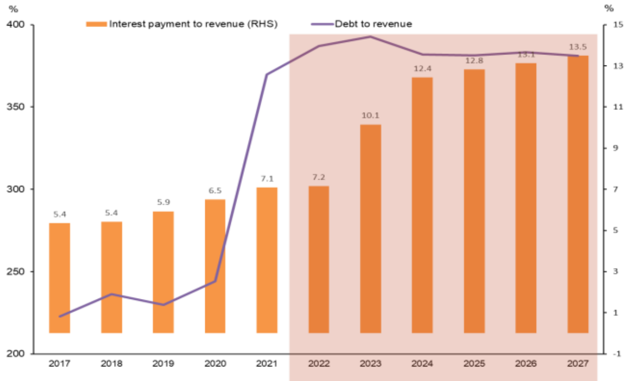
Source: AMRO staff projections

Public debt is expected to stay under the 70 percent debt-to-GDP ratio ceiling through FY2026…



Source: AMRO staff projections

… and debt affordability will also remain sound …



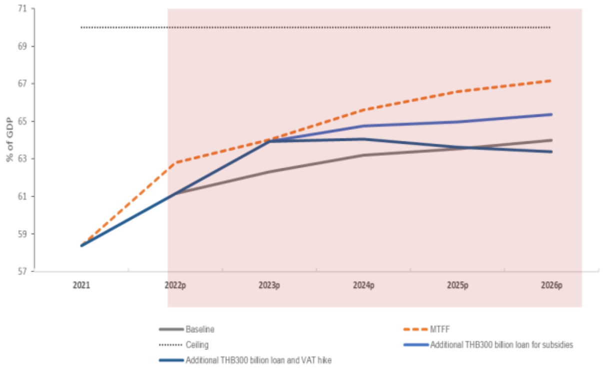
Source: AMRO staff projections

…which is similar to the current government's medium-term fiscal framework.

	FY2022	FY2023	FY2024	FY2025	FY2026
Revenue	2,400	2,490	2,560	2,640	2,720
% GDP	13.4	14.0	13.7	13.5	13.3
Expenditure	3,100	3,185	3,270	3,363	3,456
% GDP	17.3	17.9	17.5	17.2	16.9
Budgetary Balance	-700	-695	-710	-723	-736
% GDP	-4.1	-3.9	-3.8	-3.7	-3.6
Public Debt	10,439.77	11,215.98	12,019.16	12,760.25	13,462.56
% GDP	62.69	64.02	65.59	66.57	67.15

Source: Fiscal Policy Office

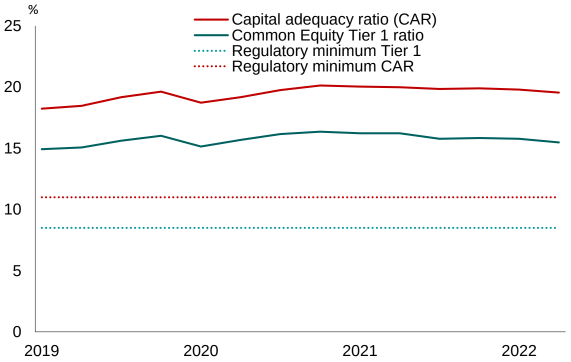
AMRO's scenario analyses show that public debt would remain below the 70 percent ceiling should quasi-fiscal institutions borrow more to maintain fuel and cooking gas subsidies.



Source: PDMO; AMRO staff projections

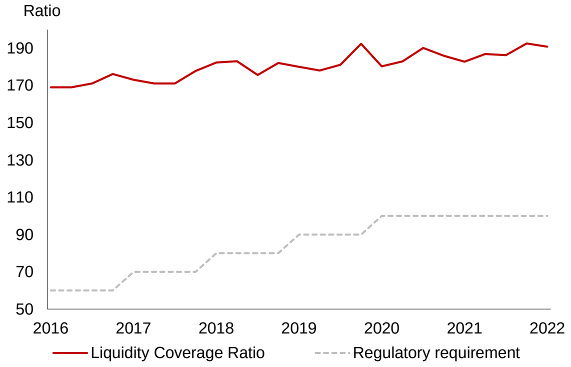
Figure 1.5. Monetary and Financial Sectors

The BIS ratio remained steady at 19.6 percent in Q2 2022.



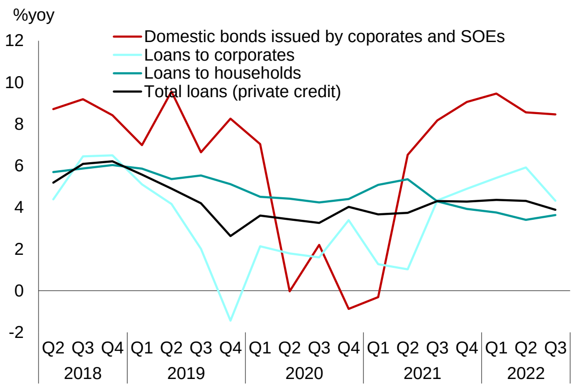
Source: BOT

The liquidity coverage ratio (LCR) stayed well above regulatory requirements.



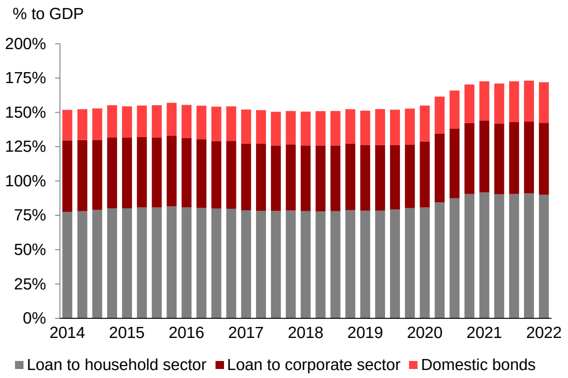
Source: BOT

Overall financing to corporates rose further, while lending to households remained stable.



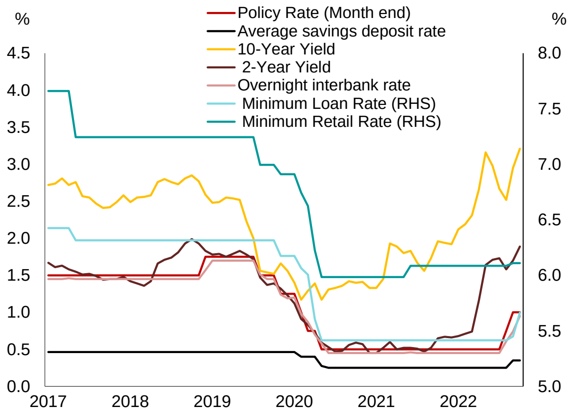
Source: BOT

Overall private-sector debt as a percentage of GDP is declining slightly as a result of the stronger recovery.



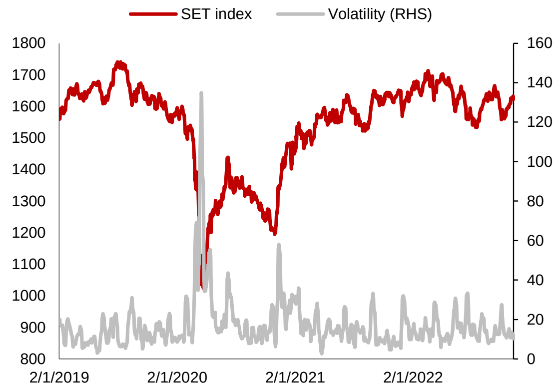
Source: BOT

Government bond yields have increased sharply.



Source: BOT

The Thai stock market declined in 2022 due to the war in Ukraine, but has rebounded slightly since then.



Source: BOT

Appendix 2. Selected Economic Indicators for Thailand

	2018	2019	2020	2021	Projections 2022	Projections 2023
Real sector	(In percent change unless specified)					
Real GDP	4.2	2.2	-6.2	1.5	3.2	4.8
Final consumption	4.1	3.4	-0.5	1.0	3.7	2.0
Private sector	4.6	4.0	-1.0	0.3	5.5	2.8
Public sector	2.7	1.6	1.4	3.2	-2.2	-1.1
Gross fixed capital formation	3.9	2.0	-4.8	3.4	2.6	3.3
Private sector	4.3	2.6	-8.2	3.3	3.0	2.9
Public sector	2.8	0.1	5.1	3.8	1.5	4.3
Export of Goods and Services	3.4	-3.0	-19.7	10.4	10.6	8.8
Goods	3.8	-3.7	-5.8	14.9	4.6	2.4
Services	2.0	-0.5	-61.3	-23.1	65.0	55.6
Import of Goods and Services	8.3	-5.2	-14.1	17.9	7.6	3.9
Goods	7.9	-5.8	-10.6	18.3	7.3	4.9
Services	9.9	-2.7	-27.8	16.0	5.9	-1.7
Consumer price inflation (period average)	1.1	0.7	-0.8	1.2	6.2	2.5
Core inflation (period average)	0.7	0.5	0.3	0.2	2.5	2.6
Unemployment rate (period average)	1.1	1.0	1.7	1.9	1.5	1.2
External sector	(in billions of U.S. dollars unless specified)					
Current account balance	28.5	38.3	21.1	-10.3	-13.6	4.6
(In percent of GDP)	5.6	7.0	4.2	-2.0	-2.8	0.9
Trade balance	22.4	26.7	40.9	38.9	24.8	20.7
(In percent of GDP)	1.4	1.6	2.6	2.4	1.5	1.1
Exports, f.o.b.	251.1	242.7	227.0	269.6	298.8	308.8
Imports, f.o.b.	228.7	216.0	186.1	230.7	274.0	288.1
Services, net	22.5	24.3	-14.9	-39.7	-27.8	-5.3
Receipts	77.5	81.2	31.0	25.4	37.7	60.6
Payments	54.9	56.9	45.9	65.1	65.5	65.9
Primary income, net	-24.5	-20.0	-10.9	-18.0	-18.8	-19.2
Secondary income, net	8.0	7.2	6.1	7.4	8.2	8.4
Financial account balance	-12.3	-14.8	-11.7	-6.0	5.1	5.7
Direct investment, net	-3.4	-4.6	-23.5	-4.5	0.0	2.7
Portfolio investment, net	-5.8	-8.8	-12.0	-11.9	-3.2	-4.7
Financial Derivatives, net	0.1	0.8	-0.4	-1.2	0.1	0.1
Other investment, net	-3.3	-2.1	24.3	11.6	8.2	7.6
Errors and omissions	-8.3	-9.9	8.9	9.2	0.0	0.0
Overall balance	7.3	13.6	18.4	-7.1	-8.6	10.3
Gross official reserves excluding net forward position	205.6	224.3	258.1	246.0	237.4	247.7
(In months of imports of goods & services)	8.7	9.9	13.3	10.0	8.4	8.4
Short-term debt in percent of total debt	38.9	34.8	39.2	38.1	39.5	
Total external debt	163.1	171.9	190.7	196.3	194.2	
Short-term debt (% of international reserves)	30.8	26.6	29.0	30.4	32.3	
Fiscal sector /1	(in percent of FYGDP)					
Revenue	15.7	15.3	15.1	14.9	14.7	14.4
Expenditure	18.6	18.1	20.0	20.1	18.5	17.4
Budget balance	-2.9	-2.8	-4.9	-5.2	-3.5	-3.0
Fiscal balance (including off-budget COVID spending) /2	-2.9	-2.8	-7.1	-9.0	-5.9	-3.7
Public debt	42.0	41.0	49.4	58.2	61.1	62.3
Monetary sector	(In percent change)					
Domestic private credit (in percentage change)	6.2	2.6	4.0	4.3	4.3	
(in % of GDP)	127.2	126.6	142.2	143.3	140.8	
Policy rate (percent per annum, end of period)	1.8	1.3	0.5	0.5	1.0	
10-year government bond yield (period average)	2.7	2.0	1.3	1.8	3.1	
Broad money	5.1	4.1	8.9	5.2	4.7	
Memorandum items:						
Exchange rate (THB per US$, average)	32.3	31.0	31.3	32.0	35.5	35.0
Exchange rate (THB per US$, end of period)	37.8	38.8	39.8	32.8	38.0	
Nominal GDP (in THB trillion)	16.4	16.9	15.6	16.2	17.0	18.1
Nominal GDP (in US$ bilion)	500.5	541.6	506.9	500.1	479.4	510.2
GDP per capita (US$)	7,631.6	8,176.7	7,550.0	7,644.6	7,327.3	

Note: 1/ Fiscal year is October-September. FY2022 is the actual outturn, based on a cash basis. Fiscal Sector figures for FY2023 are based on AMRO staff estimates. 2/ The central government fiscal balance, excluding extra-budgetary funds and the social security fund.
Source: Thai authorities, AMRO staff estimates

Appendix 3. Balance of Payment

Unit: US$ billion	2018	2019	2020	2021	H1 2022
Current account balance (I)	**28.5**	**38.3**	**21.1**	**-10.3**	**-10.7**
Trade balance	22.4	26.7	40.9	38.9	14.5
Exports, f.o.b.	251.1	242.7	227.0	269.6	147.8
Imports, f.o.b.	228.7	216.0	186.1	230.7	133.4
Services, net	22.5	24.3	-14.9	-39.7	-19.9
Receipts	77.5	81.2	31.0	25.4	16.7
Payments	54.9	56.9	45.9	65.1	36.6
Primary income, net	-24.5	-20.0	-10.9	-18.0	-9.0
Secondary income, net	8.0	7.2	6.1	7.4	3.8
Capital account balance (II)	-0.6	0.0	0.0	0.0	0.0
Financial account balance, net[1] (III)	**-12.3**	**-14.8**	**-11.7**	**-6.0**	**4.6**
Direct investment, net	-3.4	-4.6	-23.5	-4.5	1.8
Portfolio investment, net	-5.8	-8.8	-12.0	-11.9	4.5
Financial derivatives, net	0.1	0.8	-0.4	-1.2	-0.2
Other investment, net	-3.3	-2.1	24.3	11.6	-1.4
Errors and omissions (IV)	**-8.3**	**-9.9**	**8.9**	**9.2**	**-1.3**
Overall balance (=I + II - III + IV)	**7.3**	**13.6**	**18.4**	**-7.1**	**-7.4**
Reserve assets (+ indicates increases)	**7.3**	**13.6**	**18.4**	**-7.1**	**-7.4**
Memorandum items:					
Current account balance (% of GDP)	5.6	7.0	4.2	-2.0	-2.7
Gross official reserves excluding net forward position	205.6	224.3	258.1	246.0	222.3
GDP	506.8	544.2	499.7	505.9	247.6

Note: 1/ The financial account is presented based on the BPM5 format. Net outflows in net balances are indicated by a minus (-) sign.

Appendix 4. Statement of Central Government Operations

Unit: THB billion	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023 (budgeted)
Gross revenue collected by the government	**2,974.1**	**3,061.1**	**2,864.6**	**2,829.2**	**3,070.8**	**3,002.8**
Revenue Dept.	1,915.5	2,009.3	1,833.8	1,875.8	2,166.3	2,029.1
Excise Dept.	580.4	585.4	548.4	531.6	503.5	567.0
Customs Dept.	108.7	108.5	93.9	102.4	110.5	105.5
Other Sections[2]	369.5	357.8	388.5	319.5	290.6	301.2
Net revenue[3]	**2,536.9**	**2,566.1**	**2,388.3**	**2,372.5**	**2,531.0**	**2,490.0**
(% of GDP)	15.7	15.3	15.1	14.9	14.7	13.9
Expenditure	**3,007.2**	**3,043.2**	**3,168.7**	**3,208.7**	**3,146.2**	**3,185.0**
(% of GDP)	18.6	18.1	20.0	20.1	18.5	17.8
Current	2,411.7	2,396.1	2,575.9	2,583.8	2,415.1	2,396.9
Capital	380.3	387.1	367.9	428.4	382.8	695.1
Carry over	215.1	254.9	224.9	196.5	213.7	-
Budget balance / Domestic borrowings	**-483.0**	**-503.0**	**-824.2**	**-762.0**	**-595.4**	**-695.0**
(% of GDP)	-3.0	-3.0	-5.2	-4.8	-3.5	-3.9
Budget balance / Domestic borrowings (including off-budget COVID spending) (% of GDP)[4]	-3.0	-3.0	-7.1	-9.0		
Non budgetary balance[5]	**92.3**	**33.5**	**99.3**	**42.3**	**-**	**-**
Cash balance: before financing	-390.7	-469.5	-725.0	-719.7	-	-
Borrowing to finance the deficit	**500.4**	**349.0**	**784.1**	**736.4**	**700.0**	**695.0**
Fiscal cash balance	109.7	-120.5	59.1	16.6	-	-
Public debt (% of GDP)	**42.0**	**41.0**	**49.4**	**58.4**	**-**	**-**

Note: 1/ The fiscal year falls between October and September. Using the fiscal cash balance basis. FY2023 is based on authorities' figures.
2/ Other sections include revenue from SOEs and other government agencies.
3/ Net revenue is the gross revenue excluding the tax rebate of the Revenue Department, the VAT allocation to provincial and local administrative organizations, export duty compensation and other taxes.
4/ Refers to the central government fiscal balance and spending under the Emergency Loans, but excluding extra-budgetary funds and the social security fund.
5/ The non-budgetary balance cover the operation of autonomous organizations that are established under specific laws, such as the National Health Security Office and Social Security Office. Therefore, their budget proposals do not need to be scrutinized by the government.

Appendix 5. Data Adequacy for Surveillance Purposes: a Preliminary Assessment

Surveillance Areas	Data Availability(i)	Reporting Frequency/Timeliness(ii)	Data Quality(iii)	Consistency(iv)	Others, if any(v)
National Account	Available	Quarterly, six weeks after the end of the reference quarter, based on an advance release calendar.	-	-	-
Balance of Payments (BOP) and External Position	Available	BOP data is reported monthly with a two-month lag (one-month lag for trade data), released on the last business day of the month. Official reserve assets are reported weekly with a one-week lag. External debt is reported quarterly with a one quarter lag. Exchange rates are reported daily at 6 pm (BKK-GMT+07:00) on a working day.	-	-	-
State Budget and Government/External Debt	Available	Planned budget is announced before the beginning of the fiscal year in October (annual). Budget implementation (expenditure and revenue) is reported monthly with a one-month lag. Government/external debt is reported monthly with a one-month lag.	-	-	-
Money Supply and Credit Growth	Available	Monetary aggregates and monetary survey are reported monthly with a one-month lag. Credit and deposit data is reported monthly with a six-week lag.	-	-	-
Financial Sector Soundness Indicators	Available	“Performance of the Thai Banking System”, as well as related data, are reported quarterly by the BOT with a quarter lag.	-	-	-
State-Owned-Enterprises’ Statistics	Available	(1) State Enterprise Key Indicators (quarterly, in Thai) by the State Enterprise Policy Office (SEPO) under the MOF. (2) State Enterprise Review published annually by SEPO for individual SOEs. (3) Monthly and (4) Quarterly report on data and performance review (respectively) of SFIs (no fixed schedule); listed companies must follow stock exchange disclosure requirements.	-	-	-

Notes:
1. Data availability refers to whether the official data is available for public access by any means
2. Reporting frequency refers to the periodicity of data publication. Timeliness refers to how up to date the published data is relative to the publication date
3. Data quality refers to the accuracy and reliability of the available data given the data methodologies that are taken into account
4. Consistency refers to both internal consistency within the data series itself and its horizontal consistency with other data series of either the same or different categories
5. Other criteria might apply, if relevant. Examples include but are not limited to potential areas of improvement for data adequacy.

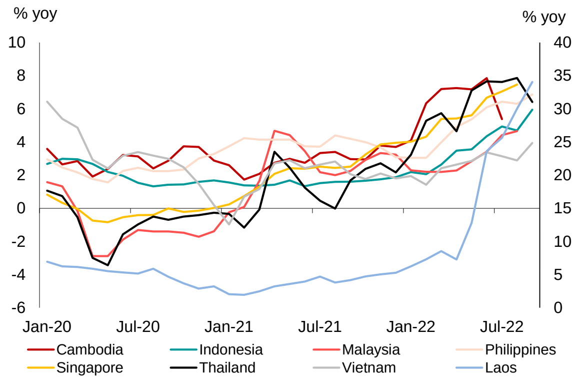
Source: AMRO staff compilations. This preliminary assessment will form the “Supplementary Data Adequacy Assessment" in the EPRD Matrix.

Annexes: Selected Issues

1. Impact of High Commodity Prices on Inflation and Public Debt[20]

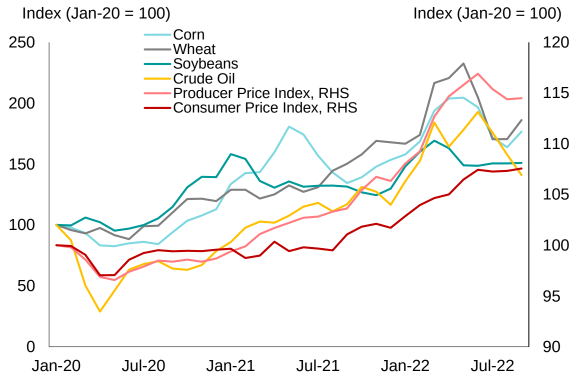
1. **Inflation in Thailand rose sharply in 2022 and is among the highest in the region.** Since the start of the pandemic, inflationary pressures in Thailand had remained subdued due to the significant impacts of the pandemic and weak recovery. In 2022, however, Thailand's inflation increased sharply and is now among the highest compared to regional peers (Figure A1.1). The surge in domestic prices stemmed mainly from the spike in crude oil and global commodity prices following the outbreak of the war in Ukraine in February (Figure A1.2). Energy prices, despite having moderated since June, remain elevated and have also contributed to higher prices in other items in the CPI basket, particularly the cooked and prepared food categories, in addition to the direct impact on domestic fuel prices. A weaker Thai baht has also partially resulted in higher import prices.

Figure A1.1. Inflation in Selected Regional Economies



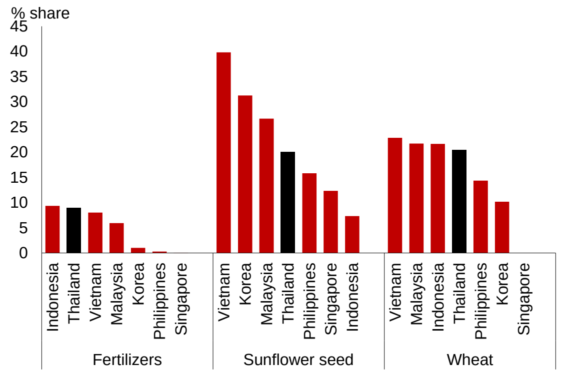
Source: Regional authorities, Bureau of Trade and Economic Indices

Figure A1.2. Key Agricultural and Crude Oil Prices, and Thailand's CPI and PPI



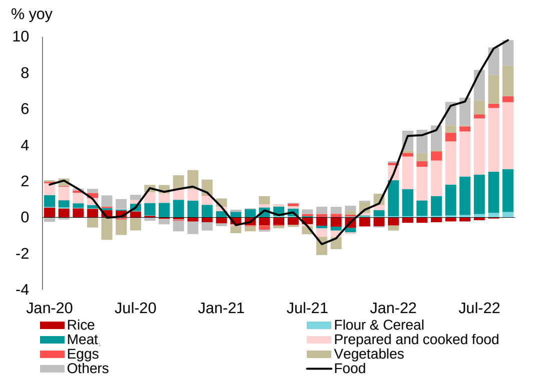
Source: World Bank, Bureau of Trade and Economic Indices

Figure A1.3. Share of Fertilizer, Sunflower Seed And Wheat Imports From Russia and Ukraine



Source: Global Trade Atlas, AMRO staff calculations

Figure A1.4. Thailand's Food and Beverage Price Index



Source: Bureau of Trade and Economic Indices, AMRO staff estimates

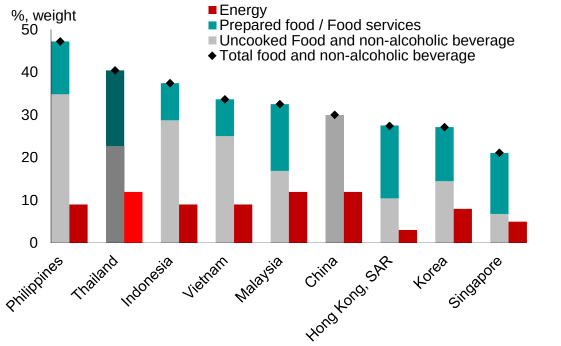
2. **The decline in key commodity imports from Russia and Ukraine has affected animal feed prices, which have in turn led to higher food prices in Thailand.** Although the direct impact of reduced agricultural imports from Russia and Ukraine on food prices has been limited, the lower sunflower oil and wheat imports from Russia and Ukraine, which make up a large share of Thailand's total imports of such goods, have partially contributed to a sharp increase in animal feed prices (Figure A1.3). Higher fertilizer prices are also gradually affecting the prices of key crops such as rice, corn and sugarcane. This has in turn led to the sharp and

[20] Prepared by Ming Han (Justin) Lim, Desk Economist, and Andriansyah, Fiscal Specialist.

continued rise in the prices of meat, vegetables, eggs, and prepared and cooked food (Figure A1.4).

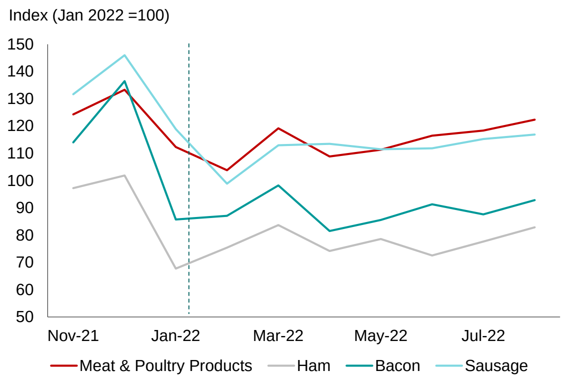
3. **The high inflation is also attributed to the large weightage of food in Thailand's CPI basket and disruption in domestic pork production**. Even though energy prices have eased, inflation in Thailand remains elevated given the large share of food and non-alcoholic beverages in the CPI basket, which is among the biggest in the region (Figure A1.5). Moreover, prices of pork have surged since January 2022 due to a domestic outbreak of African swine fever, which severely curbed the production of meat in Thailand (Figure A1.6). Prices of poultry have also increased since May, in part due to Malaysia's partial poultry export ban, which galvanized other countries into buying supplies from Thailand at higher prices.

Figure A1.5. Share of Food and Energy in CPI basket



Source: Regional authorities, Bureau of Trade and Economic Indices

Figure A1.6. Meat Production



Source: Office of Industrial Economics

Table A.1: Key Measures to Reduce the Impact of Rising Energy and Food Prices

Measures	Guidelines
Price controls	**A. Legal measures regulating 56 price-controlled items:** 1. Regulate 56 price-controlled items (51 goods and 5 services) on which different measures are applied: • Determine maximum retail price (e.g. facial masks) • Need prior approval for price change (e.g. milk, fertilizers, pesticides) Require at least 15 days of advance notice of price change (e.g. washing powder, soap, shampoo) **B. Administrative measures** 1. Closely monitor retail prices of listed goods and services (242 items): • Watch List - monitored twice a month (212 items) • Priority Watch List - monitored twice a week (9 items) • Sensitive List - monitored daily (21 items) 2. Seek cooperation from producers and retailers to voluntarily maintain stable prices
Discount schemes	1. Sell discounted essential products via physical stores, online platforms, and mobile units visiting each local community
Lifting of import curbs	1. Temporarily suspend controls on wheat imports 2. Allow duty-free corn imports of up to 600,000 tonnes 3. Negotiate with potential suppliers such as Saudi Arabia for fertilizer supplies

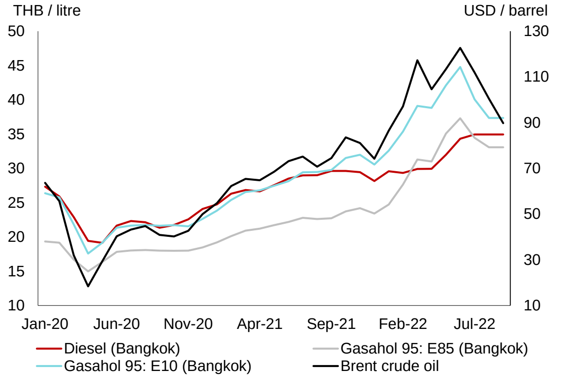
Source: Ministry of Commerce

4. **The authorities are closely monitoring price increases and regularly consult producers on price adjustments for key goods and services.** The Ministry of Commerce closely monitors the prices of 242 goods and services, which are classified into three main groups – watch list, priority list and sensitive list (Table A.1). In light of the surge in production costs, the ministry is also in close consultation with affected producers to better understand

the changes in their cost structures. Producers are also encouraged to either voluntarily delay price increases or gradually raise their charges. On price controls, the authorities regulate 56 types of goods and services, of which 29 are included in the CPI basket, making up 26.4 percent of the CPI basket. Price changes of the regulated goods, such as motor fuel, cooking gas, eggs, poultry and pork, are subject to prior government approval. To address the shortfall in key imports from Russia and Ukraine, the authorities have removed import quotas on wheat and import duties on corn and are also exploring alternative import sources for fertilizers.

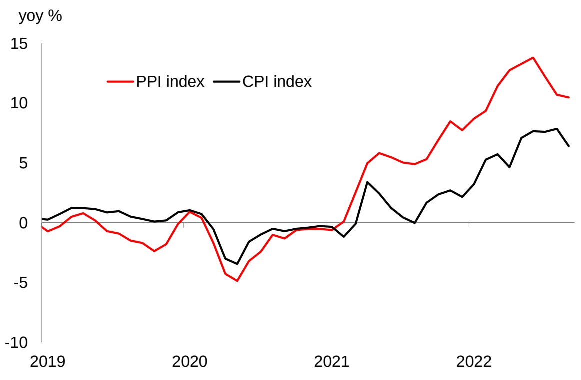
5. **Several quasi-fiscal institutions are providing fuel and electricity subsidies, while the authorities have cut excise tax on diesel**. Apart from the measures undertaken by the Ministry of Commerce, several other government agencies and state-owned enterprises (SOEs) also provide subsidies for fuel, cooking and natural gas, and electricity. The State Oil Fuel Fund (Box A1.1) caps the prices of LPG cooking gas and diesel, compensates fuel producers and importers in light of the price caps, and reduces or waives payment of the Oil Fuel Fund levy (Figure A1.7). Meanwhile, the cost of capping fuel tariffs for electricity generation is borne by the Electricity Generating Authority of Thailand (EGAT), and PTT Plc is involved in subsidizing natural gas for public transportation. In addition, excise tax on diesel was reduced from THB6.44 to THB3.44 per liter between February and May, and further reduced to THB1.44 per liter until January 2023.

Figure A1.7. Fuel Prices and Brent Crude Oil Price



Source: Energy Policy and Planning Office; Ministry of Energy; Bureau of Trade and Economic Indices

Figure A1.8. Consumer and Producer Price Indices

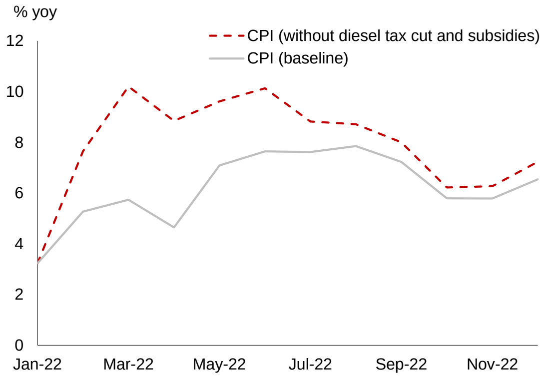


Source: Bureau of Trade and Economic Indices

6. **Although these subsidies have dampened the price pressures, they were progressively rolled back in view of the high fiscal costs.** Since early-2021, the cost pass-through from producers to consumers has weakened, mainly due to the price controls on key goods and the electricity and fuel subsidies, and the weak economic recovery (Figure A1.8). Without these subsidies and reductions of excise tax and oil fund levy, AMRO estimates that inflation could be as high as 7.9 percent in 2022 instead of 6.2 percent (Figure A1.9). However, by taking these measures, the government has incurred significant off-budget spending and a loss in diesel excise tax revenue. Based on official and AMRO estimates, the government has spent more than THB265.4 billion,[21] or 1.7 percent of GDP, to curb the impact of high energy prices on inflation since last year. In light of their high fiscal costs, authorities have gradually rolled back these subsidies, for example, by progressively raising the price of cooking gas from THB18.9 per kg to THB24.9, even though this rollback has contributed to further price pressures in the prepared and cooked food categories (Figure A1.10).

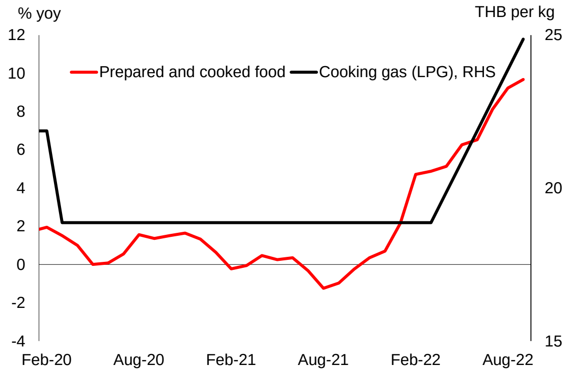
[21] The Oil Fuel Fund has spent more than THB120 billion to subsidize diesel and cooking gas. Electricity subsidies by EGAT amounted to THB85 billion, while PTT has spent THB6.5 billion on natural gas subsidies for public transportation. The estimated diesel excise revenue foregone since February 2022 is about THB56.4 billion (until the end of FY2022).

Figure A1.9. Impact of Subsidies and Diesel Excise Tax Cut on Inflation



Source: AMRO staff estimates

Figure A1.10. Prices of Prepared and Cooked Food Index and LPG Cooking Gas



Source: Energy Policy and Planning Office, Ministry of Energy, Bureau of Trade and Economic Indices

7. **AMRO staff projections show that public debt would increase further but remain below the 70 percent ceiling (Figure 1.4. Debt Sustainability Analysis).** Despite the fiscal costs incurred in providing these subsidies, Thailand's public debt is assessed to be still sustainable according to the government's fiscal sustainability framework. The budgetary fiscal balance is also projected to decline further over the medium term. Under a baseline scenario that assumes a gradual economic recovery path, stable interest and exchange rates and moderate fiscal consolidation, Brent crude oil remains elevated at USD80 to USD95 per barrel, while public debt is expected to reach 64.4 percent of GDP in FY2026. However, should energy prices increase further and broad-based subsidies be reintroduced, the subsidy costs borne by extra-budgetary funds and public institutions may lead to even higher public debt. In an extreme scenario where global oil prices rise to as high as USD150 per barrel, the Oil Fuel Fund might need to borrow THB300 billion[22] to finance its deficit; eventually, this borrowing would increase public debt to 69 percent of GDP in FY2026.

8. **As such, the roll-back of subsidies is welcomed as it allows the authorities to focus on Thailand's post-pandemic recovery efforts while ensuring medium-term fiscal sustainability.** AMRO supports the government's fiscal policy to lessen the impacts of high inflationary pressure on more vulnerable segments through fuel subsidies. However, as an economy with a robust social security system (Amaglobeli et al. 2022), Thailand should take a pro-poor progressive approach to provide subsidies that are more targeted at lower-income earners and yet temporary in nature. The authorities also need to let international fuel prices pass through to the domestic market, so as to ease the burden on the quasi-fiscal operations of government-linked institutions. The fiscal costs of subsidies should be gradually phased out or reallocated to infrastructure development and structural reform, such as digitalization and climate change transition. In addition, a gradual increase in VAT, say, from 7 percent to 8 percent in FY2024, can mitigate the impact of higher subsidies on public debt below the ceiling (Figure 1.4. Debt Sustainability Analysis). The gradual normalizing VAT rate must be balanced by increasing the allocation and making social aid programs more targeted.

[22] If Brent crude oil prices increase to USD150 per barrel in the extreme scenario, Thailand's diesel price is estimated to rise to THB57 per liter, which is much higher than the current ceiling of THB35. Assuming a monthly diesel consumption of 2.4 billion liters, the subsidy would amount to THB25 billion a month, which works out to THB300 billion per year.

Box A1.1. Quasi-fiscal Operations of Oil Fuel Fund[23]

Thai authorities have adopted several price-stabilization measures, such as capping fuel prices[24] via the Oil Fuel Fund, to combat the social impacts of rising energy prices. Diesel fuel is a primary source of energy for boats, trucks and buses, while liquefied petroleum gas (LPG) is used for cooking. Increases in diesel fuel and LPG prices will raise transportation and cooking costs and, thereby, the prices of necessity goods, eventually affecting people's purchasing power, especially among poor households. In Thailand, the institution responsible for stabilizing domestic fuel prices in the event of increasing global oil prices is the Oil Fuel Fund.

The fund was established in 2004 and reinforced by the Oil Fuel Fund Act in 2019 with the sole objective of stabilizing domestic fuel prices. The fund is managed by a government agency, the Oil Fuel Fund Office (OFFO), and operates under policies determined by the National Energy Policy Council. The Minister of Energy is chairman of the fund's management committee, one of whose members is the Permanent Secretary of the Ministry of Finance. The fund must follow the policy framework stipulated in the Oil Fuel Fund Act to stabilize fuel prices. First, it must have sufficient operating funds of up to THB40 billion, which includes loans. Second, if the fund has insufficient liquidity to operate, the OFFO, with the approval of the Council of Ministers, has the power to borrow a maximum of THB20 billion. The borrowing limit may be changed in line with a specific economic situation, but the change must be stipulated in a royal decree. For instance, under the prevailing higher fuel prices, a royal decree was enacted in 2021 to allow the fund to borrow up to THB40 billion, double the statutory cap.

Measures to stabilize fuel prices mainly work through compensation. The fund compensates fuel producers and importers, with the amount dependent on the volume of fuel produced, distributed or imported, and the volume of LPG bought or received. Meanwhile, the fund receives its primary income from fuel refineries, distributors and importers, and from buyers and receivers of LPG. The contribution from each party is determined by a formula set by the Excise Department for refineries, the Customs Department for importers, and the Department of Mineral Fuels for buyers and receivers of LPG based on the quantity of fuel and LPG produced, imported and sold.[25] Due to the higher fuel prices, the fund is in deficit as of August 28, 2022 (Table A1.1.1).

Another stabilization measure is a reduction or exemption of the Oil Fuel Fund levy for diesel, LPG and gasoline (Table A1.1.2). The reduction or exemption of the levy is also considered a subsidy[26] and will reduce the fund's income. Recently, the government announced that the fund's levies would be adjusted weekly to stabilize retail fuel prices. For instance, the levies for Gasohol 91 and Gasohol 95 were reduced from THB1.02 to THB0.09 per liter in June.[27]

[23] This box is prepared by Andriansyah, Fiscal Specialist.
[24] The standard diesel fuel price was capped at THB30 per liter between December 20212010 and April 30, 2022. Starting May 1, 2022, the government increased the cap to THB35 per liter, which was in effect until end-June, after which it began raising the price gradually every week to reflect the higher international oil prices. The latest retail price of standard diesel stood at THB34.94 per liter as of August 25, 2022. The cap of THB35 per liter has ended by end of June. Meanwhile, the LPG price cap of THB318 per 15kg, in place for the past two years, was lifted on March 31, 2022. Since then, the LPG price has been adjusted on a quarterly basis. It was raised from THB363 in June to THB378 in July, THB393 in August and THB408 in September.
[25] For instance, the compensation rates for fuel produced and used domestically range from THB0.06-7.18 per liter depending on the type of fuel, such as THB7.18 per liter for gasoline and THB0.06 for high-speed diesel B7, according to the committee's announcement on September 30, 2022.
[26] There are many types of subsidies, such as direct cash and semi-cash transfers; reductions and exemptions in taxes, excise, levy and import duties; subsidized credits; electricity price cuts; and losses incurred by SOEs. ADB (2015) estimated that the cost of the oil subsidies totaled about THB189 billion in 2012.
[27] Diesel price rise on Tuesday, levy cut for gasohol. Bangkok Post, accessed on June 9, 2022.
https://www.bangkokpost.com/business/2321578/diesel-price-rise-on-tuesday-levy-cut-for-gasohol

Table A1.1.1. Oil Fuel Fund Financial Positions (THB million)

	Dec 26, 2021			Aug 28, 2022		
	Oil	LPG	Total	Oil	LPG	Total
Assets	**33,461**	**1,651**	**35,112**	**13,719**	**1,342**	**15,061**
Bank Deposit	4,871	-	4,871	2,047	-	2,047
Deposit at MOF	26,800	-	26,800	-	-	-
Account Receivables	1,790	1,651	3,441	11,672	1,342	13,014
- Money to be transferred from the LPG account	*1,430*	-	*1,430*	*11,207*	-	*11,207*
- Income from oil traders	*360*	-	*360*	*465*	-	*465*
- Income from LPG plants	-	*1,378*	*1,378*	-	*1,050*	*1,050*
- Income from LPG dealers	-	*273*	*273*	-	*292*	*292*
Liabilities	**15,217**	**24,375**	**39,592**	**92,020**	**42,805**	**134,825**
Money to be transferred to the oil account	-	1,430	1,430	-	11,207	11,207
Compensation for the price of LPG produced by separation plants	-	277	277	-	277	277
Compensation for LPG gas prices from the concessionaire	-	8	8	-	11	11
Compensation for the price of LPG used as fuel	-	22,660	22,660	-	31,310	31,310
Various types of fuel compensation	15,092	-	15,092	91,990	-	91,990
Compensation according to the measures to reduce the retail oil price	7	-	7	6	-	6
Administrative costs	118	-	118	24	-	24
Fund Position (Net)	**18,244**	**-22,724**	**-4,480**	**-78,301**	**-41,463**	**-119,764**

Source: Oil Fuel Fund Office
Note: Oil includes gasoline and diesel fuel.

The fuel price stabilization conducted by the fund is essentially a quasi-fiscal operation.[28] The cost of the price caps will be shouldered by the fund instead of the central government budget. Over the long term, the fund's position is expected to be neutral: surplus accumulated during lower oil prices will be used to finance the deficit during higher oil prices. In reality, however, the fund's position is very volatile (Figure A1.1.1): the fund did not accumulate enough surpluses from 2015 to mid-2021 when the oil prices were low; therefore, it experienced a significant negative position of THB120 billion as of August 2022 with the recent surge in oil prices. To finance its negative position, the fund should follow a series of steps: first, increase fuel prices when the market price exceeds the price cap; second, borrow not more than THB40 billion if the fuel price increases are still insufficient to cover the negative position; and third, request a subsidy from the government. The last resort would be to seek further funding from the private sector, such as PTT, ExxonMobil and Shell. In end-September 2022, the Cabinet approved an emergency decree allowing the fund to borrow up to THB150 billion, or about 1 percent of GDP, with the Ministry of Finance as the guarantor.[29] The borrowing is expected to increase public debt. Therefore, the operation of the fund will affect the public sector's fiscal position. Going forward, the fund should conduct a scenario analysis to decide how much of a net positive position is necessary to compensate for surging oil prices. It can also consider raising the operating balance of THB40 billion so as to accumulate higher surpluses when oil prices are low.

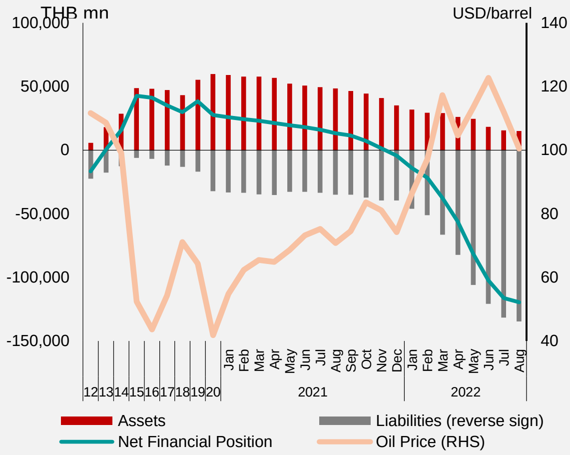
[28] Both the IMF (2007) and the International Budget Partnership (2011) define a quasi-fiscal operation as an activity undertaken by a public corporation or a private-sector company at the direction of and on behalf of the government.
[29] Oil Fund Set to Get Cash Boost. Bangkok Post, accessed on October 3, 2022. https://www.bangkokpost.com/thailand/general/2401705/oil-fund-set-to-get-cash-boost

Table A1.1.2. Structure of Fuel Prices under Fund's Purview

	LPG	Diesel	Gasoline
Ex-refinery	√	√	√
Excise Tax	√	√	√
Municipality tax	√	√	
Oil fund levy	√	√	√
Conservation fund		√	√
Wholesale VAT	√	√	√
Retail VAT	√	√	√
Marketing margin	√		

Source: IISD (2013)

Figure A1.1.1 Fund's Financial Balance



Source: The Oil Fuel Fund Office; CEIC

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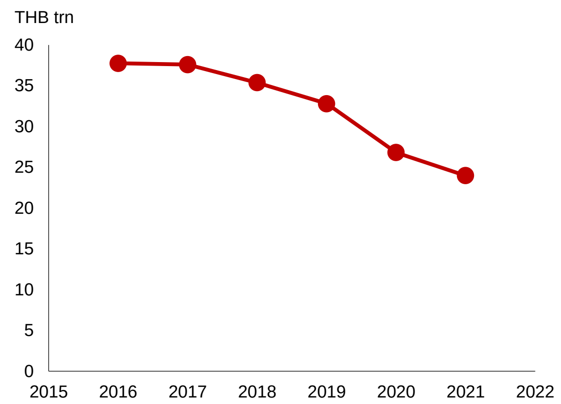
2. Shifting toward financial digitalization and progress of CBDC[30]

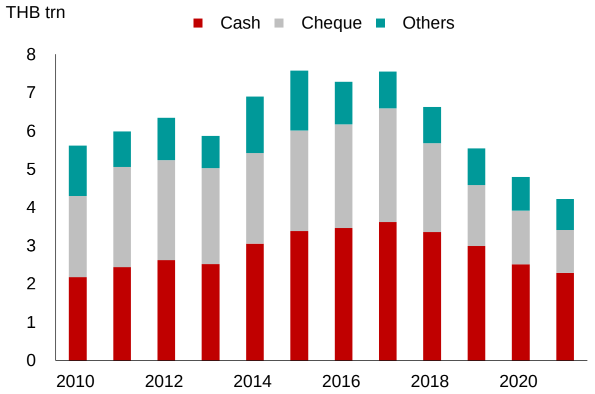
1. Payment methods have been shifting toward using digital platforms in Thailand. In recent years, the adoption of cashless, contactless and digital payment has accelerated, underpinned by mobility restrictions imposed during the pandemic. In 2020, online payments accounted for 86 percent of total transactions, while offline point of sale made up the remainder (BOT 2020), of which 63 percent used cash (FIS 2021). While cash withdrawals over the counter declined steadily (Figure A2.1), bill payments by cash at bank and non-bank counters also decreased by 34 percent from 2017 to 2021. During the same period, check payments dropped sharply by 62 percent reflecting the Bank of Thailand's (BOT) promotion of digital payment in lieu of checks (Figure A2.2). Digital infrastructure continues to improve, rendering cashless payment more popular among Thais. Digital payment usage per capital increased by about five times during 2016 to 2021 (Figure A2.3).

Figure A2.1. Cash Withdrawals over the Counter



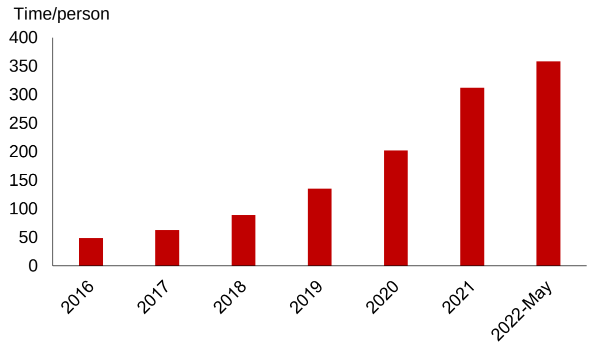
Source: BOT, AMRO calculations

Figure A2.2. Bill Payments at Bank and Non-bank Counters



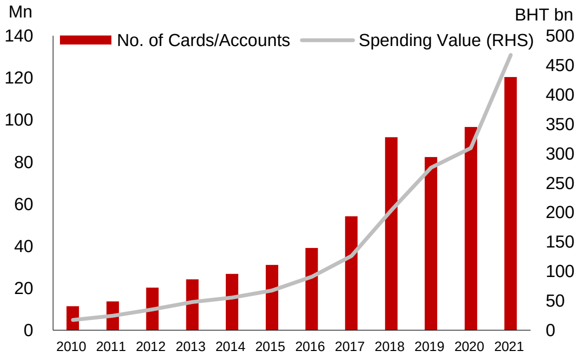
Source: BOT, AMRO calculations

Figure A2.3. Digital Payment Usage per Capital



Source: BOT, AMRO calculations

Figure A2.4. Use of e-Money



Source: BOT, AMRO calculations

2. With the help of digital technology, e-money, mobile banking and financial technology have played an increasingly important role in Thailand. The use of e-money, a new digital payment option, has been increasingly popular over the past years both in the number of accounts and in value (Figure A2.4**)**. The BOT has issued licenses to 30 e-money issuers, of which 23 are non-bank companies, which signals the growing role of non-banks in retail payment. From 2017 to 2021, mobile banking transactions rose remarkably, by about 12 times in volume and six times in value (Figure A2.5). Thailand also has a fast-growing fintech sector, having registered 268 fintech companies by Q3 2021. In the first nine months of 2021, fintech companies secured funding of USD215.6 million, a significant improvement of about

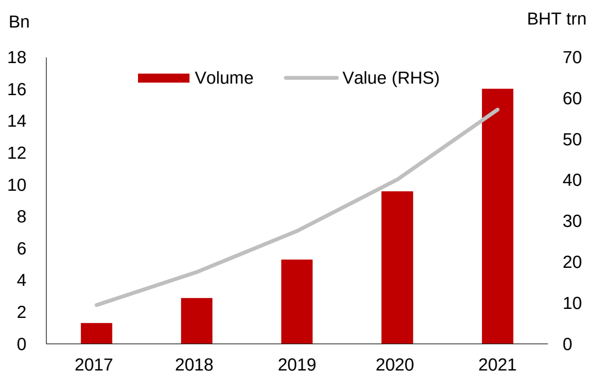
[30] Prepared by Hoai Viet Le, Associate (up to December 2022).

60 percent from the USD134 million in 2020 (Fintechnews 2022). Thailand reportedly attracted 15 percent of the total fintech investment directed to ASEAN countries in 2021, compared to just 2 percent in 2019 (Swiss Business Hub ASEAN 2022).

3. **The nationwide shift to digital payment is taking place under the National E-Payment Master Plan and Payment Systems Roadmap.** The National e-Payment Master Plan,[31] announced in 2015, was intended to develop a foundation for continuous development of digital payment infrastructure and services (BOT 2019). The BOT, as the agency regulating payment systems, supported the master plan by implementing Payment Systems Roadmaps ,[32] taking main responsibility for the PromptPay project and a card usage expansion drive. Under the roadmaps, the rollout of e-wallets and continued adoption of digital payment were expected to improve business efficiency, raise productivity and promote financial inclusion. The fourth and latest roadmap aimed to create an interoperable payment infrastructure by creating a biometric method of user authentication, developing a cross-border payment and fund transfer service, and promoting widespread usage of digital payment. The roadmap targeted digital payment as the most preferred choice in Thailand, with digital finance expected to be offered to small businesses for future economic growth. With the adoption of PromptPay and QR code payment, new digital services related to payment innovations were introduced, such as Pao Tang[33] and digitalized income-tax refunds.

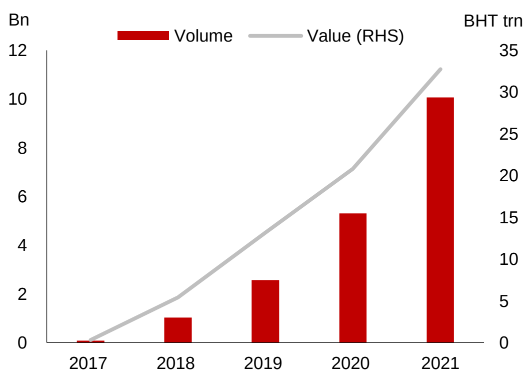
4. **The nationwide adoption of PromptPay financial technologies was a game changer in retail payment.** Digital platforms like PromptPay and QR code payment enabled real-time settlement in a low-cost, secured and convenient manner, facilitating efficient financial transactions among people and businesses. While credit card usage has been relatively low in Thailand compared to advanced economies,[34] the people have easily embraced PromptPay, which recorded 71.1 million accounts/users as of June 2022, including foreigners. The volume and value of transactions via PromptPay in 2021 increased exponentially from 2017 (Figure A2.6).

Figure A2.5. Use of Mobile Banking



Source: BOT, AMRO calculations

Figure A2.6. Use of PromptPay



Source: BOT, AMRO calculations

Ongoing challenges

5. **While financial digitalization has expanded at a rapid pace, challenges remain.** Regardless of the authorities' efforts to drive a cashless society, a portion of the population still stick to cash due to its convenience, their habits and concerns over digital tracking. The

[31] The master plan is a national strategy that seeks to push the development of payment infrastructures and the use of electronic payment. It comprises five important projects: (1) the PromptPay project, (2) the card usage expansion project, (3) the e-Tax and e-Document systems project, (4) the Government e-Payment project, and (5) the literacy and promotion project.
[32] These roadmaps provide a framework to develop Thailand's payment systems during 2002-2004 (Roadmap 1), 2005-2010 (Roadmap 2), 2012-2016 (Roadmap 3) and 2019-2021 (Roadmap 4).
[33] Pao Tang is an all-in-one application of Krungthai Bank that is designed to cover all of people's needs, from banking, savings and investment products to the government's financial aid as well as health care and lifestyle needs.
[34] Credit card penetration in Thailand is 30 percent, compared to 85 percent in Singapore, 11 percent in Vietnam, and 6 percent in Indonesia (Sartiges 2020).

BOT found in a 2022 survey on Pao Tang users that most people reverted back to the use of cash after the government's money transfer schemes expired. People deemed it necessary to have cash in their pockets as it was seen as more convenient, more widely accepted, cheaper and more private than digitalized options (Thai Examiner 2022). For smaller retailers and enterprises, the cost of installing digital payment systems cuts into their profitability and hinders them from making the cashless service available to customers. So, the authorities may need to provide more incentives to use digital payment, for example, through e-money handouts, rebates and a loyalty system.

6. **Cross-border payment through financial digitalization requires more regulatory readiness.** Thailand is a fast mover in adopting digital payment systems for cross-border transactions, such as cross-border PromptPay and QR code payment initiatives to link businesses and individuals in Thailand with their counterparts in other countries,[35] and wholesale CDBC, to overcome limitations in the traditional cross-border payment system. Financial digitalization also allows cross-border capital flow via digital currencies, or via digitalized money transfer operators, which require additional regulations and measures for the authorities to control and monitor the transactions. For instance, caps on cash amounts that were allowed to be physically carried over the border could be less effective with the wide use of digital assets (Chen and Tsang 2021). Meanwhile, cryptocurrency, while not recognized as a mean of payment legally, is a new instrument, not yet under sufficient control of the authorities. Given its rapid development, any regulatory deficiencies may result in unintended distortions in the market. As many Thais are interested in cryptocurrency as a payment option (Cash Matters 2022), more research may be needed to establish a credible regulatory environment for the widespread use of cryptos and CDBCs.

7. **While digital payment is increasingly adopted, data security, privacy and consumer protection should not be neglected.** Digitalization is seen as a double-edged sword, with the undesirable aspect being cybersecurity risks (Techwire Asia 2022). More than 200 attacks on public and private financial institutions have been reported since 2007 (Carnegie 2022). Individual consumers have also been increasingly targeted by financial fraud, which can take many forms, including overseas deception, stealing important digitalized personal information that could be used to extract funds from victims. According to Kaspersky research, social engineering scams are the top threat in most ASEAN countries, while in Thailand, the most encountered risk is fake websites, which makes up 31 percent of all cyber threats detected in the nation (Techwire Asia 2022). Cybersecurity threats are increasingly related to cross-border crime, so the authorities should promote international coordination in strengthening data security against data theft. The loss of privacy is another concern as individual spending patterns are increasingly exposed to or tracked by digital payment platforms.

Box A2.1. Central Bank Digital Currency (CBDC) – Opportunities and challenges[36]

In the region, Thailand is one of the leading economies with both retail and wholesale CBDCs; in particular, its wholesale CBDC is among those that had an early start. Thailand's roadmap to CBDC began with Inthanon Project Phase 1 in 2018 and Phase 2 in 2019, both of which were collaborative projects between the BOT and domestic financial institutions. With positive takeaways from the projects, Thailand has a "proof-of-concept", in enabling core features of wholesale CDBC in cross-border settlement with Hong Kong, China (Inthanon-Lionrock Phase 1) in 2019, which was

[35] Cross-border payment links were set up with Japan in 2018, Cambodia (2020), Vietnam (2021), Malaysia (2021), Indonesia (2021) and Singapore (2021). [this footnote also appears in the main report]
[36] This box is prepared by Hoai Viet Lie, Associate.

then expanded to multiple CBDCs (m-CBDCs)[37] in 2021, including with Hong Kong, the United Arab Emirates and mainland China, during which time the project was renamed m-Bridge Project. The m-Bridge project has laid a promising foundation for enlarging the cross-border wholesale CDBC network to even larger number of jurisdictions and financial instruments[38].

The participation of more jurisdictions in wholesale CBDC requires multilateral and coordinated regulatory arrangements. Given that the m-Bridge Project is of a limited scale with only selected participants, the potential to scale up should be explored when more validator nodes are added as a result of the increase in participating jurisdictions (BOT & HKMA 2021). Besides, the m-CDBC system requires multilateral arrangements on cross-border data flow, including those related to verification and measures on anti-money laundering and combating the financing of terrorism, which essentially comply with the local regulations of the participating jurisdictions. Ensuring user privacy and system security within multiple entry points could be challenging as more countries and institutions join in. Furthermore, due to the high customization in designing CBDCs, the regulatory response must be coordinated and cohesive to establish the appropriate regulatory coverage among participating jurisdictions.

Following the fruitful "proof-of-concept" of wholesale CDBC projects, the development of retail CDBC shifted to a pilot phase in December 2022. The BOT extended the scope of retail CBDC development to a pilot phase to help develop related policies and improve the design of potential retail CBDC. The pilot phase would be separated into two tracks. The first track, called Foundation Track, was scheduled to start at end-2022 and expected to last until mid-2023. This would allow the CBDC, to be used in cash-like activities, such as paying for goods and services, within a limited scale of about 10,000 retail users and three companies (BOT 2022). The second track, known as Innovation Track, would assess the CBDC's programmability and improve its design to suit the needs of Thai private sector and retail consumers. The BOT allowed the private sector to apply for participation in CBDC Hackathon for submitting their business use cases for retail CBDC between August 5 and September 12.

The retail CDBC is still mostly at an experimental stage, being exposed to various risks. Like any other digital payment system, CBDC is vulnerable to cybersecurity attacks, account and data breaches and theft, counterfeiting, and distant future quantum computing attacks (World Economic Forum 2021). Through smart contracts, retail CDBC enables central banks to view data on users' spending patterns, which could result in a loss of privacy. Central banks may face additional risks such as technology failure or cyberattacks which could lead to payment disruptions or even nationwide systemic risk (UK Finance 2021). Retail CBDC could also encourage bank deposits to be converted into CBDC, which may result in higher funding costs for banks, especially small banks, or even the possibility of disrupting the existing financial-intermediation structure (Prashant and Quach 2022).

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[37] The multiple CBDC bridge is designed to explore the application of CBDCs to multi-currency cross-border payment.
[38] m-Bridge project showed that real-time gross settlements could be achieved using Distributed Ledger Technology (DLT) with lower costs, improved efficiency, fraud prevention, automated liquidity provisioning, on-demand foreign exchange conversion and settlement, and better regulatory compliance. Through the m-Bridge platform, 20 banks in the four jurisdictions have conducted 164 payment and foreign exchange transactions totaling over $22 million over six weeks, settled directly on the platform. The pilot of the use of CDBC by commercial banks for real-value transactions across borders, as part of Project m-Bridge, has been concluded successfully by BIS Innovation Hub in October 2022. (BIS 2022).

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3. FX liberalization: What does it mean for Thailand's Capital Flows?[39]

1. **Thailand's central bank announced foreign exchange measures in April 2022 to further ease capital outflow regulations.** The foreign exchange (FX) measures unveiled by the Bank of Thailand (BOT) in April emphasized greater flexibility, broader management of FX risk exposure and a lower administrative burden for Thai residents, both companies and individuals alike, in conducting FX transactions (BOT, 2022). Transaction ceilings and limits were removed, and the coverage of FX activities no longer requiring prior BOT approval, likewise widened. For example, commercial bank clients that have gone through the standard "know-your-business" process were no longer required to submit supporting documents for each of their regular transactions.

2. **While FX liberalization in Thailand is not new, the nature of the measures appears to have evolved in line with the country's economic development**. The stability of the domestic currency—given its implications for capital movement, financial institutions' risk exposure and trade competitiveness—goes hand in hand with ensuring macroeconomic and financial stability. To this end, the BOT has been revising and relaxing FX regulations as early as the 2000s to facilitate Thai business and exporters' operations in response to increasing trade competition and economic integration (Table A3.1). Most of the measures focused on facilitating or encouraging access rather than improving the transaction process *per se*, and focused on allowing permission to open foreign currency deposit (FCD) accounts, removing ceilings on these FCDs, or increasing the thresholds for Thai exporters that would require transaction forms, among others. In 2017, authorities recognized that further FX regulation reforms were needed to remove impediments to the economy's international competitiveness and ease of doing business, and thus issued the "Foreign Exchange Regulation Reform" road map (BOT, 2017). This marked a paradigm shift for the BOT, allowing the private sector greater flexibility in FX transactions within the central bank's framework. It also saw the rollout of measures that eased the administrative burden on FX transactions, such as electronic forms for reporting and reduction in document requirements. These changes in administrative policies are also among the defining features of Thailand's "New Foreign Exchange Ecosystem".

3. **The measures rolled out in April 2022 were, in fact, part of the BOT's ongoing road map under the New Foreign Exchange Ecosystem announced in 2020**. The New FX Ecosystem, a four-pillared approach, was meant to address key structural problems in the Thai foreign exchange market (Figure A3.1, Figure A3.2); by contrast, the reforms in 2017 appeared to mostly focus on improving the ease of doing business. In particular, these structural issues included unbalanced capital movements characterized by low(er) acquisitions of overseas assets by residents (Figure A3.3),[40] still-low hedging activity of the corporate sector, relatively high FX transaction costs compared to Thailand's peers, and high sensitivity to global financial volatility (BOT, 2020a).[41] Measures to accelerate the development of the new ecosystem under its first pillar were announced in November 2020 (BOT,2020b).

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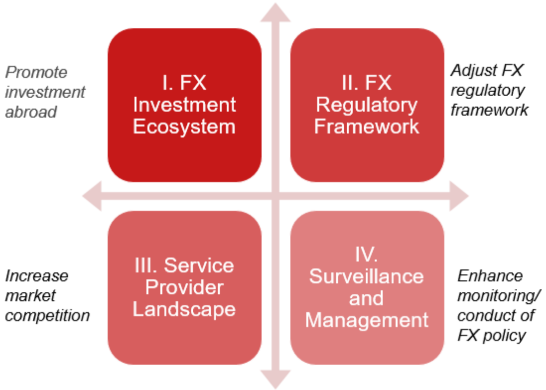
[39] Prepared by Marthe Memoracion Hinojales, Economist.

[40] This is because in the past five years, the strong current account surplus—averaging at about 8 percent of GDP—has "attracted high capital inflows…while capital [out] flows for direct investment and foreign portfolio investment" stood at only 4 percent of GDP (BOT, 2020a).

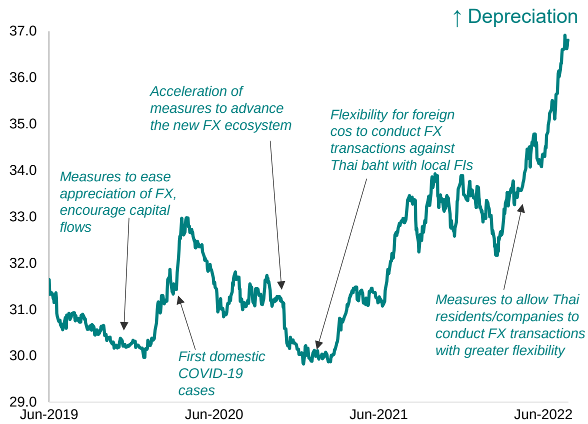
[41] According to the World Bank, the average cost of transferring USD500 from the United States, which banks and non-banks in Thailand charge as the FX transfer fee, was equivalent to about 5.3 percent of the total transfer amount as of Q2 2022, subject to an exchange rate margin of 2.4 percent. In comparison, the FX transfer fee in the Philippines was only 3.1 percent with an exchange rate margin of 1.4 percent; 3.1 percent in Vietnam with the exchange rate margin at 1.12 percent; and 4.29 percent in China with the exchange rate margin at 0.65 percent. The exchange rate margin is "the percentage difference between the market reference rate and the exchange rate actually applied to the transaction" (World Bank, 2022). As for the high sensitivity to global financial volatility, this is because at least 60 percent of all baht transactions happen in offshore markets rather than onshore, according to the Bank of International Settlements.

Figure A3.1. New FX Ecosystem, a Simplified Illustration



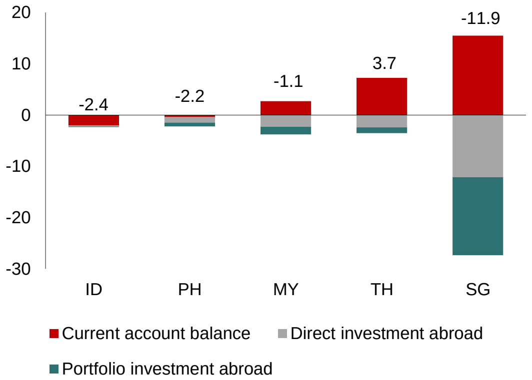
Source: AMRO staff

Figure A3.2. Thai Baht against USD



Source: National authorities via Bloomberg, official policy documents, AMRO staff

Figure A3.3. ASEAN-5: Resident Investment Abroad versus Current Account Balance
(2015–19 average, percent of GDP)



Source: AMRO staff
Note: ID = Indonesia; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand. Numbers atop the bars represent the sum of the three bars. Residents' investments abroad are considered outflows (liabilities) and are thus represented as negative values.

Table A3.1. Selected FX Liberalization Measures from 2006

Year	*Measures*
2006 May	Increased limits of FCDs' outstanding balance for a business from USD10 million to USD50 million.
2007 Jan	Allowed businesses with FCs received from abroad, but without future FX obligations, to deposit these funds in FC accounts, subject to ceilings.
2007 Jul	Allowed residents with funds that originated abroad regardless of the source to deposit FCs with financial institutions (FIs) in Thailand, subject to ceilings.
2007 Aug	Allowed residents with FC funds originating within the country to deposit the money in FIs in Thailand.
2007 Dec	Removed limit on FCDs as long as funds originated abroad; and raised limit on FCDs for residents with FC funds originating domestically.
2010 Oct	Allowed companies earning export proceeds in FC to transfer funds from their FCD accounts to counterparties locally to pay for goods and services; and increased FX transaction threshold requiring an FX transaction form from USD20,000 to USD50,000.
2017 Jun	Issued FX Regulations Reform, streamlining procedures and reducing documents required for transferring money abroad, and promoting transactions in electronic form, among others.
2019 Nov	Relaxed FX regulations regarding exemption on repatriation of export proceeds (e.g. relaxation of threshold for repatriation), investment in foreign securities, outward transfers, and settlement of domestic gold trading in FC; previously, gold trading could be done only in baht.
2020 Feb	Increased threshold on income and export proceeds that did not need to be repatriated.
2020 Nov	Allowed residents to freely deposit funds in FCD accounts and conduct fund transfers between FCD accounts; relaxed regulations regarding investment in foreign securities; and required registration for non-residents prior to bond trading.

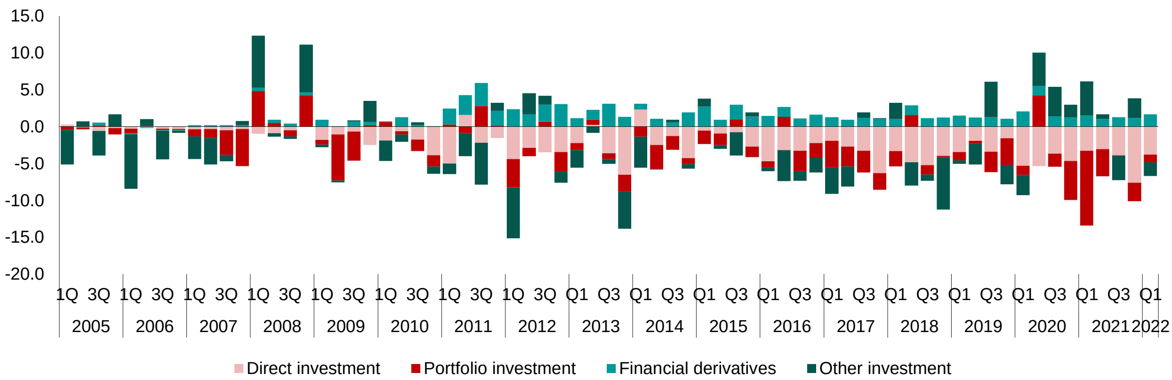
2021 Jan	Gave greater flexibility for non-resident companies to conduct FX transactions against Thai baht with domestic FIs under the non-resident qualified company scheme.
2022 Apr	Allowed residents greater flexibility in both cross-border and domestic FX transfers; allowed resident companies to manage FX exposure more broadly; and eased documentary requirements.

Source: BOT, various press releases, AMRO staff compilation

4. **AMRO conducted a simple empirical exercise to examine if the easing of FX regulations has indeed affected Thai residents' outward investments.** Looking at the behavior of residents' overseas assets, as captured in the balance of payments, and whether it has significantly changed over time can shed light on whether such policies have been indeed beneficial to the BOT's policy objectives. For the analysis, the available historical asset-side capital flow data (BPM6) is divided into two periods: *pre-easing* (Q1 2005 to Q4 2006) and *post-easing* (Q1 2007 to Q1 2022), and disaggregated across four outflow types: direct investment, portfolio investment, other investments, and financial derivatives (Figure A3.4). Tests for equality of means and variances for each of the four capital flow types are used, similar to the approach of Bayangos and others (2016). Theoretically, FX liberalization measures should effect a statistically significant change in the means and/or variances of capital flows in the years following implementation. If these indicators are not statistically different between different time periods, one can surmise that liberalization measures have not been as critical in influencing capital outflows; in contrast, if the tests yield *statistically different* results, it can be inferred that such measures did affect outward capital movement.

Figure A3.4. Thailand: Investment Assets Abroad

(Billions of USD)



Source: National authorities via Haver Analytics
Note: Based on BPM6. Assets are thus defined as, in the case of direct investments for example, "investments by resident direct investors in their direct investment enterprises abroad *plus* reverse investments by resident direct investment enterprises in their direct investors abroad *plus* investments by resident fellow enterprises in other fellow enterprises abroad." As such, positive values mean a *net inflow* or decrease in Thai residents' investments abroad. Negative values mean a *net outflow* or increase in Thai residents' investments abroad.

5. **An initial assessment of the BOT's FX measures in the last two decades suggests that such policies have impacted resident capital flows.** The corresponding statistical tests suggest that FX reforms do matter for the Thai financial markets across all four different types of capital; in other words, the FX liberalization measures saw increases in capital flows to some extent (Table A3.2). The results are most prominent for direct investment and financial derivatives, which could suggest an increase in FX activity from the corporate sector through overseas direct acquisitions and from Thai exporters, for example, in hedging their exposures through forwards, compared to the pre-2007 period (scenario 1). This finding remains significant even if the post-easing period is subdivided into periods that correspond to the period of the implementation of the Foreign Exchange Regulation Reform or the New FX Ecosystem (scenario 2; see paragraph 7).

7. **However, different capital flows respond differently, suggesting the need for differentiated policies.** The post-easing period is further disaggregated into three sub-periods or "waves": ***Wave 1*** (initial reforms), corresponding to the period Q1 2007 to Q4 2016 and before the 2017 reforms; ***Wave 2*** (FX reform road map), corresponding to the period Q1 2017 to Q4 2019 and before the New FX Ecosystem was implemented; and ***Wave 3*** (New FX Ecosystem), corresponding to the period from Q1 2020 onward. Statistical tests on the means of each wave suggest that the means of outward direct investment and financial derivatives, in particular, have changed significantly compared with the pre-easing period (see upper part of Table A3.3).[42] However, the finding is slightly different for portfolio investment and other investment outflows; in the case of the former, the FX reform road map triggered a statistically significant effect, while for the latter, it was the New FX Ecosystem.

Table A3.2. Empirical Results: Tests of Means and Variances
(p-values)

Outflow type	***Direct investment***		***Portfolio investment***		***Other investment***		***Financial derivatives***	
	Equality of		*Equality of*		*Equality of*		*Equality of*	
	Means	*Variance*	*Means*	*Variance*	*Means*	*Variance*	*Means*	*Variance*
Scenario 1	0.001***	0.000***	0.003***	0.027**	0.019**	0.095*	0.000***	0.011**
Scenario 2	0.000***	0.000***	0.188	0.031**	0.002***	0.334	0.001***	0.000***

Source: Author calculations
Note: Scenario 1 compares only two periods: pre-easing versus post-easing (as a whole). Scenario 2 compares multiple periods: pre-easing and three post-easing periods (see paragraph 7). *** significant at 1%, ** significant at 5%, * significant at 10%. Tests on equality of means use the Anova F-test or Welch's Anova, while for variances, the Bartlett or Levene's test is used.

Table A3.3. Empirical Results: Tests of Means, by Type and Wave

Row					***Direct investment***		***Portfolio investment***		***Other investment***		***Financial derivatives***	
					t-score	*p-values*	*t-score*	*p-values*	*t-score*	*p-values*	*t-score*	*p-values*
1	**Pre-easing**		*vs*	Wave 1 (initial reforms)	-5.64	**0.00*** **	-1.85	0.262	1.78	0.307	7.76	**0.00*** **
2	**Pre-easing**		*vs*	Wave 2 (FX road map)	-7.88	**0.00*** **	-3.18	**0.033** **	0.61	0.929	16.36	**0.00*** **
3	**Pre-easing**		*vs*	Wave 3 (FX ecosystem)	-8.95	**0.00*** **	-1.59	0.434	3.57	**0.022** **	12.0	**0.00*** **
4	**Post-easing**	Initial reforms	*vs*	FX road map	-3.21	**0.019** **	-1.43	0.495	-0.76	0.873	-0.34	0.986
5	**Post-easing**	Initial reforms	*vs*	FX ecosystem	-4.73	**0.001*** **	-1.05	0.728	2.73	**0.084* **	0.88	0.816
6	**Post-easing**	FX road map	*vs*	FX ecosystem	-1.62	0.395	-0.44	0.970	2.96	**0.048** **	1.88	0.288

Source: Author calculations
Note: Tests on equality of means use the Anova F-test or Welch's Anova, followed by the Games-Howell post hoc method to compare across the waves. In this case, the t-score is the ratio of the difference between the mean of the *n* groups and the variation that exists within these groups. The score is compared against the critical value T-distribution table. Higher (smaller) absolute values of the t-score indicate that a large (small) difference exists between *n* groups. In other words, a large t-score indicates that the groups are different, while a small t-score indicates that the groups are similar.

8. **Liberalization measures may not necessarily have equal effects.** To gauge whether the *type* of liberalization measure matters, a test of means is applied to compare post-easing waves to one another (see lower part of Table A3.3). Given that several policies post-2017 are intended to ease the conduct of FX transactions, the results suggest that the

[42] There are several other factors that encourage outward capital flows ("push factors"), but these would require a separate analysis.

presence or absence of high administrative burdens, with their associated transaction costs, could be very important for Thai investors' outward capital decisions. For direct investments, the FX road map and New FX Ecosystem policies, while appearing to be relatively similar to one another in effect, are nonetheless an improvement from the initial wave of reforms (see Table A3.3, rows 4–5, p-values under "direct investment"). For other investments, in contrast, the New FX Ecosystem appears to have a more significant impact than the FX road map (see Table A3.3, rows 5–6, p-values under "other investment").[43] On the other hand, the impacts of different liberalization measures on portfolio investments and financial derivatives are not statistically significant. This may be due to the highly uncertain external environment—beginning with the COVID-19 pandemic, followed by increasing market volatility—that could have considerably dampened Thai residents' investment sentiment. Thus, revisiting this assessment at a later date to include post-pandemic or post-crises periods in the sample would be helpful.

9. **The initial analysis suggests that the authorities appear to be well on track in facilitating residents' investments abroad, and their consistent implementation of the remaining pillars would be highly beneficial.** The empirical exercise is an initial confirmation that the BOT's consistent follow-through with its FX liberalization plans has been positive for its initial policy objective. With key components of the first two pillars now well underway (see Figure A3.1), the authorities are working on the implementation of the third pillar, such as improving the service provider landscape, in order to increase market competition. To the extent that this will help ease the administrative burden on investors through a more efficient provision of FX services and reduce transaction costs through higher competition, efforts in this direction should further encourage more Thai residents to invest in foreign assets, and exporters to raise their ability to hedge their exposures. Given the economy's strong external position and supervisory capabilities, accelerating the implementation of the remaining pillars should enable Thailand to reap the benefits of FX liberalization, without negative consequences on financial and external stability.

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[43] A compounding effect across waves is a possibility, but this factor falls outside the scope of the current selected issue.

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