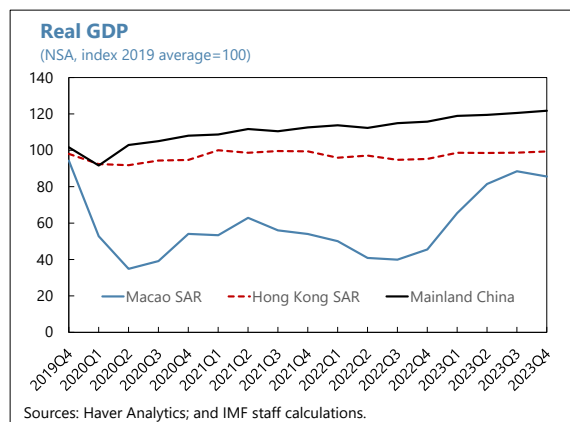
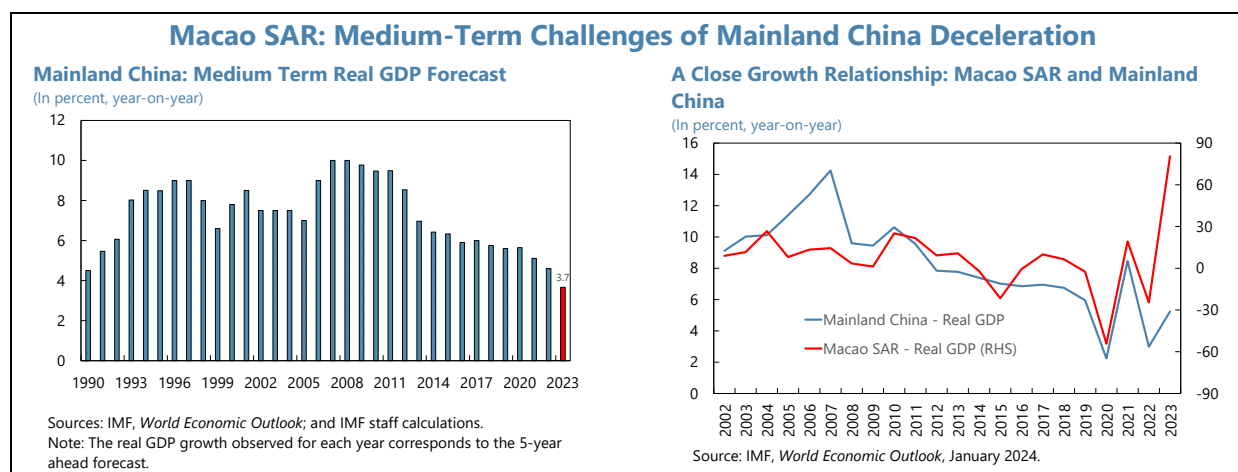


## CONTEXT

**1. China's reopening breathed life into Macao SAR's pandemic-hit economy.**<sup>1</sup> Due to the COVID-19 pandemic, annual real GDP in 2022 was 56 percent below the level of GDP recorded during 2019. The end of the containment measures in Mainland China in late 2022 resulted in a significant return of tourists in 2023, with arrivals reaching 72 percent of their 2019 level, and reinvigorated the gaming sector. Nevertheless, real GDP level in 2023 was still 20 percent below the 2019 level.



**2. The vulnerabilities from the dominance of gaming sector in the economy underscore the urgency to find new sources of growth.** The economy heavily depends on the gaming sector (50 percent of GDP in 2019) and tourists from Mainland China (71 percent of tourist arrivals in 2019). Macao SAR experienced higher growth volatility compared with peers during 2002-2019 due to cyclical nature of tourist arrivals and lumpy expansion of capacities in the gaming sector followed by structural shifts in the sector away from the VIP segment. In addition, GDP growth slowed prior to the pandemic. Real GDP growth averaged about 3 percent in 2016-19 compared to 11 percent in 2002-09, largely driven by declining productivity growth. Despite high enrolment rates in tertiary education, considerable skill mismatches in Macao SAR weigh on productivity and hinder economic diversification (IMF Country Report No. 22/121). Medium-term headwinds include expected declining medium-term growth in Mainland China and an increase in the expected frequency of climate related disasters that could damage critical infrastructure.



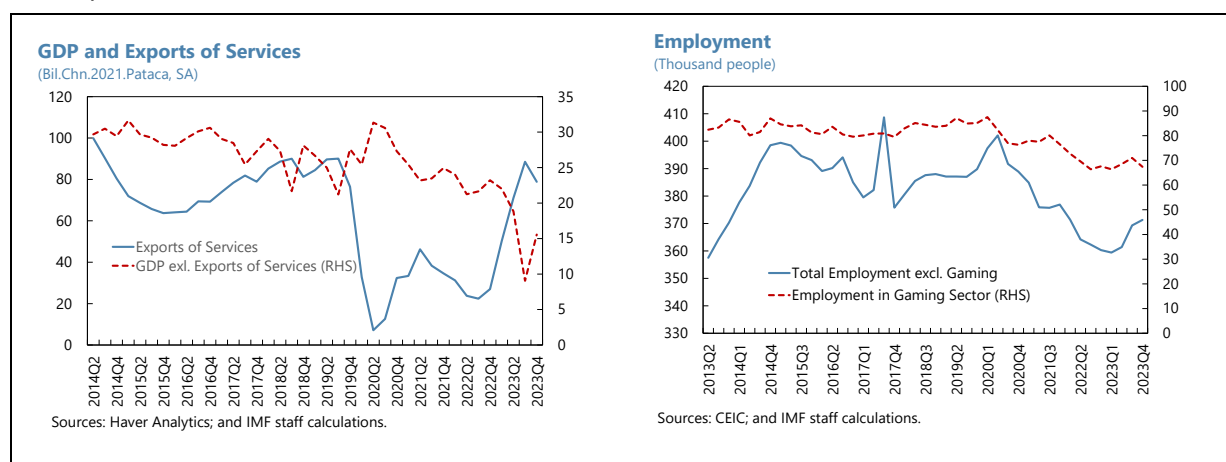
**3. Diversification is one of the main pillars of the government's economic agenda.** Macao SAR faces macrostructural challenges stemming from its heavy reliance on tourism and small

<sup>1</sup> These consultation discussions form part of the Article IV consultation with the People's Republic of China.

population and land size. To address these challenges, the government aims to facilitate Macao SAR's integration into the Greater Bay Area (GBA)—a regional cooperation linking Macao SAR with Hong Kong SAR and the Mainland's Guangdong province—through the development of the Guangdong Macao In-depth Cooperation Zone (GMICZ). This would provide a broader platform for Macao SAR's economic diversification efforts. The focus is on tax incentives and subsidies for firms that will establish their operation in the GMICZ and be engaged in the four priority sectors identified by the Master Plan of the development of the GMICZ (Appendix I).<sup>2</sup>

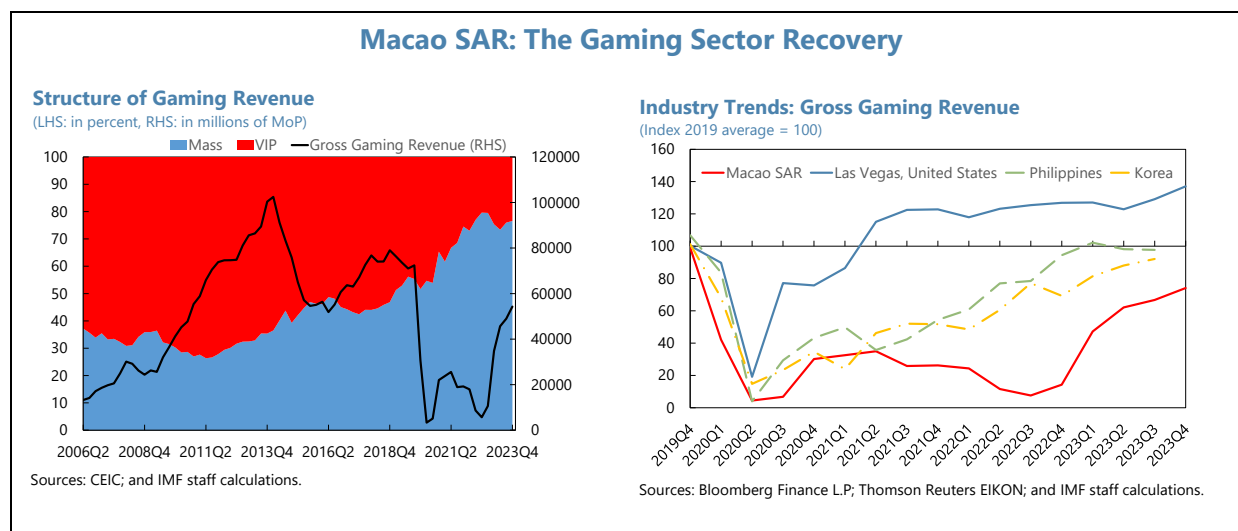
## RECENT DEVELOPMENTS

**4. After a strong rebound through much of the year, the growth momentum slowed in the last quarter of 2023.** Macao SAR's economy expanded by 80.5 percent in 2023, driven by a surge in services exports after Mainland China lifted COVID-19 containment measures. Private consumption and public investments grew robustly by 12.1 and 22.5 percent, respectively, while public consumption declined, reflecting withdrawal of pandemic-era stimulus measures. However, growth slowed in 2023Q4 probably reflecting weaker private consumption in the Mainland. On the supply side, high interest rates and increased competition from neighboring Mainland regions and e-commerce limited the recovery of non-gaming sectors, particularly local SMEs with weak links to the tourism industry. Headline inflation hovered around 1 percent in 2023, mostly due to declining rental prices.



**5. The gaming sector had a stellar performance in 2023, bolstered by the mass tourism segment.** Though from a low base, gross gaming revenue (GGR) of the sector increased by 329 percent in 2023 reaching 63 percent of 2019 level. Mass tourism drove the recovery, accounting for 75 percent of total GGR in 2023, considerably surpassing its share in 2019. The rapid shift from VIP to the mass segment reflects the tightened rules for junket operators under the new legal regime. Despite the strong recovery, Macao SAR's gaming sector is still lagging the recovery of competitors.

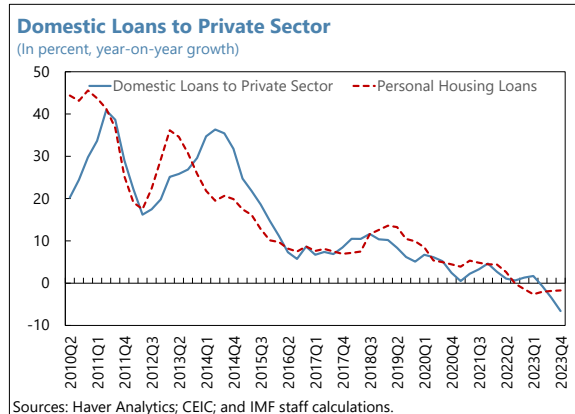
<sup>2</sup> The Master Plan of the development of the Guangdong Macao In-depth Cooperation Zone envisions the development of four industries: (i) high technology; (ii) traditional Chinese medicine; (iii) convention, exhibition, trade, culture, and sports; and (iv) modern financial services.



**6. Labor market outcomes improved substantially.** The unemployment rate declined to 2.3 percent and underemployment to 1.4 percent in end-2023—the lowest since 2020Q2, though still above the pre-pandemic levels. This was supported by a 2.4 percent y/y employment growth in 2023H2, driven by the employment of women, particularly in the gaming and hotels and restaurants sectors. After a 9.5 percent cumulative decline in 2020–22, median monthly wages increased by about 14.3 percent in 2023 compared with 2022.

**7. Despite a considerable increase in NPLs, the banking system remains resilient thanks to its large capital and liquidity buffers.** NPLs

increased by 1.9 percentage points to 3.4 percent in end-2023, both on external assets—mainly due to exposure to the Mainland’s property sector—and domestic assets. Performance problems in the latter reflected the confluence of high interest rates, declines in property prices, and a slow pace of recovery in some segments of the economy. Nevertheless, the banking system remains well capitalized, with an average capital adequacy ratio (CAR) at 14.1 percent as of end-2023, profitable—



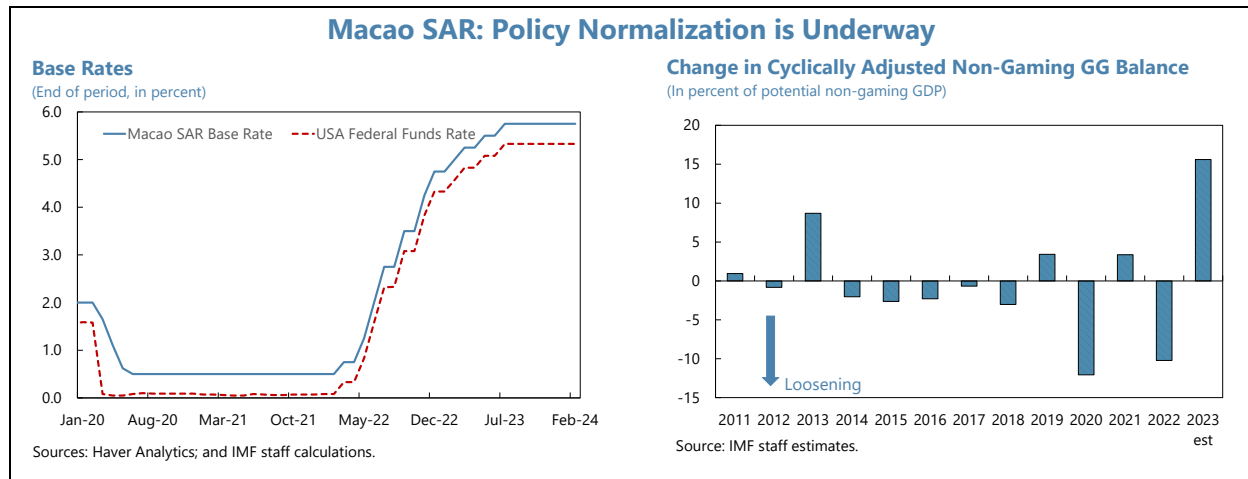
with a comfortable interest margin to gross income at 69.3 percent, and liquid—with liquid assets at 37.2 percent of total assets.<sup>3</sup> Credit growth turned negative due to rapid increase in the Base rate from April 2022 following monetary policy normalization in the US, given the currency peg. Interest rate sensitive segments, such as households, were particularly affected, given a significant reliance on flexible-rate mortgages, which emphasizes banks’ exposure to interest rate risk.

**8. Fiscal policy consolidated considerably in 2023.** The general government deficit declined to 0.4 percent of GDP in 2023 compared with 38 percent in 2022, driven by the withdrawal of

<sup>3</sup> A considerable decline in CAR in 2023Q4 compared with the previous quarter was partially driven by a [change in methodology](#) on computing regulatory capital to align the measure with the Basel III framework.

pandemic relief measures, higher gaming revenues, and decline in other current spending. In line with the Budget, capital expenditure increased by 22.5 percent in 2023 relative to 2022.

**9. Monetary policy was tightened to support the exchange rate peg.** In line with Macao SAR's currency board arrangement, the Monetary Authority of Macao (AMCM) has increased the Base rate by 525 basis points since March 2022.<sup>4</sup> This follows similar increases by the Hong Kong Monetary Authority and the US Federal Reserve. The real effective exchange rate has remained roughly stable in 2023. FX reserves reached USD 27.8 billion (14.3 months of import) by end-2023, up by USD 1.8 billion from end-2022.



**10. Macao SAR's overall external position is assessed substantially stronger than warranted by medium-term fundamentals and desirable policies in 2023.**<sup>5</sup> The current account (CA) surplus in 2023 is estimated to have reached 30 percent of GDP compared with a 11.4 percent recorded in 2022. This was driven by a significant rebound in services exports, which was partially offset by the primary income balance turning negative in 2023, as reinvested earnings from the gaming sector recovered. Based on the External Balance Assessment (EBA) and accounting for Macao SAR-specific factors, staff's preliminary assessment is that the CA gap in 2023 is around 10.5–13.5 percent of GDP (Appendix II). The identified policy gap only accounts for a small portion of the CA gap, which is largely accounted for by a residual. Macao SAR's persistent savings-investment gap is, in part, driven by high precautionary savings and subdued investment.

## OUTLOOK AND RISKS

**11. After a strong rebound, growth is expected to slow in 2024, though it would remain in double digits.** GDP is projected to grow by 13.9 percent in 2024, driven by further recovery of the gaming sector and pickup in private investment, partly linked to the commitment of gaming

<sup>4</sup> The Macao pataca is pegged to the Hong Kong dollar (HKD) at a fixed exchange rate of 1MOP:1.03 HKD, and at the same time, the Hong Kong Dollar uses a linked exchange rate system with the US dollar in the range 1USD:7.75-7.85HKD.

<sup>5</sup> The external sector assessment is based on projected 2023 outcomes and will be updated as actual data become available.

concessionaires to invest in non-gaming sectors. The impact of the expected fiscal tightening is estimated to be small, given the large share of imports in domestic demand. GDP is expected to regain its pre-pandemic level in 2025. Growth is projected to converge to its long-term potential of 3 percent. The economic diversification combined with the commitment of casino operators under the new licensing agreement to attract more international tourists is expected to mitigate the impact of the secular slowing of growth in Mainland China. Inflation is projected to accelerate to 1.7 percent in 2024 and stabilize around 2.5 in the medium term as narrowing output gap and increasing wages counteract the downward pressure from low inflation in Mainland China.

**12. The balance of risks to the outlook is tilted to the downside.** While stronger-than-expected recovery of the gaming sector and faster-than-envisaged integration with the GBA could boost growth, most risks point to a lower growth (Appendix III).

- **China slowdown.** A sharper- or longer-than-expected contraction in the property sector, local government financing stress, and decline in investment, or rising geopolitical tensions could slow economic activity in Mainland China, with knock-on effects on the financial system and economy.
- **Financial risks:** Higher-for-longer interest rates in the major economies could exert pressure on banks' balance sheet through the impact on asset valuation and quality. In addition, large foreign liabilities of Macao SAR banks with short maturity could pose risks to financial stability.
- **Increased competition in the gaming industry.** Emerging gaming centers elsewhere in Asia could reduce tourism to Macao SAR in the medium-term.
- **Commodity price volatility:** Rising commodity prices due to supply disruptions, including those caused by the escalation of the conflict in the Middle East, as well as fluctuations in demand could fuel inflation. However, a large share of imported goods from the Mainland, where inflation remains very low, would mitigate this risk.
- **Climate risks.** Extreme climate events driven by rising temperatures could adversely affect critical infrastructure, financial institutions, and corporates.
- **Cyberthreats:** Cyberattacks on physical or digital infrastructure and service providers could trigger financial and economic instability.

## Authorities' Views

**13. The authorities broadly shared staff's assessment of the economic outlook and risks.** They expect the continued robust growth of the gaming sector combined with the efforts by the government and the gaming concessionaires aimed at promoting non-gaming tourism to support near-term growth. The authorities expect inflation to increase only gradually since a big share of consumption basket is imported from the Mainland, where inflation remains mild. The authorities considered risks more balanced than staff with the expanded hotel capacity and resumption of international flights providing additional impetus to the tourism sector. Moreover, the authorities

are aware of the possible competition from emerging gaming centers elsewhere in Asia and closely monitor the evolving environment.

## POLICY DISCUSSION

*Against the backdrop of still incomplete recovery, downside risks, and available policy space, the policy discussions focused on how to support the recovery in the near-term, strengthen the resilience of financial system, and manage emerging financial risks. On medium-term issues, the focus was on the implementation of mutually reinforcing reforms to facilitate the economy's diversification and external rebalancing, as well as to strengthen the economy's resilience to future shocks. In a scenario when downside risks materialize, staff advocated for targeted support to vulnerable groups. The authorities have made notable progress in implementing previous Article IV consultations discussions' recommendations (Appendix IV)*

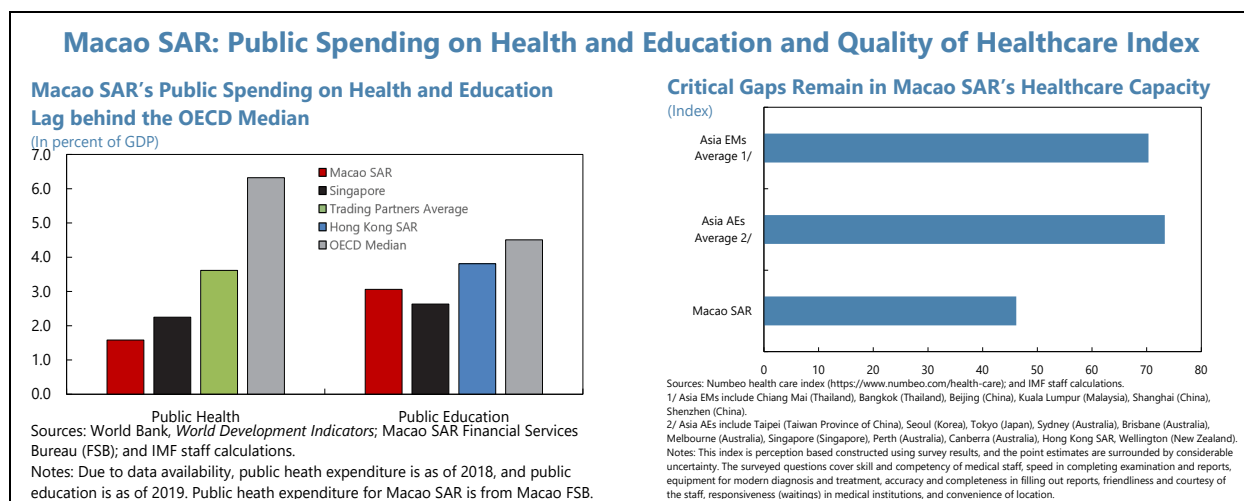
### A. Fiscal Policy

**14. Fiscal policy is set to consolidate further in 2024.** The 2024 Budget envisages the general government balance to turn positive at 2 percent of GDP. The consolidation will be driven by a decline in capital spending and strong increase in government revenues supported by the gaming sector's recovery. This will imply a tightening of the fiscal stance by 1 percentage point, as measured by the change in the cyclically adjusted non-gaming balance as a percent of non-gaming potential GDP.<sup>6</sup> Nevertheless, the fiscal surplus is likely to be larger than envisaged because the gross gaming revenues are expected to be higher than assumed in the 2024 Budget.

**15. A slower pace of fiscal consolidation is warranted to support economic activity in the non-gaming sector and external rebalancing, and to buttress the sustainability of medium-term growth.** With no public debt and fiscal reserves estimated at 150 percent of GDP at end-2023, Macao SAR's fiscal space is ample.<sup>7</sup> The unequal pace of recovery between the gaming and non-gaming sectors and a negative output gap call for continued government support. In addition, there is a need to scale up public spending on climate resilient infrastructure as well as on education and healthcare to support the economy's diversification and external sector rebalancing. Staff analysis suggests that closing gaps in education and healthcare (Country Report No. 2022/121) will require additional 0.8 percent of GDP public spending annually, while the average annual cost for adaptation investments could be 1.2 percent of GDP (IMF country Report No. 22/120). Given Macao SAR's low level of government spending relative to GDP (less than half of the OECD average), the room for meeting these objectives through spending reallocation is limited, and the envisaged consolidation will further constrain the government's ability to address them.

<sup>6</sup> Abstracting from volatile gaming revenues provides for a better measure of discretionary fiscal policy and its impact on domestic economy.

<sup>7</sup> The authorities' fiscal anchor is the balanced budget requirement of the Basic Law, which ensures fiscal sustainability and contributes to meeting inter-generational equity goals. Under the current framework, drawdown from the fiscal reserves is treated as revenue, thus staff's policy recommendation is fully consistent with the authorities balanced budget rule.



**16. Furthermore, developing a credible Medium to Long-Term Fiscal Framework (MLTFF) would help better manage trade-offs from multiple demands on fiscal resources.** The balanced budget requirement stipulated in the Basic Law underpins Macao SAR's medium-term fiscal sustainability and has contributed to Macao SAR's strong fiscal position. However, large expenditure needed to diversify Macao SAR's economy, enhance its resilience to climate change, and support external rebalancing require advanced planning, prioritization, and they require the implementation of multiyear projects, and commitment of resources to these projects. A MLTFF offers a platform to integrate all fiscal decisions into a well specified framework with clear short- and medium-term priorities and steps to ensure efficiency of spending and tax policies. These guidelines and plans will help better manage trade-offs from multiple demands on fiscal policy, including for multi-year projects ([IMF Country Report No. 19/123](#)).

### Authorities' Views

**17. The authorities were open to revisiting the pace of fiscal consolidation during the mid-year review of the budget.** They emphasized the importance of the envisaged fiscal consolidation for signaling the government's commitment to returning to a balanced budget to the population and the business community. The authorities highlighted that despite the planned consolidation, the 2024 Budget maintains the expenditure on major welfare measures, and spending on education and healthcare is a high priority for the government. Moreover, the budgeted expenditure on climate resilient infrastructure with emphasis on the construction and optimization of flooding control facilities in 2024 is the highest in the past five years. Recognizing the importance of fiscal policy for the near-term recovery, the authorities indicated that fiscal resources might be reallocated to slow the pace of fiscal consolidation during a mid-year review of the budget if the expected fiscal surplus turns to be larger than envisaged, including due to higher-than-budgeted gaming revenues.

**18. The authorities do not see a need to revise the "Budget Framework Law" which served Macao SAR well.** They consider the balanced budget requirement stipulated in the Basic Law as an efficient mechanism for ensuring the territory's medium-term fiscal sustainability. In addition, although only the current year amount of multi-year projects is reserved in the budget, it includes a



table for investment plans with estimated expenditure for subsequent years. This enables the government to ensure sufficient funding for future year spending.

## B. Monetary and Financial Sector Policies

**19. Macao SAR's currency board arrangement provides a credible nominal anchor for economic and financial stability.** Strong fiscal discipline, flexible labor markets, a healthy banking sector, and adequate reserve coverage support the exchange rate regime (Appendix V). Sustaining these policies is crucial for the regime's ongoing success.

**20. Macao SAR's sizable banking system is dominated by subsidiaries and branches of foreign banks.** The total assets of the banking system amounted to about 640 percent of GDP in 2023, largely on account of branches and subsidiaries of foreign banks.<sup>8</sup> Banks' foreign assets and liabilities are large at 61 and 45 percent of total assets, respectively, with considerable exposure to Mainland China. The sector's loan-to-deposit ratio in foreign currency is generally close to 100 percent. Nevertheless, a high share (about 72 percent) of foreign liabilities with maturity less than one year creates funding vulnerabilities. The non-bank financial sector is also large in Macao SAR, with insurance companies and pension funds holding assets of 70 and 11 percent of GDP, respectively.

**21. Macao SAR's banking system is resilient to major shocks stemming from downside risks to the outlook, thanks to its large capital and liquidity buffers (Appendix VI).** Stress tests conducted by staff suggest that the banking system can withstand large shocks to asset quality, collateral value, interest rates, and deposit outflow.<sup>9</sup> Macao SAR's banking system is also resilient to spillovers from a further contraction in the Mainland property sector, which could trigger depreciation of the RMB and further increases in NPLs. However, the stress tests indicate that some non-systemically important banks may be vulnerable.

**22. Proactive policies should be deployed to further strengthen the soundness of the financial system and manage emerging risks.**

- Policy intervention in the banking system should be gradually unwound and the remaining pandemic-related forbearance measures not extended beyond 2024.
- Banks should be encouraged to hold higher provisioning to help them withstand a potential asset quality deterioration. In this regard, the new requirement by the AMCM for banks to hold higher (at least 40/50 percent for performing/non-performing loans) provisioning against exposure to some of the Mainland property developers is a step in the right direction.

<sup>8</sup> Out of the thirty-four banks operating in Macao SAR, seven are subsidiaries of foreign banks, twenty-one are branches, and six are domestic.

<sup>9</sup> The stress tests were conducted using end-2022 data. Since then, the financial sector risks have increased.



- Enhancing the insolvency and debt resolution and restructuring frameworks, including special out-of-court solutions, would avoid overloading the court system and facilitate the exit of non-viable firms.
- Collecting bank-by-bank data on NPLs by economic sectors and interbank credit would improve the AMCM's systemic risk assessment.
- Strengthening the risk monitoring of borrowers from Mainland China, the liquidity position of banks with large short-term foreign liabilities, and the non-bank financial sector would be critical.

**23. The authorities continue modernizing the Macao SAR's financial system.** The revised Financial System Act ("FSA") makes Macao SAR's legal framework for financial regulation and supervision more flexible, streamlines the bond issuance, and establishes legal basis for promoting financial innovation. In addition, the AMCM issued a guideline for temporary authorization for financial innovation that includes safeguards to manage associated risks. However, the FSA contains provisions that depart from international best practices, notably regarding the lack of a robust framework for crisis management, recovery, and resolution and the safeguards in the temporary licensing regime. The authorities have replaced the previous tiered system of loan-to-value (LTV) limits for residents with a unified 70 percent limit and have also aligned the limits for residents and non-residents.<sup>10</sup>

**24. The authorities should strike a balance between modernizing the financial system and managing related risks.** Including a robust resolution framework for credit institutions in the FSA, underpinned by the AMCM's operational independence, would enable efficient resolution of such institutions with minimal use of public funds and preserving critical financial and economic functions to minimize impacts to the stability of the financial system. The conditions for licensing banks with restricted scope of activity should be fit for the purpose and prudently established to manage potential concentration risks. Safeguards should be introduced in the detailed supervisory guidelines on granting exemption from supervisory requirements to qualified entities engaged in financial innovation. Using strict criteria for the extension of the validity period for temporary authorization for financial innovation would provide appropriate level of safeguards.

**25. The authorities' actions to strengthen the AML/CFT framework are welcome and should be sustained.** The updated assessment of money laundering, terrorism financing and proliferation financing (ML/TF/PF) risks across various sectors in Macao SAR is welcome and its findings should guide the implementation of measures to mitigate these risks. The revisions to the FSA to enhance the licensing and "fit-and-proper" requirements for the financial sector, and the new Trust Law permitting only AML/CFT-regulated financial institutions to act as trustees, are also welcome. The authorities should continue improving the investigation and prosecution of the

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<sup>10</sup> The LTV ratios previously discriminated between resident and non-residents and had been classified as capital flow management measure and macroprudential measure under the IMF's Institutional View on capital flows (IMF Country Report No. 19/123). With the unification of the ratios for residents and non-residents, this CFM is considered removed.

laundering of foreign proceeds of crime, particularly through the gaming sector, and ensure that accurate beneficial ownership information is readily available to competent authorities on a timely basis.

## Authorities' Views

**26. The authorities found staff's policy recommendations based on a bank-by-bank stress test very timely.** The authorities were confident in the shock absorbing capacity of Macao SAR banks, given the strong capital and liquidity buffers. They considered the stress in the Mainland's property sector and the uneven nature of the recovery may pose risk to the financial sector. Therefore, the AMCM has stepped up its risk monitoring and analysis efforts related to Macao SAR bank's exposure to the Mainland's property sector and domestic SMEs. In addition, a credit bureau was recently launched for individuals, which would improve banks' credit risk assessment. In line with staff advice, the authorities expressed readiness to encourage higher provisioning by banks to withstand further asset quality deterioration and collect more granular data to enhance the AMCM's systemic risk assessment. On the forbearance measures, the authorities have clarified that the measure is no longer available for new loans and the extension until end-2024 aims to allow enough transition time for borrowers that are currently benefiting from the measures.

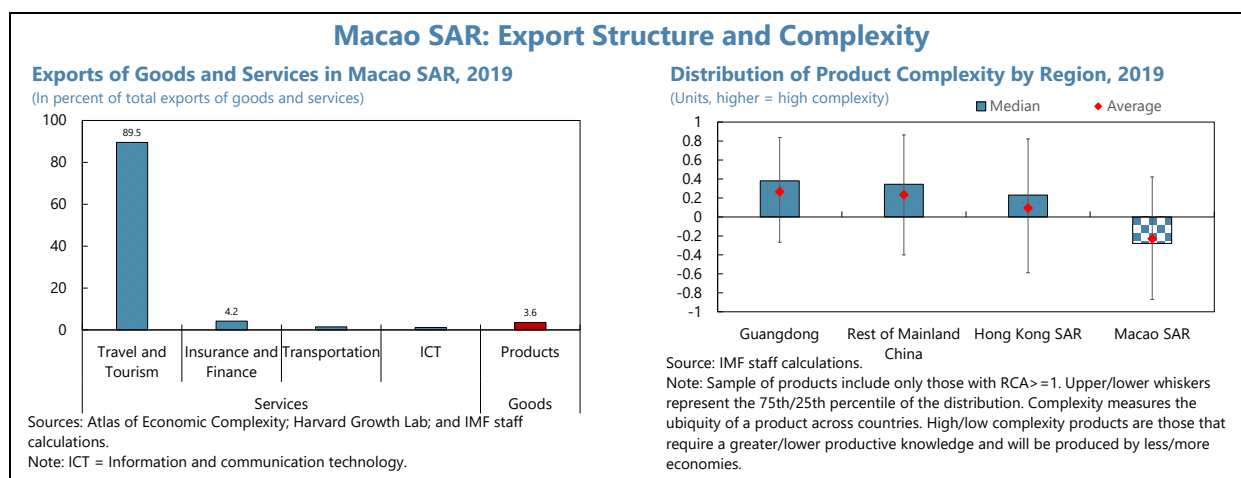
**27. The authorities aim to further enhance the legal framework for the financial system and AML/CFT.** They concurred with staff on the need to ensure adequate safeguards when granting exemption from supervisory requirements to qualified entities engaged in financial innovation and extending the validity period for temporary authorization for financial innovation. The AMCM is considering issuing a guidance that will clearly spell out different stages of resolution framework for credit institutions. Moreover, the authorities intend to revise/introduce legislations related to insurance companies, investment funds, and securities. To strengthen the cyber resilience of the financial sector, the AMCM has revised and issued several guidelines related to technology risk management, including for the insurance sector to better align Macao SAR's legal framework for the financial system with international best practices. The authorities have finalized the draft bill for the revision of Insurance Intermediary Business Ordinance, which incorporates the criminal conviction record on ML/TF into the fit-and-proper assessment. In addition, the AMCM aims to complete the draft of the Risk-based Capital Framework for the Insurance Industry of Macao SAR in 2027/2028.

## C. Structural Policies

**28. Integration into the GBA offers an opportunity for Macao SAR to leverage Guangdong region's extensive knowledge base to advance its diversification agenda (Selected Issues Paper).** The share of Macao SAR's exports of goods was only 3.6 percent of total exports of goods and services in 2019—strikingly below the 61.5 percent average for advanced economies. In addition, Macao SAR's export of goods are concentrated in few sectors that have low complexity and are associated with low productivity levels.<sup>11</sup> Staff analysis suggests that the productive

<sup>11</sup> Hausmann et al (2013) defined economic complexity as a unit of measurement of the available know-how and the ability to recombine the available know-how to create a larger variety and quality of products.

capabilities available in Macao SAR do not meet the needs of sectors targeted by the government. In contrast, Guangdong region possesses a greater productive knowledge and complexity, including in sectors targeted by the government. The rich product space in Guangdong region offers possibilities to diversify into products with high opportunity gains beyond the sectors identified by the government.

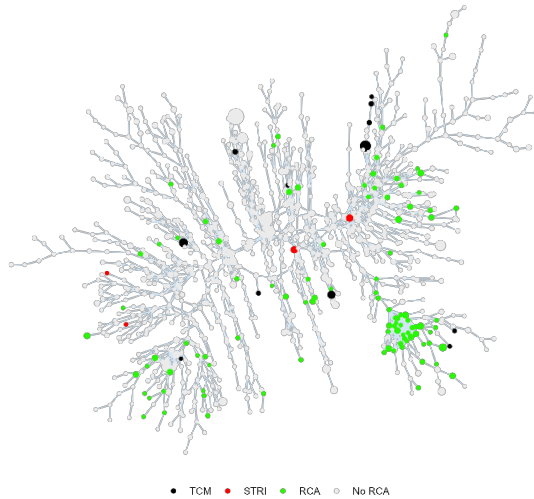


**29. Comprehensive reforms are needed to enable Macao SAR to capitalize on opportunities offered by the integration into the GBA.** Economy-wide structural reforms (see paragraph 30) that improve efficiency and resource allocation would enable Macao SAR to leverage on the knowledge base available in the GBA. The authorities should be cognizant of possible negative spillovers, trade distortions, and governance risks related to their industrial policies (IP). Robust cost-benefit analysis, combined with transparent mechanisms for project selection, regular reviews, and clearly defined sunset clauses to ensure that policies are phased out, would help minimize their negative externalities. Complementary policies, such as provision of adequate infrastructure, could facilitate positive spillovers from the GMICZ to the rest of the economy. The authorities should also ensure that their measures to facilitate diversification are consistent with the WTO rules.

### Macao SAR and Guangdong Region: Product Space, 2019

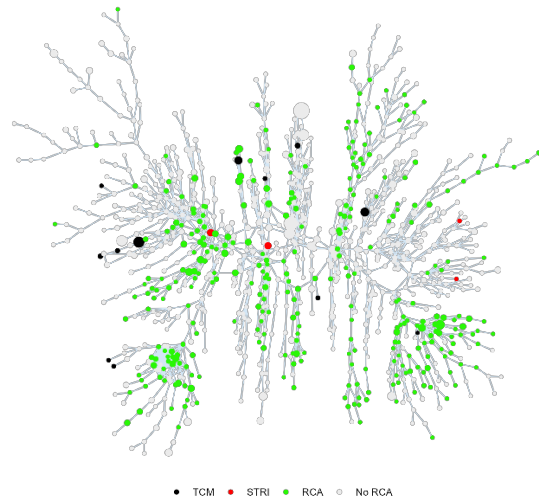
*Macao SAR's knowhow is concentrated in few sectors far from sectors targeted by the government.*

#### Macao SAR's Product Space in 2019



*Guangdong region's productive knowledge offers diversification opportunities beyond the sectors targeted by the government.*

#### Guangdong Region's Product Space in 2019



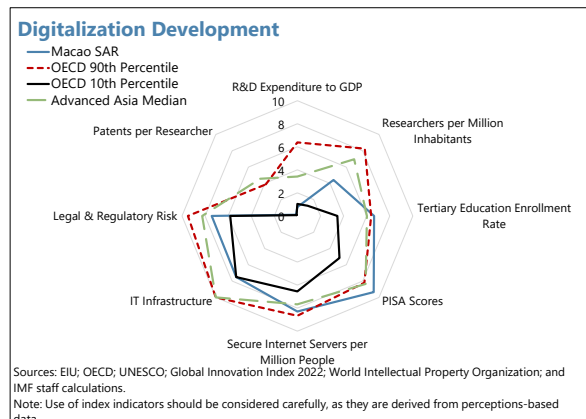
Sources: Atlas of Economic Complexity-International Trade Data; Guangdong Bilateral Trade – Customs and, IMF staff calculations.

Note: Each node represents a product, the size of the bubble the value of global exports. According to the theory of economic complexity, products with similar capabilities will be located close to each other as it is measured by proximity (or the probability of exporting both products). Economies will find easier to diversify into products located closer to those that the country is already producing (know-how). TCM = Traditional Chinese Medicine; STRI = Scientific and Technological Research Industry; RCA = Revealed Comparative Advantage. Black and red nodes are those identified products from TCM and STRI regardless of RCA. Green nodes are products with  $RCA > 1$ . Non-colored nodes are products with  $RCA < 1$ .

### 30. Digitalization and innovation have the potential to reverse the trend decline in Macao SAR's pre-pandemic productivity and support economic diversification (Appendix VII). A

recent IMF study suggests that more innovative and digitalized Asian firms tend to be more productive.<sup>12</sup> Macao SAR has experienced a significant increase in digitalization over the past decade, although it still lags regional peers. The following policies could further support digitalization and innovation in Macao SAR:

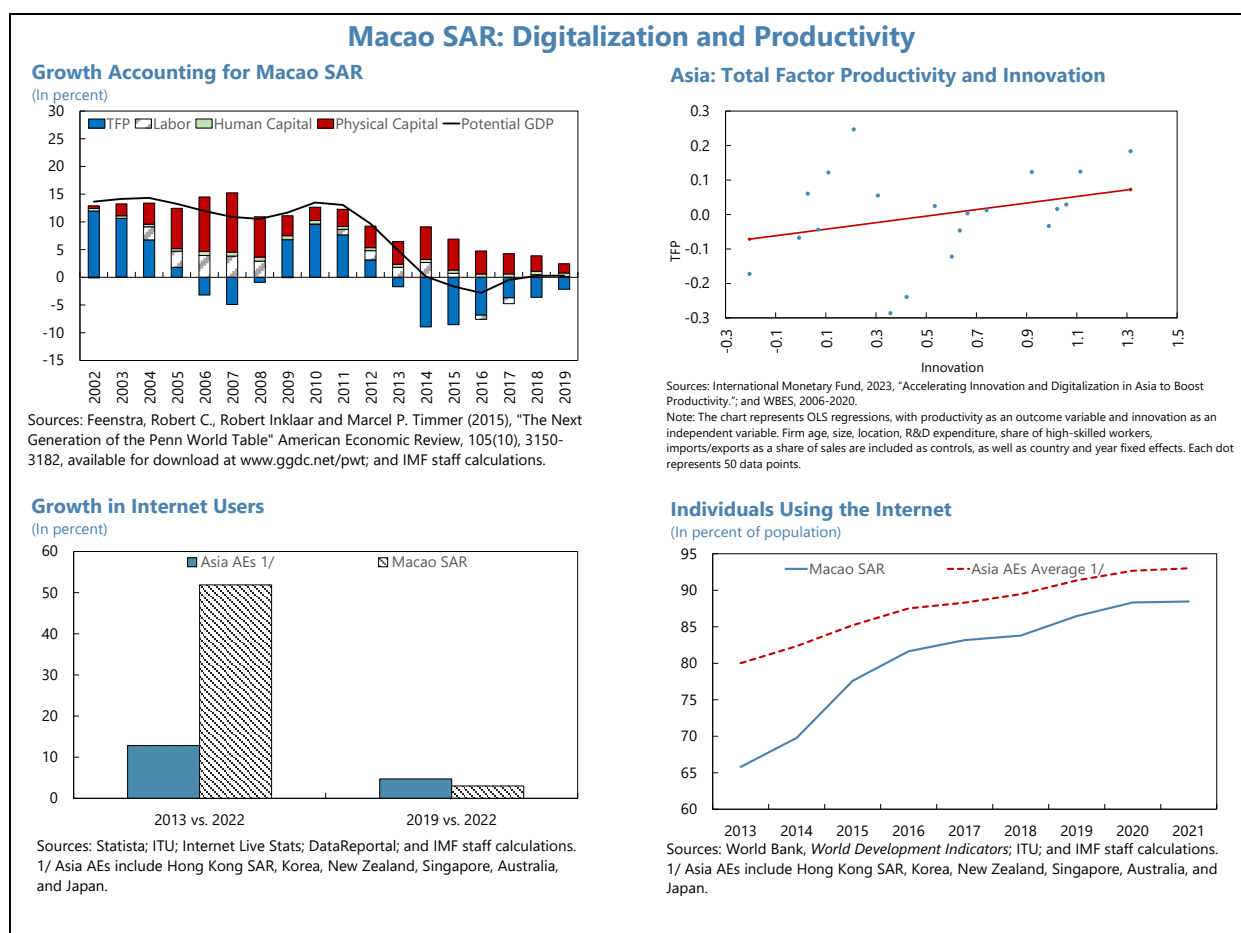
- Macao SAR lags peers in terms of R&D spending, researchers per million inhabitants, and the number of patents per million



<sup>12</sup> Dabla-Norris, E., Kinda, T., Chahande, K., Chai, H., Chen, Y., De Stefani, A., Kido, Y., Qi, F., & Sollaci, A. (2023). Accelerating Innovation and Digitalization in Asia to Boost Productivity. International Monetary Fund. Departmental Papers, 2023(001).

researchers. Policies should focus on improving the design and targeting of Macao SAR's R&D tax incentives, scaling up public spending on basic research, and improving small and medium enterprises' access to finance and digital technologies.

- The available skills in Macao SAR do not match the skill demand of the sectors targeted by the government (IMF Country Report No. 22/121). Therefore, scaling up public spending on outcome-oriented occupational and on-the-job training and strengthening science-business linkages could reduce skill mismatches. In addition, streamlining administrative requirements for hiring non-resident skilled workers could help compete for foreign talent.
- Increasing regulatory predictability, raising the effectiveness of the judiciary, and strengthening the protection of property rights as well as streamlining labor and business regulations will increase Macao SAR's attractiveness as an investment destination.



## Authorities' Views

**31. The authorities emphasized that Macao SAR's economic diversification should be private sector led and government guided.** While agreeing on the need for an economy-wide structural reforms, the authorities believe that Macao SAR's private sector needs government guidance to achieve diversification, given the heavy reliance on the gaming sector and the relatively

small domestic manufacturing base. The authorities emphasized that the orientation of industrial policies is now more towards innovation and technology and that the incentive measures are granted through a transparent process managed by a panel committee that includes several members from the private sector. In addition, they reaffirmed their commitment to the rules-based multilateral trading system advocated by the WTO.

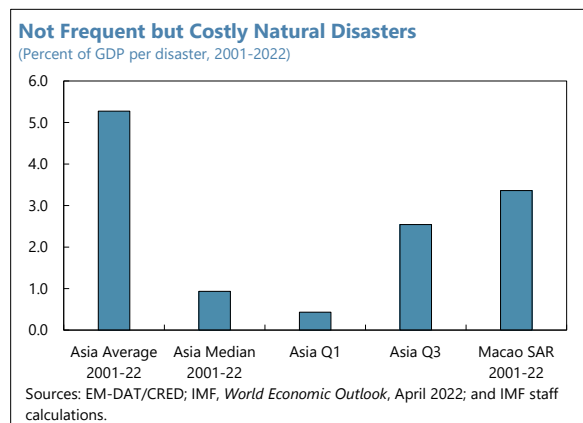
**32. The authorities shared staff's view on the pivotal role of the digitalization and innovation for boosting Macao SAR's productivity.** In this regard, they have launched the SME Digitalization Program in 2023, which provides training and digitalization solutions to qualifying SMEs. In addition, enterprises that are certified by the newly introduced Technology Enterprise Certification Program will be given priority when applying for other government support measures. The authorities are planning to launch training and certification programs targeting at various sectors such as integrated tourism, information technology, finance, and MICE. In this regard, they cooperate with professional associations to develop training programs tailored to the needs of the private sector. While the administrative requirements for hiring foreign skilled workers have not been changed, the authorities have launched online application services for renewal of already hired specialized and non-specialized non-resident workers to speed up the process.

**33. Although the frequency of natural disaster events in Macao SAR in the past two decades has been lower than in other Asian economies, such events were costly.** Macao SAR has formulated environmental-protection and disaster-prevention plans, including reinforcing infrastructure for disaster prevention and mitigation, improving the emergency management system, as well as strengthening risk management, monitoring and early warning capability. Diligent implementation of the government's

environmental-protection and disaster prevention plans would help guard against costly natural disasters. In addition, the authorities should conduct a comprehensive assessment of investment needs for adaptation and ensure the appropriate integration of financing for these projects in the medium-term fiscal plan.

### Authorities' Views

**34. The authorities reaffirmed their commitment to enhancing resilience against climate-related disasters.** The government has increased infrastructure spending on flood protection and introduced advanced technologies to improve the forecast of tropical cyclones and storm surges. In addition, the authorities will continue their efforts to engage with the public to raise awareness about climate-related risks and how to respond to climate disasters. They will also further improve communication between staff from different agencies responsible for responding to climate-related disasters.



## STAFF APPRAISAL

**35. The strong post-pandemic economic rebound was uneven.** A surge in services exports after Mainland China lifted COVID-19 containment measures propelled GDP growth. However, the pace of the recovery softened recently. In addition, the expansion of some segments of the economy with weak links to the tourism industry was constrained by higher interest rates and increased competition from neighboring Mainland regions and e-commerce.

**36. Economic growth is expected to remain strong in the near term.** Further recovery of the gaming sector and increased investment in non-gaming sectors underpin growth in the near term. Inflation is expected to increase only gradually due to low imported inflation from the Mainland. In the absence of an increase in public investment in human and physical capital and rapid progress towards economic diversification, the current account balance is set to reach to pre-pandemic levels as tourists return to Macao SAR.

**37. Downside risks cloud the outlook.** Sharper-than-expected contraction in the Mainland's property sector and higher-for-longer interest rates in the major economies could negatively affect Macao SAR's financial system and growth. Extreme climate events could adversely affect critical infrastructure, financial institutions, and corporates. On the upside, a stronger-than-expected recovery of the gaming sector and faster-than-envisaged integration with the GBA could boost growth.

**38. In staff's preliminary assessment, Macao SAR's external position in 2023 was substantially stronger than warranted by medium-term fundamentals and desirable policies.** Macao SAR's persistent saving-investment gap is partly driven by high precautionary savings and subdued investment.

**39. Fiscal policy should support economic activity in the non-gaming sector, enhance sustainability of medium-term growth, and contribute to external rebalancing.** With ample fiscal space, negative output gap, and limited room for spending reallocation, a slower pace of fiscal consolidation is needed to support still incomplete recovery, address diversification bottlenecks, strengthen economic resilience to climate change, and contribute to external rebalancing. This could be achieved through scaling up spending on human and physical capital. Moreover, developing a credible Medium to Long-Term Fiscal Framework would help better manage trade-offs from multiple demands on fiscal resources.

**40. Proactive policies are needed to strengthen the soundness of the financial system and manage emerging risks.** Encouraging banks to hold higher provisioning will strengthen their resilience to a potential asset quality deterioration, while collecting more granular data on NPLs and interbank credit would enable improved systemic risk assessments of the Monetary Authority of Macao. There is a need to enhance the insolvency and debt resolution and restructuring frameworks as well as strengthening the risk monitoring of borrowers from Mainland China, the liquidity position of banks with large short-term foreign liabilities, and the non-bank financial sector. Prudent



fiscal policy conduct, the maintenance of flexible labor markets, a healthy banking sector, and adequate foreign currency reserve coverage will help to support the exchange rate peg.

**41. The authorities' initiatives to modernize and strengthen the financial system should go hand-in-hand with efforts to manage related risks.** The revision of Financial System Act (FSA) and actions to strengthen the AML/CFT framework are welcome. The authorities should establish a robust resolution framework for credit institutions, underpinned by the AMCM's operational independence. There is a need to introduce safeguards in the process for granting exemption from supervisory requirements to qualified entities engaged in financial innovation and extending the validity period for temporary authorization.

**42. The economic vulnerabilities from the dominance of the gaming sector underscore the importance of fostering economic diversification.** Macao SAR's high growth volatility due to its heavy dependence on the gaming sector was amplified by the pandemic. To address the macrostructural challenges stemming from Macao SAR's overreliance on tourism, small population, and limited land, the authorities stepped up their efforts to facilitate economic diversification through tax incentives and subsidies.

**43. Economy-wide structural reforms that improve efficiency and resource allocation should be a key pillar of Macao SAR's diversification agenda.** The focus should be on incentivizing R&D and innovation, upskilling and reskilling the labor force, and streamlining labor and business regulations. Meanwhile, the government's industrial policies aimed at facilitating diversification could give rise to negative spillovers, trade distortions, and governance risks, necessitating careful consideration.

**44. Diligent implementation of the government's environmental-protection and disaster prevention plans would help guard against costly natural disasters.** Authorities should continue the implementation of the adaptation and prevention measures, conduct a comprehensive assessment of investment needs for adaptation, and ensure the appropriate integration of financing for these projects in the medium-term fiscal plan.

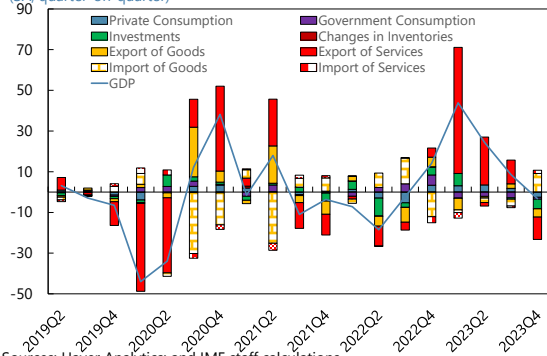
**It is proposed that the next Article IV consultation discussions take place on the 24-month cycle.**

**Figure 1. Macao SAR: Real Sector Developments**

*Macao SAR's recovery is underway driven by an increase in exports of services ....*

#### Contribution to GDP Growth

(SA, quarter-on-quarter)

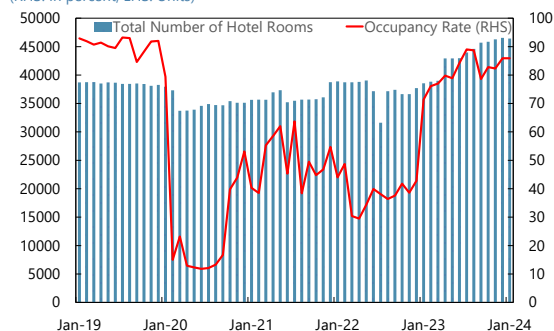


Sources: Haver Analytics; and IMF staff calculations.

*Supply of hotel rooms increased, and occupancy rates are back to pre-pandemic levels.*

#### Occupancy Rates and Total Number of Rooms

(RHS: In percent, LHS: Units)

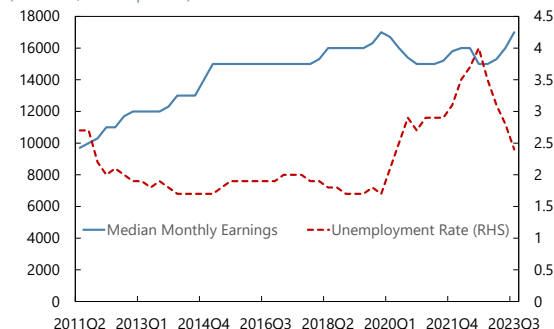


Sources: Statistics and Census Service (DSEC); CEIC; and IMF staff calculations.

*The labor market started to recover...*

#### Labor Market

(LHS: MoP, RHS: in percent)

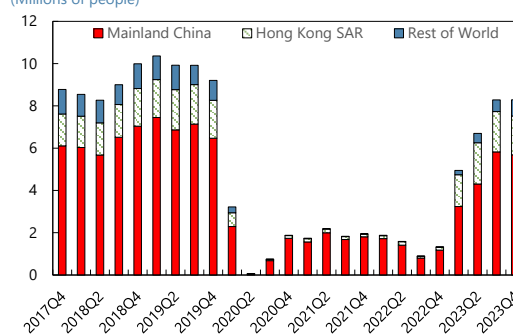


Sources: Statistics and Census Service (DSEC); and IMF staff calculations.

*...Owing to an influx of tourists since the end of the COVID-19 restrictions ...*

#### Visitor Arrivals

(Millions of people)

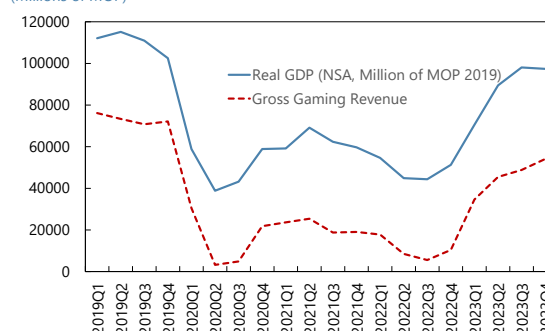


Source: Statistics and Census Service (DSEC).

*Gross gaming revenue increased.*

#### Real GDP and Gross Gaming Revenue

(Millions of MOP)

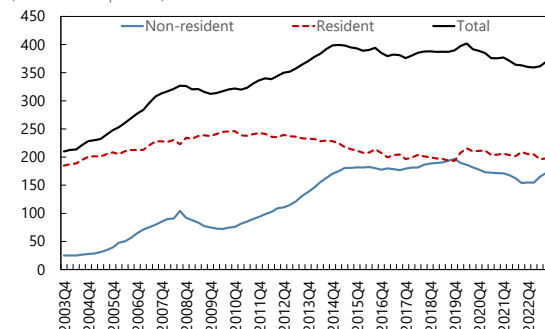


Sources: Statistics and Census Service (DSEC); Bloomberg Finance LP.

*... primarily driven by an increase in the employment of non-residents.*

#### Employment

(Thousands of persons)



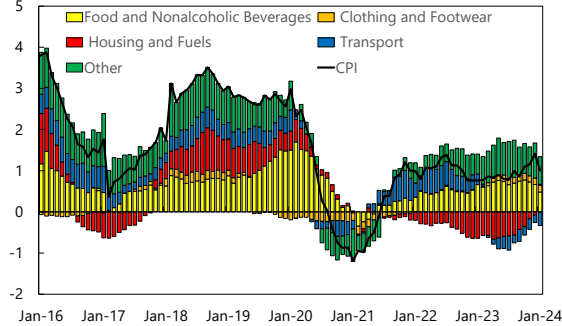
Sources: CEIC; and IMF staff calculations.

**Figure 1. Macao SAR: Real Sector Developments (Concluded)**

*Inflation has hovered around 1 percent in 2023, mainly driven by housing and transport prices.*

#### CPI Growth Decomposition

(In percent)

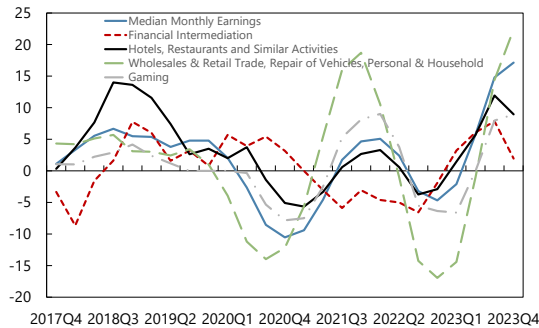


Sources: Haver Analytics; and IMF staff calculations.

*Monthly earnings are starting to pick-up.*

#### Median Monthly Earnings

(Three quarter moving average, year-on-year, in percent)

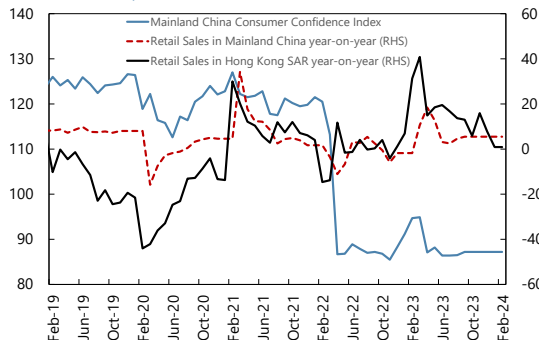


Sources: Haver Analytics; and IMF staff calculations.

*High-frequency indicators suggest that consumer confidence in neighboring regions is weak.*

#### A Slowdown in the Region Could Drag on Macao SAR's Recovery

(LHS: Index, RHS: in percent)

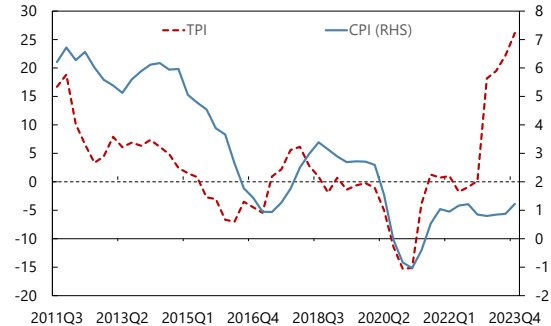


Source: Bloomberg Finance L.P.

*While the tourist price index has increased, inflation has not followed suit.*

#### Consumer Price Index (CPI) and Tourism Price Index (TPI)

(In percent, year-on-year)

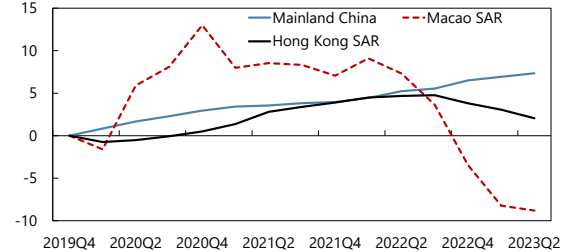


Sources: CEIC; Haver Analytics; and IMF staff calculations.

*Macao SAR's excess savings of consumers are below pre-pandemic levels.*

#### Cumulative Excess Savings

(Cumulative change since 2019Q4, in percent of GDP)



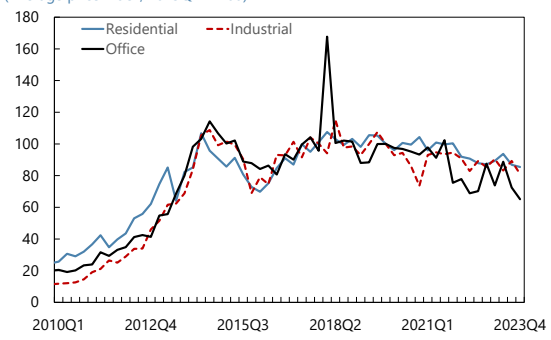
Sources: Haver Analytics; and IMF staff calculations.

Note: Excess saving is defined as the difference between actual household saving and pre-pandemic household saving. For Macao SAR savings are computed as the sum of demand and saving deposits in percent of 2019Q4 GDP annualized.

*After a brief stabilization, housing price decline resumed.*

#### Housing Price

(Average price index, 2019Q4 = 100)



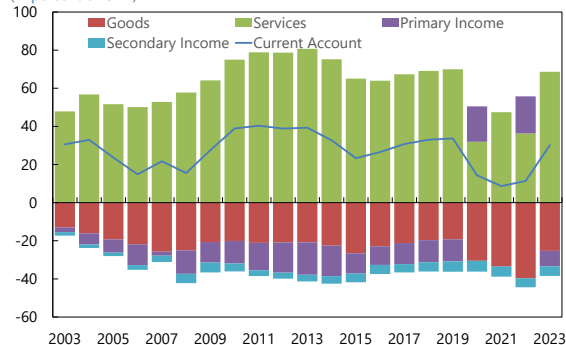
Sources: CEIC; and IMF staff calculations.

**Figure 2. Macao SAR: External Sector Developments**

*Services export drove current account improvement in 2023.*

**Current Account and Components**

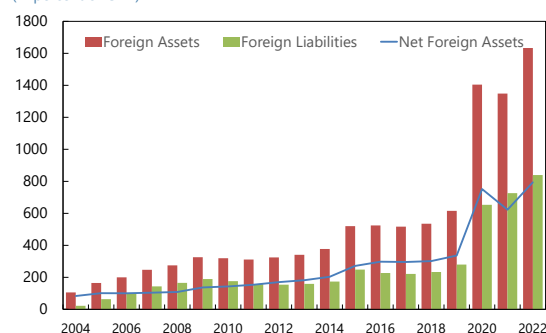
(In percent of GDP)



*NIIP remains significant...*

**Estimated International Investment Position**

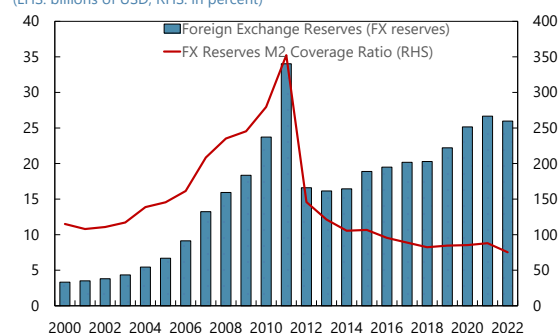
(In percent of GDP)



*...with FX reserves at a comfortable level.*

**Foreign Exchange Reserves**

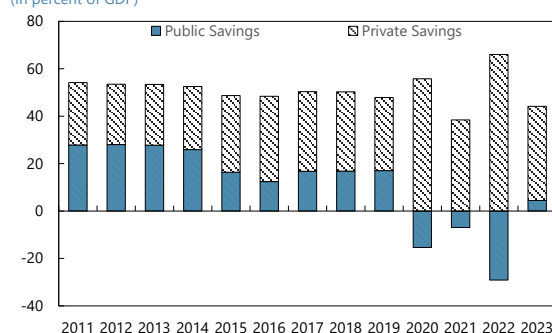
(LHS: billions of USD, RHS: in percent)



*Both private and public savings improved...*

**National Savings**

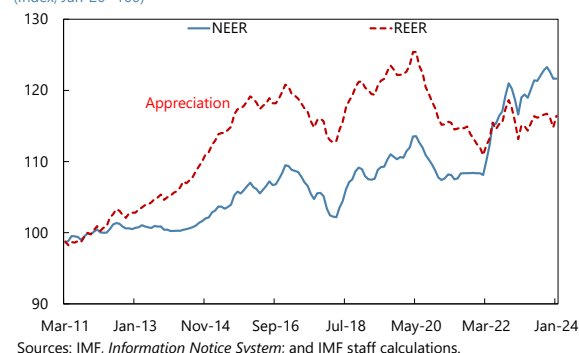
(In percent of GDP)



*Effective exchange rate was stable in real terms, despite appreciating in nominal terms...*

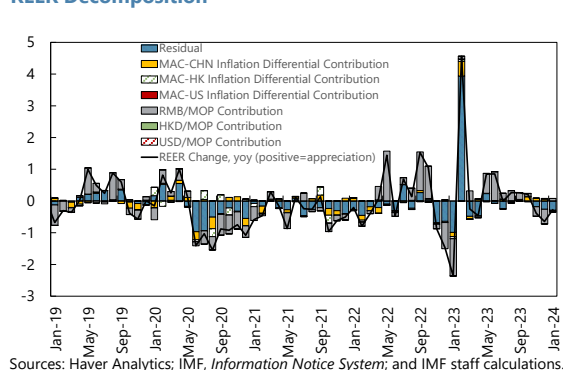
**Effective Exchange Rate**

(Index, Jan-20=100)



*...as inflation differentials offset nominal depreciation.*

**REER Decomposition**

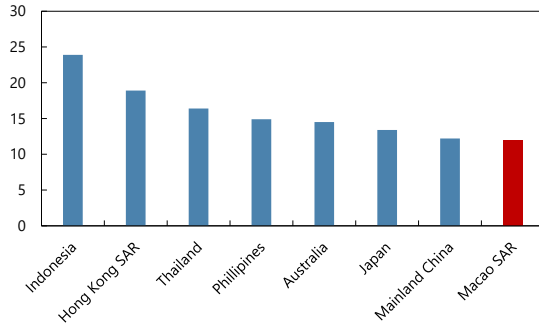


**Figure 3. Macao SAR: Financial Soundness Indicators**

*Capital adequacy is in double digits, though below peers.*

#### Regulatory Tier 1 Capital to Risk-Weighted Assets

(In percent, latest data available)

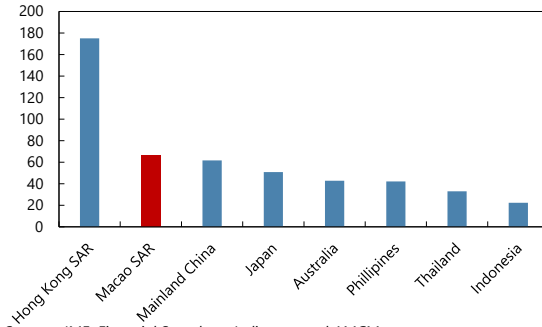


Sources: IMF, *Financial Soundness Indicators*; and AMCM.

*Liquidity is ample...*

#### Liquid Assets to Short-term Liabilities

(In percent, latest data available)

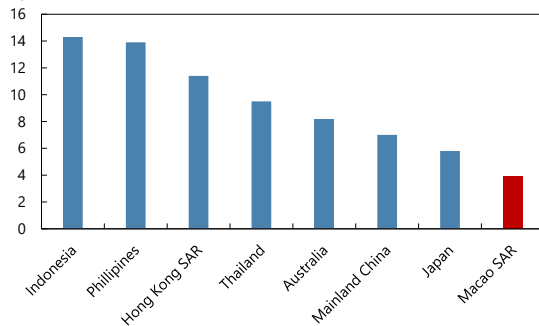


Sources: IMF, *Financial Soundness Indicators*; and AMCM.

*...profitability comfortable ...*

#### Return on Equity

(In percent, latest data available)

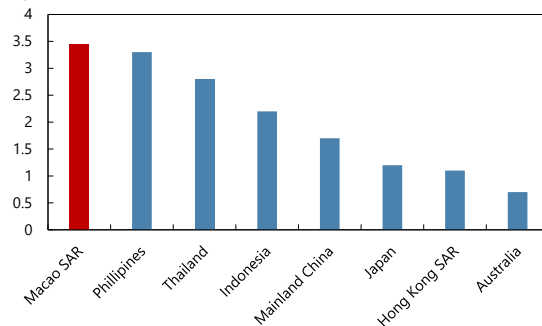


Sources: IMF, *Financial Soundness Indicators*; and AMCM.

*... though NPLs are above peers.*

#### Nonperforming Loans to Total Gross Loans

(In percent, latest data available)

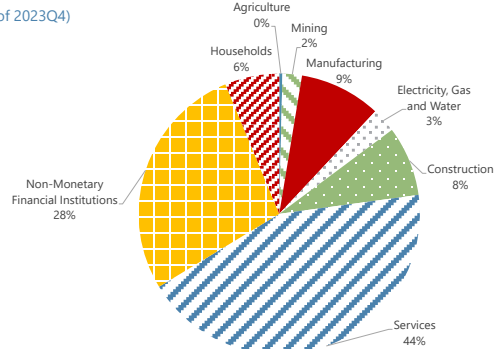


Sources: IMF, *Financial Soundness Indicators*; and AMCM.

*Majority of loans to nonresidents are to non-monetary financial institutions and services sector...*

#### Sectoral Distribution of Loans to Nonresidents

(As of 2023Q4)

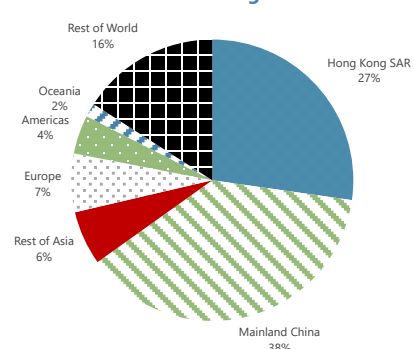


Sources: AMCM; and IMF staff calculations.

*...mostly allocated in the Mainland and Hongkong SAR.*

#### Regional Distribution of Banks' Foreign Assets

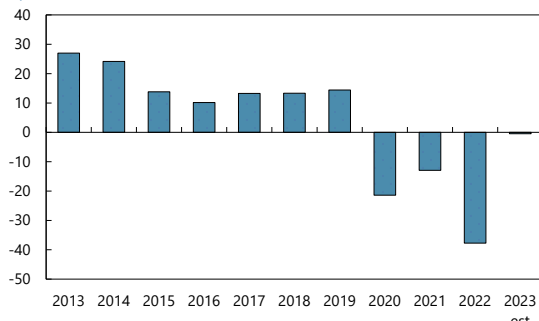
(As of 2023Q4)



Sources: AMCM; and IMF staff calculations.

**Figure 4. Macao SAR: Fiscal Developments***The fiscal balance has improved in 2023...***General Government Balance**

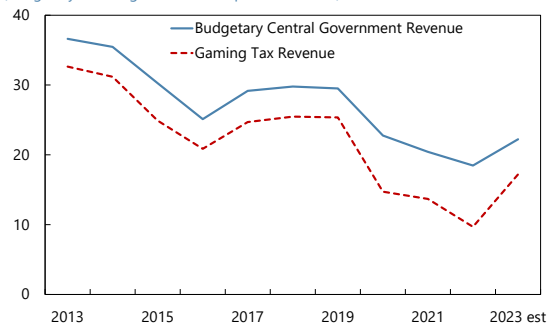
(In percent of GDP)



Sources: Macao SAR Financial Services Bureau (FSB); and IMF Government Statistics.

*...thanks to the recovery of gaming tax revenue...***Revenue and Gaming Tax Revenue**

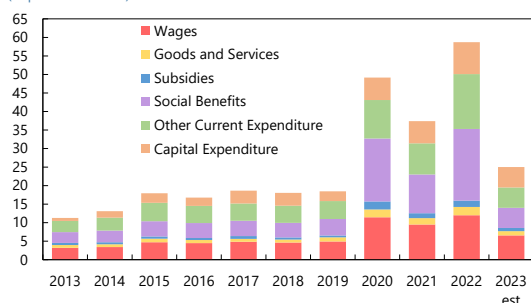
(Budgetary central government, in percent of GDP)



Sources: Macao SAR Financial Services Bureau (FSB); IMF Government Statistics; and IMF staff estimates.

*...and expenditure restraint.***General Government Expenditure**

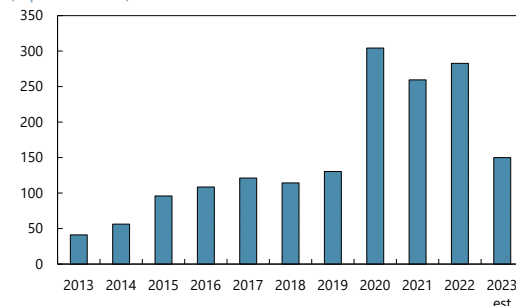
(In percent of GDP)



Sources: Macao SAR Financial Services Bureau (FSB); IMF Government Statistics; and IMF staff estimates.

*Fiscal reserves remain large.***Fiscal Reserve**

(In percent of GDP)



Sources: Macao SAR Financial Services Bureau (FSB); and IMF staff estimates.

**Table 1. Macao SAR: Selected Economic and Financial Indicators, 2021-29**

	2021	2022	2023	2024	2025	2026	2027	2028	2029
			Est.	Projection					
	(Annual percentage change, unless otherwise specified)								
<b>National accounts</b>									
Real GDP	23.5	-21.4	80.5	13.9	9.6	4.4	3.0	3.0	3.0
Total domestic demand	4.4	-7.0	7.4	4.5	3.8	3.8	3.8	3.8	3.8
Consumption	5.7	-2.5	5.4	4.4	3.4	3.4	3.3	3.3	3.3
Investment	0.9	-19.4	14.1	4.8	5.2	5.2	5.2	5.2	5.3
Net exports 1/	18.0	-15.4	73.2	11.1	7.5	2.4	1.1	1.0	1.0
Exports	83.5	-25.3	92.9	14.4	9.4	4.1	2.6	2.6	2.6
Imports	53.7	-9.9	8.0	4.2	2.5	3.2	3.1	3.1	3.1
Gross fixed capital formation (In percent of GDP)	22.3	22.8	13.5	12.5	11.9	12.0	12.2	12.5	12.7
National savings (In percent of GDP) 2/	37.0	21.8	54.3	45.3	47.0	46.2	45.0	44.0	43.2
<b>Prices and employment</b>									
Headline inflation (Average)	0.0	1.0	0.9	1.7	2.3	2.4	2.5	2.5	2.5
Unemployment rate (Annual average)	2.9	3.7	2.7	2.0	1.9	1.8	1.7	1.7	1.7
	(In percent of GDP, unless otherwise specified)								
<b>Fiscal accounts</b>									
General government balance	-12.9	-37.7	-0.4	2.0	12.0	12.3	13.2	13.2	13.2
Budgetary Central Government Balance	-14.5	-32.0	-0.7	0.1	9.0	9.5	10.8	10.8	10.8
Revenue	20.4	18.5	22.2	23.3	29.9	29.5	30.2	30.2	30.2
Expenditure	34.9	50.4	23.0	23.2	20.8	20.0	19.4	19.4	19.4
Extra-budgetary funds balance	-0.1	-0.1	0.4	0.8	1.6	1.1	0.6	0.6	0.6
Social security funds balance	1.6	-5.6	0.1	1.0	1.4	1.6	1.8	1.8	1.8
Total public debt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fiscal Reserve 3/	259.4	282.8	149.9	...	...	...	...	...	...
<b>Balance of payments /4</b>									
Current account	8.7	11.4	30.2	32.5	34.8	33.9	32.5	31.3	30.2
Goods	-33.3	-39.6	-25.3	-23.0	-21.0	-20.5	-20.2	-20.0	-19.8
Services	47.4	36.3	68.6	71.0	71.8	71.5	70.6	69.9	69.1
Income	-5.5	14.7	-13.2	-15.5	-16.0	-17.0	-17.9	-18.6	-19.1
Financial account	-13.9	-3.1	5.0	10.3	12.3	14.1	14.3	14.5	14.9
Reserve Asset	4.4	-4.1	25.2	...	...	...	...	...	...
Gross external debt	614.9	698.7	383.9	358.3	341.5	341.6	345.3	330.2	314.3
Memorandum items:									
Nominal GDP (In millions of U.S. dollars)	30,969	24,464	47,061	54,677	61,777	66,171	69,827	73,650	77,625
Per capita GDP (In thousands of U.S. dollars)	45	36	69	79	88	93	97	101	106

Sources: CEIC; Haver Analytics; IMF, International Financial Statistics; national authorities; and IMF staff estimates.

1/ Contribution to annual growth in percentage points.

2/ Projections start in 2023.

3/ Fiscal reserve fund was established on January 1, 2012 with a transfer from foreign exchange reserves.

4/ Projections start in 2023.



**Table 2. Macao SAR: Indicators of External Vulnerability, 2013-2023**

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>Monetary and financial indicators</b>											
Broad money (M2, annual percentage change)	17.7	10.4	-3.0	12.6	11.1	10.1	5.5	0.7	-0.7	4.4	1.2
Loans (annual percentage change)	31.4	29.0	10.3	3.1	14.2	12.4	6.5	9.4	11.1	-6.7	-10.1
Resident	29.6	31.8	14.8	8.6	8.4	10.2	2.6	3.1	5.5	1.5	-5.9
Nonresident	33.2	26.4	6.0	-2.7	21.0	14.7	10.5	15.2	15.8	-13.0	-13.8
Private domestic credit excl financial investment (MOP bn)	257.2	339.1	389.1	422.7	458.4	505.1	518.1	534.2	563.5	572.2	538.3
(Percent change)	29.6	31.8	14.8	8.6	8.4	10.2	2.6	3.1	5.5	1.5	-5.9
Personal loans for house purchases (MOP bn)	96.6	115.8	127.5	138.6	148.2	166.8	183.3	191.5	200.0	197.2	193.8
(Percent change)	25.9	19.9	10.1	8.7	6.9	12.6	9.9	4.5	4.5	-1.4	-1.7
Other resident loans (MOP bn)	160.7	223.3	261.6	284.1	310.2	338.3	334.8	342.7	363.5	375.0	344.5
<b>Balance of payments indicators 1/</b>											
Exports (annual percentage change, U.S. dollars)	19.2	0.6	-24.8	-2.3	17.5	12.4	-0.2	-65.8	80.8	-25.5	106.9
Imports (annual percentage change, U.S. dollars)	11.5	14.2	-0.5	-11.1	8.2	5.7	-3.8	-13.7	56.2	-8.3	5.6
Current account balance (percent GDP)	39.3	32.7	23.3	26.5	30.8	33.0	33.7	14.3	8.7	11.4	30.2
Capital and financial account balance (percent GDP)	-35.4	-21.2	-8.1	-26.5	-27.7	-23.9	-18.8	-14.9	13.9	3.1	-5.0
Of which: gross foreign direct investment inflows	7.3	4.4	1.1	4.1	3.4	3.1	11.8	-24.5	18.4	12.0	6.9
<b>Reserve indicators 1/</b>											
Foreign exchange reserves (billions of US dollars)	16.1	16.4	18.9	19.5	20.2	20.3	22.2	25.1	26.7	26.0	27.8
Foreign exchange reserves to imports of GNFS (months)	12.2	10.9	12.6	14.6	14.0	13.3	15.1	19.8	13.5	14.5	14.3
Foreign exchange reserves to broad money (M2, percent)	121.2	105.5	106.7	95.5	88.8	82.4	84.6	85.3	88.0	75.3	...
Foreign exchange reserves (percent of GDP)	31.3	30.0	41.9	43.2	40.0	36.7	40.3	99.2	86.1	106.2	59.0
<b>Banking sector</b>											
Foreign assets of banking sector (percent GDP) 2/	158.7	171.0	234.0	228.1	230.5	252.6	290.8	682.6	711.7	810.7	388.6
Banking system profits (MOP bn)	8.5	11.0	12.8	14.3	14.9	16.1	16.9	17.0	16.2	13.2	5.7
(annual percent change)	34.7	29.9	16.4	11.5	4.3	7.9	5.3	0.2	-4.3	-18.8	-56.7
Nonperforming loans (MOP bn)											
To residents	0.4	0.7	0.9	1.5	1.5	1.5	2.1	3.5	3.9	5.6	14.7
To nonresidents	0.1	0.2	0.1	0.1	0.6	0.8	0.6	1.1	5.6	14.7	26.8
<b>Financial Sector</b>											
Policy rate: discount window base rate (eop)	0.5	0.5	0.8	1.0	1.8	2.8	2.0	0.5	0.5	4.8	5.8
Saving deposit rate (average)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
Prime lending rate (average)	5.3	5.3	5.3	5.3	5.3	5.3	5.4	5.3	5.3	5.4	6.0
MAIBOR 3-month (eop)	0.4	0.4	0.4	1.0	1.3	2.4	2.4	0.4	0.3	5.0	5.2
Monetary bill yield (weighted average)	0.5	0.4	0.4	0.6	0.8	1.1	1.7	1.1	0.2	1.1	3.7
<b>Residential property market</b>											
Average transaction price: residential (MOP/sq. m.)	81,811	99,795	86,826	86,342	100,822	108,427	107,522	105,064	103,859	93,795	93,500
(Percent change)	42.6	22.0	-13.0	-0.6	16.8	7.5	-0.8	-2.3	-1.1	-9.7	-0.3
<b>Tourism</b>											
Visitor arrivals (person mn)	29.3	31.5	30.7	31.0	32.6	35.8	39.4	5.9	7.7	5.7	28.2
(Percent change)	4.4	7.5	-2.6	0.8	5.4	9.8	10.1	-85.0	30.7	-26.0	394.9
Gaming revenue (MOP bn)	361.9	352.7	231.8	224.1	266.6	303.9	293.3	61.0	87.6	42.8	183.7
(Percent change)	18.6	-2.5	-34.3	-3.3	19.0	14.0	-3.5	-79.2	43.4	-51.1	328.9
<b>Memorandum items:</b>											
Nominal GDP (USD mn)	51,536	54,903	45,048	45,071	50,384	55,191	55,082	25,344	30,969	24,464	47,061

Sources: CEIC, Haver Analytics; IMF, International Financial Statistics; national authorities; and IMF staff estimates and projections.

1/ BPM6 methodology.

2/ Excluding AMCM.

**Table 3a. Macao SAR: General Government Fiscal Data, 2021-29**  
(In millions of MOP)

	2021	2022	2023	2024	2025	2026	2027	2028	2029
			Est.	Projection					
	(In millions of MOP)								
Budgetary Central Government									
Revenue	50,656	36,443	84,382	102,064	146,722	154,371	165,722	174,006	182,621
Taxes	46,827	33,168	80,270	98,699	142,790	150,186	161,325	169,390	177,777
Personal Income	2,359	2,543	2,976	2,702	3,045	3,241	3,405	3,575	3,752
Corporate Income	5,289	7,389	7,104	7,328	7,264	7,733	8,123	8,529	8,951
Property	1,266	1,240	1,477	1,281	983	1,046	6,595	6,924	7,267
Goods and Services	37,340	21,623	68,198	86,945	130,513	137,114	142,100	149,203	156,591
Of which: Gaming	33,910	19,115	65,258	83,609	125,397	133,499	140,226	147,236	154,526
Other	574	373	516	442	986	1,050	1,103	1,158	1,215
Other Revenue	3,828	3,275	4,112	3,365	3,932	4,186	4,397	4,616	4,845
Expenditures	86,566	99,527	87,145	101,651	102,465	104,541	106,492	111,816	117,352
Wages	13,477	13,580	14,282	14,824	15,235	15,696	16,487	17,311	18,168
Goods and Services	4,306	4,426	4,346	6,993	6,212	6,090	5,848	6,140	6,444
Subsidies	2,797	3,236	2,731	4,350	2,590	2,757	2,896	3,041	3,191
Intra Government Transfers	25,780	24,334	29,321	33,677	34,989	34,634	33,558	35,235	36,980
To EBFs	22,278	23,106	25,684	27,608	29,487	28,776	27,405	28,775	30,200
To SSF	3,502	1,229	3,637	6,069	5,502	5,858	6,153	6,461	6,780
Social Benefits	18,238	30,100	10,929	16,734	15,235	15,336	16,164	16,972	17,812
Other Current	7,738	7,511	5,517	7,206	8,072	8,594	9,027	9,478	9,947
Capital Expenditure	14,231	16,339	20,020	17,866	20,132	21,432	22,512	23,638	24,808
Budgetary Central Government Balance	(35,910)	(63,084)	(2,763)	412	44,257	49,831	59,230	62,190	65,270
Extra-Budgetary Funds									
Revenue	26,255	26,854	32,146	35,848	38,067	37,911	37,000	38,849	40,773
Taxes and other Receipts	3,862	3,748	5,463	8,240	8,580	9,135	9,595	10,074	10,573
Transfers from Central Government	22,393	23,106	26,684	27,608	29,487	28,776	27,405	28,775	30,200
Expenditure	26,394	27,082	30,555	32,211	30,041	32,034	33,703	35,388	37,140
Wages	9,916	9,952	10,426	11,290	10,050	10,699	11,238	11,800	12,384
Subsidies	456	150	605	446	495	527	554	581	610
Grants	122	376	262	300	728	775	814	855	897
Social Benefits	2,377	2,357	3,291	3,371	2,333	2,536	2,719	2,855	2,996
Other Current	12,890	13,607	15,087	15,579	15,445	16,443	17,271	18,135	19,032
Capital Expenditure	632	641	884	1,227	990	1,054	1,107	1,162	1,220
EBF Balance	(140)	(228)	1,592	3,637	8,027	5,877	3,297	3,461	3,633
Social Security Fund									
Revenue	9,786	2,820	7,238	11,438	12,678	14,586	16,420	17,241	18,094
Social Contributions	386	378	395	412	827	880	924	971	1,019
Transfers from Central Government	3,502	1,229	3,637	6,069	5,502	5,858	6,153	6,461	6,780
Other Revenue	5,898	1,213	3,206	4,957	6,349	7,848	9,343	9,810	10,295
Expenditure	5,697	13,946	6,764	6,909	5,799	6,174	6,485	6,809	7,146
Wages	143	151	157	165	151	160	169	177	186
Social Benefits	5,369	5,678	6,390	6,552	5,147	5,480	5,756	6,044	6,343
Other Current	185	8,117	216	192	501	534	561	589	618
Capital Expenditure	-	-	-	-	-	-	-	-	-
SSF Balance	4,089	(11,126)	474	4,529	6,879	8,412	9,935	10,432	10,948
General Government Balance	(32,076)	(74,439)	(1,697)	8,579	59,162	64,120	72,461	76,084	79,851
Revenue	60,802	41,782	93,446	115,672	162,478	172,234	185,583	194,861	204,509
Expenditure	92,878	116,221	95,143	107,094	103,316	108,114	113,122	118,777	124,658
Memorandum									
Fiscal Reserve 1/	643,168	557,970	568,773	...	...	...	...	...	...
Non-Gaming Balance	(65,870)	(93,553)	(65,955)	(75,030)	(66,235)	(69,380)	(67,765)	(71,152)	(74,675)

1/ Fiscal Reserve was established on January 1, 2012 with a transfer from foreign exchange reserves.

Sources: Financial Services Bureau; and IMF staff estimates.

**Table 3b. Macao SAR: General Government Fiscal Data, 2021-29**  
(In percent of GDP)

	2021	2022	2023	2024	2025	2026	2027	2028	2029
			Est.	Projections					
				(In percent of GDP)					
<b>Budgetary Central Government</b>									
Revenue	20.4	18.5	22.2	23.3	29.9	29.5	30.2	30.2	30.2
Taxes	18.9	16.8	21.2	22.5	29.1	28.7	29.4	29.4	29.4
Personal Income	1.0	1.3	0.8	0.6	0.6	0.6	0.6	0.6	0.6
Corporate Income	2.1	3.7	1.9	1.7	1.5	1.5	1.5	1.5	1.5
Property	0.5	0.6	0.4	0.3	0.2	0.2	1.2	1.2	1.2
Goods and Services	15.1	11.0	18.0	19.8	26.6	26.2	25.9	25.9	25.9
Of which: Gaming	13.7	9.7	17.2	19.1	25.5	25.5	25.5	25.5	25.5
Other	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2
Other Revenue	1.5	1.7	1.1	0.8	0.8	0.8	0.8	0.8	0.8
Expenditures	34.9	50.4	23.0	23.2	20.8	20.0	19.4	19.4	19.4
Wages	5.4	6.9	3.8	3.4	3.1	3.0	3.0	3.0	3.0
Goods and Services	1.7	2.2	1.1	1.6	1.3	1.2	1.1	1.1	1.1
Subsidies	1.1	1.6	0.7	1.0	0.5	0.5	0.5	0.5	0.5
Intra Government Transfers	10.4	12.3	7.7	7.7	7.1	6.6	6.1	6.1	6.1
To EBFs	9.0	11.7	6.8	6.3	6.0	5.5	5.0	5.0	5.0
To SSF	1.4	0.6	1.0	1.4	1.1	1.1	1.1	1.1	1.1
Social Benefits	7.4	15.3	2.9	3.8	3.1	2.9	2.9	2.9	2.9
Other Current	3.1	3.8	1.5	1.6	1.6	1.6	1.6	1.6	1.6
Capital Expenditure	5.7	8.3	5.3	4.1	4.1	4.1	4.1	4.1	4.1
Budgetary Central Government Balance	-14.5	-32.0	-0.7	0.1	9.0	9.5	10.8	10.8	10.8
<b>Extra-Budgetary Funds</b>									
Revenue	10.6	13.6	8.5	8.2	7.7	7.2	6.7	6.7	6.7
Taxes and other Receipts	1.6	1.9	1.4	1.9	1.7	1.7	1.7	1.7	1.7
Transfers from Central Government	9.0	11.7	7.0	6.3	6.0	5.5	5.0	5.0	5.0
Expenditure	10.6	13.7	8.1	7.3	6.1	6.1	6.1	6.1	6.1
Wages	4.0	5.0	2.7	2.6	2.0	2.0	2.0	2.0	2.0
Subsidies	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Grants	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Social Benefits	1.0	1.2	0.9	0.8	0.5	0.5	0.5	0.5	0.5
Other Current	5.2	6.9	4.0	3.5	3.1	3.1	3.1	3.1	3.1
Capital Expenditure	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2
EBF Balance	-0.1	-0.1	0.4	0.8	1.6	1.1	0.6	0.6	0.6
<b>Social Security Fund</b>									
Revenue	3.9	1.4	1.9	2.6	2.6	2.8	3.0	3.0	3.0
Social Contributions	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2
Transfers from Central Government	1.4	0.6	1.0	1.4	1.1	1.1	1.1	1.1	1.1
Other Revenue	2.4	0.6	0.8	1.1	1.3	1.5	1.7	1.7	1.7
Expenditure	2.3	7.1	1.8	1.6	1.2	1.2	1.2	1.2	1.2
Wages	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Social Benefits	2.2	2.9	1.7	1.5	1.0	1.0	1.0	1.0	1.0
Other Current	0.1	4.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1
Capital Expenditure	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSF Balance	1.6	-5.6	0.1	1.0	1.4	1.6	1.8	1.8	1.8
<b>General Government Balance</b>	-12.9	-37.7	-0.4	2.0	12.0	12.3	13.2	13.2	13.2
Revenue	24.5	21.2	24.6	26.4	33.1	32.9	33.8	33.8	33.8
Expenditure	37.5	58.9	25.1	24.4	21.0	20.7	20.6	20.6	20.6
<b>Memorandum</b>									
Fiscal Reserve 1/	259.4	282.8	149.9	...	...	...	...	...	...
Cyclically Adjusted Non-Gaming Balance 2/	-31.6	-41.9	-26.2	-27.3	-22.9	-22.6	-20.7	-20.5	-20.2
Social Spending 3/	6.6	15.4	1.5	2.1	0.7	0.5	0.6	0.6	0.6

1/ Fiscal Reserve was established on January 1, 2012 with a transfer from foreign exchange reserves.

2/ In percent of potential non-gaming GDP

3/ Includes Social Protection, Health, Housing, and Education from spending categories by function.

Sources: Financial Services Bureau; and IMF staff estimates.

Table 4. Macao SAR: Balance of Payments, 2021-29

	2021	2022	2023	2024	2025	2026	2027	2028	2029
			Est.	Projection					
	(In millions of US dollars)								
Current account, net	2,683	2,782	14,210	17,766	21,483	22,453	22,690	23,034	23,443
Trade balance of goods and services, net	4,394	-810	20,407	26,252	31,386	33,723	35,221	36,735	38,251
Goods balance, net	-10,301	-9,696	-11,892	-12,577	-12,999	-13,568	-14,103	-14,728	-15,377
Credit (exports)	9,481	7,875	6,084	6,363	6,686	6,999	7,309	7,642	7,987
Debit (imports)	19,782	17,571	17,976	18,940	19,686	20,566	21,412	22,370	23,364
Services balance, net	14,695	8,886	32,298	38,829	44,385	47,291	49,324	51,463	53,629
Credit (exports)	18,682	13,109	37,333	44,101	49,633	52,610	54,724	56,967	59,249
Debit (imports)	3,987	4,224	5,035	5,272	5,248	5,319	5,400	5,504	5,620
Primary Income, net	-111	4,757	-3,802	-5,692	-6,757	-7,913	-9,000	-9,989	-10,711
Secondary Income, net	-1,600	-1,165	-2,395	-2,793	-3,146	-3,356	-3,531	-3,713	-4,098
Capital account, net	-1	0	0	0	0	0	0	0	0
Financial account, net	-4,308	-754	2,349	5,611	7,593	9,341	9,983	10,677	11,567
Direct investment, net	-1,241	-2,118	-2,167	-2,278	-2,392	-2,511	-2,637	-2,795	-2,963
Liabilities	5,684	2,933	3,226	3,549	3,726	3,913	4,108	4,355	4,616
Assets	4,444	815	1,059	1,271	1,335	1,401	1,472	1,560	1,653
Portfolio investment, net	6,237	3,410	6,156	7,014	7,691	8,028	8,273	8,523	8,779
Liabilities	3,441	1,103	1,992	2,269	2,488	2,598	2,677	2,758	2,840
Assets	9,678	4,513	8,148	9,284	10,179	10,626	10,949	11,280	11,619
Financial derivatives, net	-261	-846	-1,626	-1,881	-2,106	-2,242	-2,355	-2,473	-2,596
Liabilities	...	...	...	...	...	...	...	...	...
Assets	-261	-846	-1,626	-1,881	-2,106	-2,242	-2,355	-2,473	-2,596
Other investment, net	-9,043	-1,200	-13	2,756	4,400	6,066	6,702	7,422	8,347
Liabilities	50,533	-21,847	11,087	10,532	10,217	10,012	9,912	9,912	9,912
Assets	41,490	-23,048	11,073	13,288	14,617	16,079	16,614	17,334	18,259
Errors and omissions, net	-5,633	-4,546	0	0	0	0	0	0	0
Reserve assets	1,357	-1,009	11,860	...	...	...	...	...	...
	(In percent of GDP)								
Current account, net	8.7	11.4	30.2	32.5	34.8	33.9	32.5	31.3	30.2
Trade balance of goods and services, net	14.2	-3.3	43.4	48.0	50.8	51.0	50.4	49.9	49.3
Goods balance, net	-33.3	-39.6	-25.3	-23.0	-21.0	-20.5	-20.2	-20.0	-19.8
Credit (exports)	30.6	32.2	12.9	11.6	10.8	10.6	10.5	10.4	10.3
Debit (imports)	63.9	71.8	38.2	34.6	31.9	31.1	30.7	30.4	30.1
Services balance, net	47.4	36.3	68.6	71.0	71.8	71.5	70.6	69.9	69.1
Credit (exports)	60.3	53.6	79.3	80.7	80.3	79.5	78.4	77.3	76.3
Debit (imports)	12.9	17.3	10.7	9.6	8.5	8.0	7.7	7.5	7.2
Primary Income, net	-0.4	19.4	-8.1	-10.4	-10.9	-12.0	-12.9	-13.6	-13.8
Secondary Income, net	-5.2	-4.8	-5.1	-5.1	-5.1	-5.1	-5.1	-5.0	-5.3
Capital account, net	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financial account, net	-13.9	-3.1	5.0	10.3	12.3	14.1	14.3	14.5	14.9
Direct investment, net	-4.0	-8.7	-4.6	-4.2	-3.9	-3.8	-3.8	-3.8	-3.8
Liabilities	18.4	12.0	6.9	6.5	6.0	5.9	5.9	5.9	5.9
Assets	14.3	3.3	2.3	2.3	2.2	2.1	2.1	2.1	2.1
Portfolio investment, net	20.1	13.9	13.1	12.8	12.4	12.1	11.8	11.6	11.3
Liabilities	11.1	4.5	4.2	4.2	4.0	3.9	3.8	3.7	3.7
Assets	31.3	18.4	17.3	17.0	16.5	16.1	15.7	15.3	15.0
Financial derivatives, net	-0.8	-3.5	-3.5	-3.4	-3.4	-3.4	-3.4	-3.4	-3.3
Liabilities	...	...	...	...	...	...	...	...	...
Assets	-0.8	-3.5	-3.5	-3.4	-3.4	-3.4	-3.4	-3.4	-3.3
Other investment, net	-29.2	-4.9	0.0	5.0	7.1	9.2	9.6	10.1	10.8
Liabilities	163.2	-89.3	23.6	19.3	16.5	15.1	14.2	13.5	12.8
Assets	134.0	-94.2	23.5	24.3	23.7	24.3	23.8	23.5	23.5
Errors and omissions, net	-18.2	-18.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reserve assets	4.4	-4.1	25.2	...	...	...	...	...	...
Memorandum items:									
Total External Debt (in millions of U.S. dollars)	190,438	170,936	180,687	195,929	210,999	226,069	241,138	243,200	244,000
Banks	170,510	149,630	...	...	...	...	...	...	...
Non-bank entities	19,928	21,306	...	...	...	...	...	...	...
Foreign exchange reserves (in millions of U.S. dollars)	26,665	25,971	...	...	...	...	...	...	...
Nominal GDP (in millions of U.S. dollars)	30,969	24,464	47,061	54,677	61,777	66,171	69,827	73,650	77,625

Sources: CEIC; Haver Analytics; IMF, International Financial Statistics; national authorities; and IMF staff estimates and projections.

1/ BPM6 methodology.

**Table 5. Macao SAR: Selected Financial Soundness Indicators, 2016-23**

	2016	2017	2018	2019	2020	2021	2022	2023
	(In percent)							
<b>Capital adequacy</b>								
Regulatory capital to risk-weighted assets *	16.1	15.7	14.8	14.2	14.6	14.7	15.1	14.1
Regulatory Tier I capital to risk weighted assets *	11.7	11.4	10.5	10.4	10.4	10.6	10.8	11.9
Capital to assets *	3.1	3.3	3.1	3.1	3.1	2.8	3.5	3.8
<b>Asset composition and quality</b>								
Sectoral distribution of domestic credit to private sector (% of gross loans)	53.9	51.2	50.1	48.3	45.5	43.2	47.1	49.2
Personal housing loans	17.7	16.5	16.6	17.1	16.3	15.3	16.2	17.7
Construction	6.1	6.1	4.5	5.1	5.5	5.8	5.4	6.0
Manufacturing	1.5	1.5	1.0	0.7	0.5	0.5	0.4	0.3
Commercial	3.7	3.5	3.1	2.8	2.4	2.7	2.4	2.1
Public utilities	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Restaurant, hotel and related services	4.3	4.0	5.0	3.5	3.0	2.6	3.5	3.0
Non-bank financial institutions	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Other industries	20.3	19.2	19.6	18.7	17.5	16.0	18.9	19.9
Total claims on government to gross loans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Asset quality</b>								
Nonperforming loans (NPL) to gross loans *	0.2	0.2	0.2	0.2	0.3	0.7	1.5	3.4
NPL net of provisions to capital * 1/	1.3	1.5	1.3	1.9	2.8	4.9	8.3	21.8
<b>Earnings and profitability</b>								
Return on assets *	1.1	1.0	1.0	0.9	0.8	0.7	0.5	0.2
Return on equity *	21.4	19.9	19.1	17.8	16.1	14.2	10.6	3.9
Interest margin to gross income *	71.8	73.7	74.9	73.1	71.5	71.3	73.8	69.3
Trading income to total income **	4.4	2.6	2.6	4.5	4.6	4.8	1.7	3.9
Noninterest expenses to gross income *	34.0	34.4	34.4	35.7	33.4	32.9	36.9	40.2
Personnel expenses to noninterest expenses **	49.7	48.2	48.3	47.7	50.5	50.7	45.9	40.9
Spread between reference loan and deposit rates, period average ** (basis points)	175.4	167.1	174.7	152.7	137.5	146.2	156.1	108.5
<b>Liquidity</b>								
Liquid assets to total assets *	35.9	30.8	32.5	33.2	35.3	40.5	39.3	37.2
Liquid assets to short-term liabilities *	60.6	53.0	62.1	57.7	65.6	70.2	66.9	66.0
Foreign currency-denominated loans to total loans **	79.1	81.3	80.2	76.7	74.4	74.2	73.9	71.9
Foreign currency-denominated liabilities to total liabilities **	82.5	83.4	85.9	86.9	87.0	87.9	86.6	87.3
<b>Sensitivity to market risk</b>								
Net open position in foreign exchange to capital *	146.2	123.2	94.4	71.1	65.8	55.5	73.2	48.7
<b>Real estate markets</b>								
Residential real estate loans to total gross loans **	22.0	20.7	20.6	20.0	18.2	16.5	17.7	18.9
Commercial real estate loans to total gross loans **	20.7	19.7	18.9	15.5	12.9	11.0	12.3	13.1
Sources: AMCM; and IMF FSI database.								
* Core indicators      ** Encouraged indicators								
1/ Locally incorporated banks only								

## Appendix I. Macao SAR's Support and Incentive Measures

Institution	Measure	Policy Description
Economic and Technological Development Bureau, Macao SAR	Subsidy scheme for enterprise upgrading and development	Enterprises carrying out projects in Macao SAR by means of bank loans or financial leasing that contribute to economic diversification, will be granted an interest or rent subsidy for a period of up to four years.
	Tax incentives	<p>The following incentives will be granted to investors with the intend to contribute to Macao SAR's industrial development:</p> <p>Industrial tax exemption.</p> <ul style="list-style-type: none"> <li>• 50 percent reduction in profit tax.</li> <li>• 50 percent reduction in stamp duty for the conveyance of immovable property used for the operation of industrial activities.</li> <li>• 50 percent reduction in donation tax regarding the conveyance of immovable property for operation of industrial activities.</li> <li>• Exemption from stamp duty for property conveyance where a restructuring program aims to transfer the ownership of one or several industrial establishments to a single legal entity.</li> <li>• Exemption from tax on an urban property rented exclusively for industrial purposes.</li> </ul>
	Young entrepreneurs aid scheme	Young entrepreneurs and limited companies with more than 50 percent of their capital held by entrepreneurs from Macao SAR may apply. The maximum amount of the aid is MOP 300,000 which can be amortized over eight years.
	SME schemes	<p>The scope of the scheme is targeted to enterprises that meet the following requirements:</p> <ul style="list-style-type: none"> <li>• Registered at the Financial Services Bureau for tax purposes.</li> <li>• Have no more than 100 employees.</li> <li>• The aforementioned employees work in Macao SAR.</li> </ul> <p>There are three type of SME schemes:</p> <ul style="list-style-type: none"> <li>• <b>Aid Scheme:</b> Maximum aid of MOP 600,000 which can be amortized over eight years with the scope of improving the business environment.</li> <li>• <b>Credit guarantees:</b> Provides up to 70 percent guarantee of the amount of the bank loan with a maximum amount of MOP 4.9 million excluding interests and other expenses. The loan can be amortized over a period of five years from the date of drawdown.</li> <li>• <b>Credit guarantee on special projects:</b> Provides up to a 100 percent guarantee of the bank loan for special projects and aims to support those companies impacted by abnormal and unpredictable events. The maximum amount of the guarantee is up to MOP 1 million excluding interests and other expenses. The loan can be amortized over a period of five years from the date of drawdown.</li> </ul>
Financial Services Bureau	Tax incentives regime for financial leasing	Companies engaged in financial leasing are granted stamp duty and profit tax incentives
Macao Trade and Investment Promotion Institute	Support and incentive measures for the MICE industry	The measures include promotion through Macao SAR's Trade and Investment Promotion Institute (IPIM), Convention and Exhibition Stimulation Program, Stimulation Program for Professional Training and Education in the Convention and Exhibition Sector, and Financial Support Program for Participation in Exhibitions and Trade Fairs.

## Appendix II. 2023 External Sector Assessment

<b>Overall Assessment:</b> <i>The external position of Macao SAR in 2023 was assessed substantially stronger than the level implied by fundamentals and desirable policies<sup>1/</sup>. The current account surplus increased significantly in 2023 reaching 30 percent of GDP, though it is still below the 2019 level by about 3.5 percentage points. This outcome is driven by a surge in exports of service due to reopening of Mainland China and recovery of the gaming sector.</i>						
<b>Potential Policy Responses:</b> Given ample fiscal space, staff recommends more measured pace of fiscal consolidation focused on healthcare and education spending and scaling up public investments to strengthen the recovery, adopt to the climate change, and facilitate the economy's diversification. Efforts to enhance social safety nets should continue, which would reduce precautionary saving and support consumption.						
<b>Foreign Asset and Liability Position and Trajectory</b>	<b>Background.</b> Official international investment position data are not available. As an alternative, staff estimate Macao SAR's net foreign assets by calculating the cumulative sum of financial account flows starting in 2002 (the estimate is imperfect as it excludes valuation changes). Consistent with Macao SAR's large current account surpluses since 2002, this approach suggests 428.9 percent of GDP net international investment position (NIIP) in 2023, which has declined from 793.6 percent of GDP in end-2022. Gross assets declined to around 909.5 percent of GDP, while gross liabilities dropped to 480.5 percent of GDP. The large decrease in gross assets and liabilities in percent of GDP is mostly driven by the significant recovery in GDP during 2023. In absolute terms, gross assets and liabilities increased by 7.1 and 10.1 percent in 2023 respectively.  <b>Assessment.</b> The NIIP is projected to remain in a large creditor position over the medium term given CA surpluses. The large net foreign assets suggest limited grounds for concern about medium term external solvency, but ongoing attention is necessary to the quality and liquidity of foreign assets in the event of a sudden fall in external liabilities.					
2023 (% GDP)	NIIP: 428.9	Gross Assets: 909.5	Debt Assets: 97.4	Gross Liab.: 480.5	Debt Liab.: 383.1	
<b>Current Account</b>	<b>Background.</b> Macao SAR's current account (CA) surplus increased to 30.2 percent of GDP in 2023 from 11.4 percent observed in 2022. This reflects the large increase in exports of service as the gaming sector recovered in 2023. The deficit in the goods balance decreased in 2023, which is mainly driven by the significant increase in GDP in 2023. The primary income balance turned negative to 8.1 percent of GDP from close to 20 percent surplus in 2022, as reinvested earnings from the gaming sector recover.  <b>Assessment.</b> The EBA lite CA model estimates a cyclically adjusted CA of 32.9 percent of GDP and a CA norm of 20.9 percent of GDP for 2023. As the large shocks to the tourism sector are not accounted for by the standard EBA-light cyclical adjustment, a 2.3 percent of GDP adjustor is applied to the cyclically adjusted CA surplus. This implies a 12.0 percent of GDP CA gap, which consists of an identified policy gap of -0.8 percent of GDP and an unexplained residual, which partly reflects Macao SAR's structural factors not fully captured by the EBA lite model. Overall, staff assesses the current account gap in 2023 to be around 10.5–13.5 percent of GDP range.					
2023 (% GDP)	CA: 30.2	Cycl. Adj. CA: 32.9	EBA Norm: 20.9	EBA Gap: 12.0	Adjustors: -2.3	Staff Gap: 12.0
<b>Real Exchange Rate</b>	<b>Background.</b> The REER appreciated by 2.8 percent between end-2021 and end-2022. It has remained roughly stable in 2023, appreciating by 0.6 percent average of 2023 relative to average of 2022. Under the currency board arrangement, REER dynamics are largely determined by HKD and USD developments, as well as inflation differentials.  <b>Assessment.</b> Using an elasticity of -0.5 and based on the staff CA gap, staff assesses the REER to be undervalued in the 20.7-26.7 percent range, with a midpoint of 23.7 percent. The EBA-lite IREER model indicates a REER gap of 17.5 percent over the equilibrium level.					
<b>Capital and Financial Accounts: Flows and Policy Measures</b>	<b>Background.</b> In 2023, the capital account continued to record a net outflow. The financial account balance became positive in 2023, which was largely driven by increase in reserve assets. The financial non-reserve asset recorded a net outflow of 2.3 USD billion compared with a net inflow of 0.8 USD billion in 2022, mainly due to increase in portfolio investment outflows.  <b>Assessment.</b> Significant foreign assets (including contingent support from Mainland parent banks) and prudent financial regulation limit risks from potentially volatile capital flows.					
<b>FX Intervention and Reserves Level</b>	<b>Background.</b> Because Macao SAR has a currency board arrangement, international reserves have been built up in a non-discretionary way. International reserves increased to USD 27.8 billion (59.0 percent of GDP) in end 2023, which is around 14.3 months of imports, from US\$26.0 billion (105.7 percent of GDP) as of end 2022.  <b>Assessment.</b> Macao SAR international reserves remain adequate for precautionary purposes. The Pataca M2 coverage ratio was at 89.8 percent in November 2023, although declining since it peaked in 2011 (at 352 percent of Pataca M2). Macao SAR also holds significant fiscal reserves (an estimate of US\$70.5 billion or 149.9 percent of GDP as of 2023) in foreign exchange (of which about US\$18 billion was funded out of reserves in 2012). These can be an additional buffer but are primarily intended for fiscal needs rather than supporting the exchange rate regime.					
1/ The assessment for 2023 is preliminary as it is based on projected values. The final assessment of the external sector for 2023 will be that of the External Sector Report.						



## Appendix III. Risk Assessment Matrix<sup>1</sup>

Risks	Likelihood	Impact	Policies
<b>Global risks</b>			
<b>Abrupt China slowdown.</b>	<b>Medium</b>	<b>High.</b> Sharper-than-expected contraction in the property sector weighs on private demand, further amplifies local government fiscal strains, and results in disinflationary pressures and adverse macro-financial feedback loops. Given Macao SAR banks' large exposure to the Mainland China and the dependence of the gaming sector on tourists from the Mainland, this could prompt negative spillovers to Macao SAR's economy and financial system.	Accelerate efforts to promote the diversification of Macao SAR's economy. Strengthen the regulatory and supervisory framework to contain risks from the significant exposure to Mainland China. Enhance monitoring of credit risk of borrowers from Mainland China. Deploy forward-looking risk assessments and strengthen the supervisory cooperation with the Mainland regulators.
<b>Monetary policy miscalibration</b>	<b>Medium</b>	<b>Medium.</b> Amid high economic uncertainty, major central banks loosen policy stance prematurely, hindering disinflation, or keep it tight for longer than wanted, causing abrupt adjustments in financial markets and weakening the credibility of central banks. This could tighten financial conditions for Macao SAR corporations at the time of still fragile recovery.	Continue to implement prudent fiscal policy and promote labor and product market flexibility. Monitor bank's sensitivity to interest rate risk. Macao SAR's ample foreign exchange/fiscal reserves combined with well-capitalized and liquid banking system are sufficient to defend the currency peg if required.
<b>Commodity price volatility</b>	<b>High</b>	<b>Medium.</b> A succession of supply disruptions (e.g., due to conflicts, export restrictions, and OPEC+ decisions) and demand fluctuations causes recurrent commodity price volatility, external and fiscal pressures in EMDEs, cross-border spillovers, and social and economic instability.	Provide targeted support to vulnerable groups and viable firms. Build in incentives in policy support measures to facilitate reallocation of resources.
<b>Deepening geoeconomic fragmentation.</b>	<b>High</b>	<b>Low.</b> Broader conflicts, inward-oriented policies, and weakened international cooperation result in a less efficient configuration of trade and FDI, supply disruptions, protectionism, policy uncertainty, technological and payments systems fragmentation, rising shipping and input costs, financial instability, a fracturing of international monetary and financial systems, and lower growth.	Accelerate efforts to diversify Macao SAR's economy to non-gaming tourism and non-tourism industries.
<b>Cyberthreats.</b>	<b>Medium</b>	<b>Low.</b> Cyberattacks on physical or digital infrastructure and service providers (including digital currency and crypto assets) or misuse of AI technologies trigger financial and economic instability.	Invest in ICT infrastructure and further enhance cyber-security preparedness.
<b>Domestic risks</b>			
<b>Extreme climate events.</b>	<b>Medium</b>	<b>High.</b> Extreme climate events driven by rising temperatures cause loss of human lives, severe damage to infrastructure, supply disruptions, lower growth, and financial instability. Considering Macao SAR low elevation and small size, the probability of extreme coastal flood disasters increases, further threatening the human livelihood and social economic activities on the island.	Enhance early warning systems to monitor and evaluate Macao SAR's exposure to climate change risks. Scale up public investments in critical infrastructure, water security, and coastal management. Improve the understanding and management of financial risks due to climate change.

<sup>1</sup> The Risk Assessment Matrix (RAM) shows events that could materially alter the baseline path. The relative likelihood is the staff's subjective assessment of the risks surrounding the baseline ("low" is meant to indicate a probability below 10 percent, "medium" a probability between 10 and 30 percent, and "high" a probability between 30 and 50 percent). The RAM reflects staff views on the source of risks and overall level of concern as of the time of discussions with the authorities. Non-mutually exclusive risks may interact and materialize jointly. The conjunctural shocks and scenario highlight risks that may materialize over a shorter horizon (between 12 to 18 months) given the current baseline. Structural risks are those that are likely to remain salient over a longer horizon.

## Appendix IV. Implementation of Main Recommendations of the 2022 Article IV Consultation Discussions<sup>1</sup>

Fund Recommendations	Policy Actions
<b>Fiscal Policy</b>	
<ul style="list-style-type: none"> <li>Policy support should be better targeted to vulnerable groups and should provide incentives for job creation to enhance the recovery and inclusion. (14)</li> </ul>	The government offers labor market support to vulnerable groups: disadvantaged families, elderly, and disabled. In 2024, the government is planning to establish an integrated services center for people with disabilities, which will also offer vocational training.
<ul style="list-style-type: none"> <li>Scale up public investment on healthcare, education and climate-resilient infrastructure should be taken to boost the near-term demand while facilitating economic diversification and mitigating climate risks over the medium term. (14)</li> </ul>	The government plans to open the Macao Medical Center to provide high-end medical services and strengthen cooperation with Greater Bay Area to provide training courses, as well as improve education infrastructure and enhance teaching quality.
<ul style="list-style-type: none"> <li>Develop a medium/long-term fiscal framework to better address trade-offs from multiple demands on fiscal resources and ensure fiscal sustainability and intergenerational equity in the longer term. (29)</li> </ul>	No action has been taken.
<b>Financial sector</b>	
<ul style="list-style-type: none"> <li>Strengthen the risk monitoring of borrowers, including from the Mainland, and enhance the insolvency and debt resolution and restructuring frameworks to alleviate vulnerabilities in the financial system and support the recovery. (16)</li> </ul>	The AMCM has been closely monitoring the asset quality of banks with a supervisory focus on their loan classification and provisioning practices as well as their credit management of high-risk borrowers, particularly property developers in the Mainland. Furthermore, a new return for collecting monthly data on banks' exposures to the Mainland's property sector was introduced in September 2022, in addition to the regular Mainland-related exposures return, so as to gauge the concentration risk of those exposures in the local banking sector and at individual-bank level.
<ul style="list-style-type: none"> <li>Enhance the regulatory and supervisory framework and strengthening cooperation with the Mainland supervisors to help minimize possible negative spillovers from the stress in the Mainland's property sector. (16)</li> </ul>	Effective mechanisms for the exchange of regulatory information and cross-border cooperation have been established with the Mainland's supervisory authorities within memorandum of understanding (MOU) framework. Under the MOUs with the National Financial Regulatory Administration (NFRA), the relevant cross-border banks' risk profiles and vulnerabilities as well as the framework for

<sup>1</sup> The numbers in parentheses represents the number of paragraphs in 2022 Article IV consultation discussions staff report where the recommendation can be found.

Fund Recommendations	Policy Actions
	addressing key issues relevant from a supervisory perspective are shared and discussed.
<b>Structural</b>	
<ul style="list-style-type: none"> <li>Upskill/reskill the labor force, close physical and digital infrastructure gaps, enhance public institutions, and streamline business regulation. (20)</li> </ul>	<p>The AMCM has launched plans for cultivating talents to meet the needs of new business models of the financial industry. Specifically, this includes pre-employment education, on-the-job training, and accreditation of professional qualifications. They have revised a series of technology risk management related guidelines in 2023. To promote sustainable development of the insurance industry and align with the international standard of supervision, the AMCM has reviewed and redrafted its law and regulations, which is already ongoing the legislative scrutiny and aims at further improving its risk-based capital framework. Finally, AMCM has refined the questionnaire related to AML/CFT and issued guidelines on actuarial valuation.</p>
<b>Climate</b>	
<ul style="list-style-type: none"> <li>Scale up public investments in critical infrastructure and coastal management as well as better understand and manage financial risks due to climate change would help mitigate climate-related risks. (27)</li> </ul>	<p>The authorities continue the implementation of the "10-Year Plan for Disaster Prevention and Mitigation of the Macao Special Administrative Region (2019-2028)", strengthen disaster prevention and mitigation capabilities of infrastructure, improve emergency management system, enhance risk management and early warning capabilities, and improve social cooperation and response capabilities. As a measure for reducing the carbon footprint, government provides tax breaks for electric and hybrid vehicles and plans to introduce support for the replacement of obsolete motorcycles with new electric models.</p>

## Appendix V. External Sector Debt Sustainability Analysis

Macao SAR's external debt remains sustainable. Even though the external debt is high at about 383.9 percent of GDP (estimated, 2023), risks are mitigated by Macao SAR's positive net foreign asset position and the fact that much of the liabilities are obligations of bank branches to related parties. The recent surge of external debt as a percentage of GDP is mainly due to the decline of GDP in 2020 and 2022. As the economy recovers, the external debt-to-GDP ratio is expected to decline gradually and stabilize at 314.3 percent of GDP.

**1. Background.** As of end-2023, Macao SAR had an estimated US\$180.7 billion in external debt (383.9 percent of GDP). There is no public external debt. The private external debt includes US\$158.1 billion in bank liabilities and US\$22.6 billion in nonbank liabilities.

- **Banks**—The largest category of external liabilities is interbank liabilities (61.8 percent of banking sector external liabilities). Within nonresident interbank liabilities, 74.7 percent are classified as other interbank liabilities of short term (i.e., less than one-year maturity). In addition, nonresident deposits—mostly short term—amount to 29.8 percent of banking sector external liabilities. In terms of overall currency composition, 50.7 percent of gross external liabilities are in U.S. dollar.
- **Nonbanks**—External debt by nonbank firms in Macao SAR is slightly above 10 percent of the external debt. As in the case with banks, a significant portion reflects related party obligations.

**2. Projection.** The underlying dynamics of Macao SAR's external debt are healthy. First, structurally high savings rates and limited domestic investment opportunities result in consistent double digit current account surpluses and large foreign asset accumulation (banks' external assets account 60.7 percent of total assets and 389 percent of GDP). Second, although the economy experienced a prolonged recession, growth has started to gain momentum in 2023 with the new investment, the recovery of tourists and the further integration with the Greater Bay Area. On the other hand, the Base Rate of the discount window has increased from 0.5 to 5.75 percent. While interest payments have increased, larger current account surpluses are expected to off-set repayments. These factors are projected to increase Macao SAR's net external position.

**Text Table 1. External Debt (estimate)**  
(end of 2023)

	Billion USD	% of Total	% of GDP
Total	180.7	100.0	383.9
Bank	158.1	87.5	335.9
Nonbank	22.6	12.5	48.0

Sources: AMCM, and IMF staff estimates.

**Text Table 2. External Liabilities of Banking Sector**  
(as of December 2023)

Liability	Billion USD	% of GDP
Total	134.9	286.6
Nonresident Interbank	83.4	177.2
Other Interbank Liabilities	69.4	147.4
Up to 7 Days	19.8	42.0
8 Days to 1 Month	13.5	28.8
1 to 3 Months	12.7	27.0
3 to 6 Months	7.2	15.3
6 to 12 Months	9.1	19.4
1 Year and Above	7.1	15.0
NCDs	14.0	29.8
Nonresident Deposit	40.1	85.3
Time Deposits	34.0	72.3
Up to 1 Month	9.4	19.9
1 to 3 Months	8.4	17.9
3 to 6 Months	8.2	17.4
6 to 12 Months	7.8	16.6
1 Year and Above	0.22	0.5
Demand Deposits	1.0	2.2
Saving Deposits	4.7	9.9
Other Deposits	0.44	0.9
NCDs Held by Nonresidents	7.4	15.7
Other	4.0	8.4

Sources: AMCM

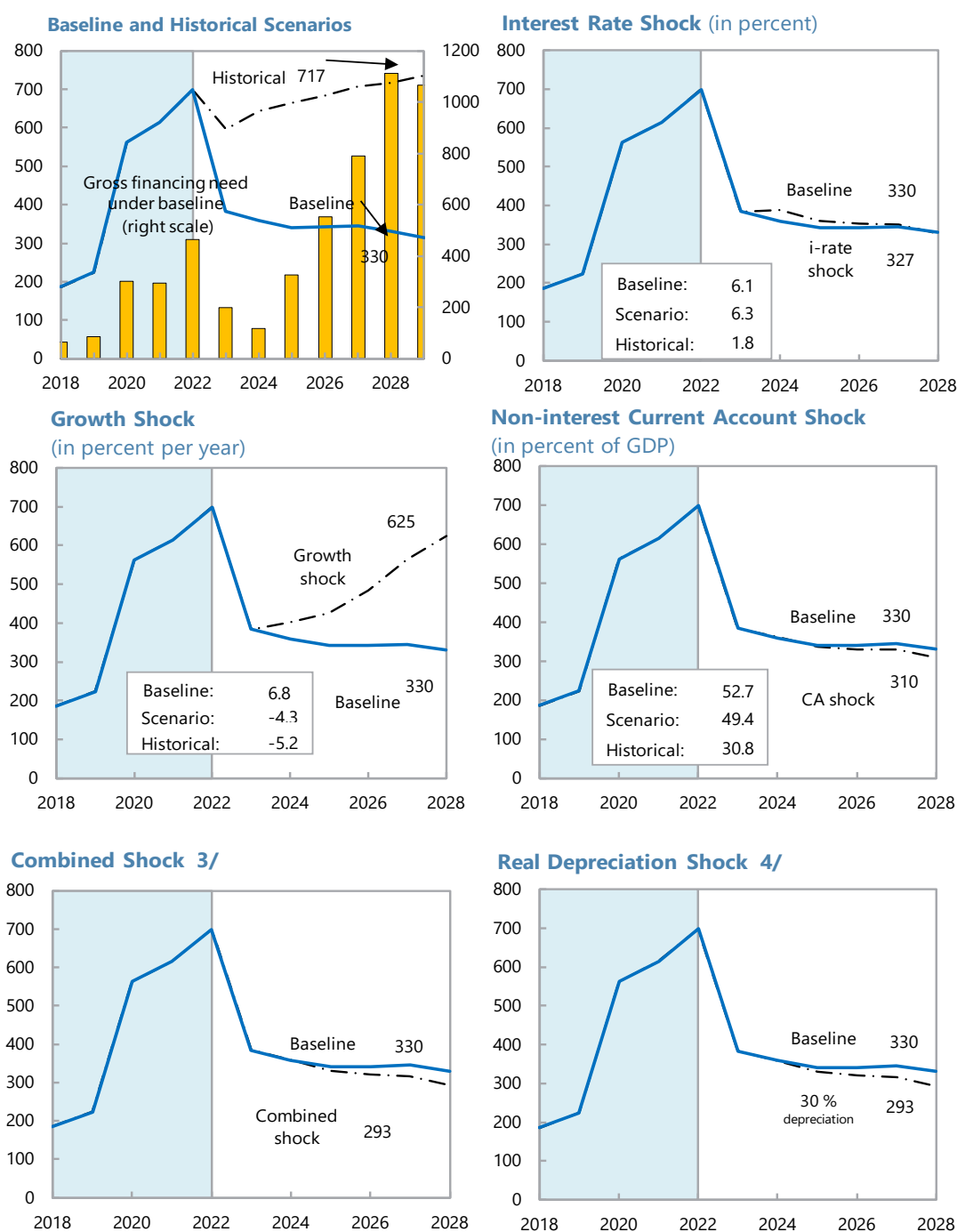
**3. Risks.** In general, the headline debt level likely overstates risks given the significant foreign external assets that increase the ability of banks to fund withdrawals without relying on AMCM's foreign exchange reserves. While the ongoing stress in Mainland China's property sector might negatively affect the quality and liquidity of Macao SAR banks' foreign assets, the exposure of Macao SAR's banks is limited. Nevertheless, continued monitoring of the large external liabilities and external assets is important. The sustained recovery of the economic activity will be key in reducing external debt to GDP ratio.

**Text Table 3. External position of Banking Sector**

(as of December 2023)

Billion USD	Asset	% of Total	Liability	% of Total
Total	182.9	100.0	134.9	100.0
USD	92.1	50.3	68.4	50.7
HKD	36.0	19.7	20.3	15.1
RMB	44.2	24.2	38.0	28.2
MOP	2.1	1.1	2.0	1.5
Other	8.6	4.7	6.2	4.6

**Appendix V. Figure 1. Macao SAR: External Debt Sustainability: Bound Test 1/ 2/**  
(External debt in percent of GDP)



Sources: International Monetary Fund, Country desk data, and staff estimates.

1/ Shaded areas represent actual data. Individual shocks are permanent one-half standard deviation shocks. Figures in the boxes represent average projections for the respective variables in the baseline and scenario being presented. Ten-year historical average for the variable is also shown.

2/ For historical scenarios, the historical averages are calculated over the ten-year period, and the information is used to project debt dynamics five years ahead.

3/ Permanent 1/4 standard deviation shocks applied to real interest rate, growth rate, and current account balance.

4/ One-time real depreciation of 30 percent occurs in 2024.

**Appendix V. Table 1. Macao SAR: External Debt Sustainability Framework, 2019–2029**

(In percent of GDP, unless otherwise indicated)

	Actual				Est		Projections					
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
<b>Baseline: External debt</b>	223.9	562.6	614.9	698.7	<b>383.9</b>	<b>358.3</b>	<b>341.5</b>	<b>341.6</b>	<b>345.3</b>	<b>330.2</b>	<b>314.3</b>	
Change in external debt	37.8	338.7	52.3	83.8	160.1	-25.6	-16.8	0.1	3.7	-15.1	-15.9	
Identified external debt-creating flows (4+8+9)	-33.0	257.7	-103.2	156.6	-318.4	-74.4	-61.2	-43.7	-38.1	-37.0	-35.4	
Current account deficit, excluding interest payments	-37.2	-24.9	-19.8	-25.8	-36.2	-47.7	-58.5	-57.4	-52.5	-47.7	-44.9	
Deficit in balance of goods and services	-50.7	-1.4	-14.2	3.3	-43.4	-48.0	-50.8	-51.0	-50.4	-49.9	-49.3	
Exports	82.7	61.5	90.9	85.8	92.3	92.3	91.2	90.1	88.8	87.7	86.6	
Imports	32.0	60.0	76.8	89.1	48.9	44.3	40.4	39.1	38.4	37.8	37.3	
Net non-debt creating capital inflows (negative)	0.3	9.3	7.6	4.4	4.3	4.2	4.2	4.2	4.2	4.2	4.2	
Automatic debt dynamics 1/	3.8	273.3	-91.0	178.0	-286.5	-30.9	-6.8	9.4	10.1	6.5	5.3	
Contribution from nominal interest rate	3.4	10.5	11.2	14.5	6.0	15.2	23.8	23.4	20.0	16.4	14.7	
Contribution from real GDP growth	4.8	264.4	-108.4	166.6	-292.5	-46.1	-30.6	-14.0	-9.9	-9.9	-9.4	
Contribution from price and exchange rate changes 2/	-4.4	-1.7	6.2	-3.1	-43.0	0.0	0.0	0.0	0.0	0.0	-8.7	
Residual, incl. change in gross foreign assets (2-3) 3/	70.8	81.0	155.5	-72.8	3.6	48.7	44.4	43.8	41.8	21.8	19.5	
External debt-to-exports ratio (in percent)	270.7	915.3	676.2	814.6	416.2	388.3	374.6	379.3	388.7	376.4	362.9	
<b>Gross external financing need (in billions of US dollars) 4/</b>	46.9	76.2	91.6	113.8	93.7	63.9	202.6	366.9	552.4	818.9	827.9	
in percent of GDP	85.1	300.8	295.8	465.2	155.3	106.1	731.4	1083.7	2065.2	1591.6	1385.0	
<b>Scenario with key variables at their historical averages 5/</b>					<b>596.4</b>	<b>644.4</b>	<b>663.7</b>	<b>683.7</b>	<b>707.5</b>	<b>717.2</b>	<b>736.1</b>	
<b>Key Macroeconomic Assumptions Underlying Baseline</b>					Historical Average	Standard Deviation						
Real GDP growth (in percent)	-2.6	-54.3	23.5	-21.4	-5.2	22.2	6.4	-2.6	-54.3	23.5	-21.4	80.5
GDP deflator (change in domestic currency)	2.4	-0.3	-0.9	1.3	3.0	3.2	3.5	2.4	-0.3	-0.9	1.3	6.5
Nominal external interest rate (in percent)	1.8	2.2	2.4	1.9	1.8	0.4	1.7	1.8	2.2	2.4	1.9	1.7
Growth of exports (US dollar terms, in percent)	-0.2	-65.8	80.8	-25.5	1.2	37.9	12.4	-0.2	-65.8	80.8	-25.5	106.9
Growth of imports (US dollar terms, in percent)	-3.8	-13.7	56.2	-10.0	5.8	20.1	5.7	-3.8	-13.7	56.2	-8.3	5.6
Current account balance, excluding interest payments	37.2	24.9	19.8	25.8	30.8	6.6	36.2	47.7	58.5	57.4	52.5	47.7
Net non-debt creating capital inflows	-0.3	-9.3	-7.6	-4.4	-4.2	2.1	-4.3	-4.2	-4.2	-4.2	-4.2	-4.2

1/ Derived as  $[r - g - r(1+g) + ea(1+r)] / (1+g+r+gr)$  times previous period debt stock, with  $r$  = nominal effective interest rate on external debt;  $r$  = change in domestic GDP deflator in US dollar terms,  $g$  = real GDP growth rate,  $e$  = nominal appreciation (increase in dollar value of domestic currency), and  $a$  = share of domestic-currency denominated debt in total external debt.

2/ The contribution from price and exchange rate changes is defined as  $[-r(1+g) + ea(1+r)] / (1+g+r+gr)$  times previous period debt stock.  $r$  increases with an appreciating domestic currency ( $e > 0$ ) and rising inflation (based on GDP deflator).

3/ For projection, line includes the impact of price and exchange rate changes.

4/ Defined as current account deficit, plus amortization on medium- and long-term debt, plus short-term debt at end of previous period.

5/ The key variables include real GDP growth; nominal interest rate; dollar deflator growth; and both non-interest current account and non-debt inflows in percent of GDP.

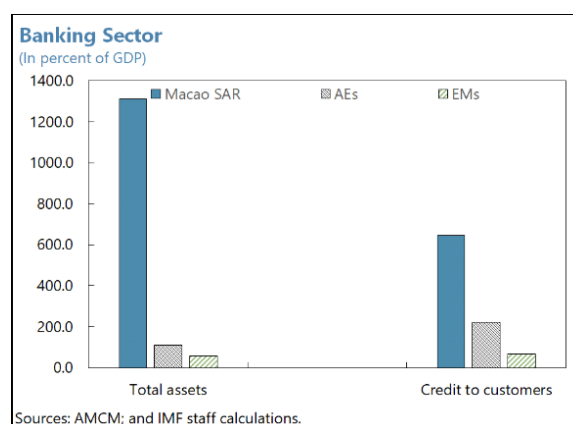


## Appendix VI. Macao SAR's, Banking System: Performance Analysis and Stress Testing<sup>1</sup>

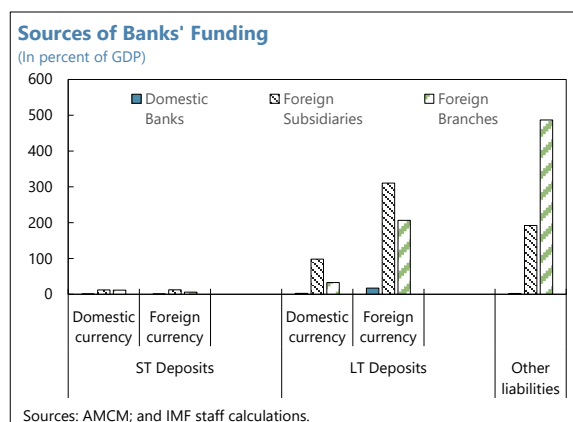
Macao SAR's banking system is large relative to the economy and is dominated by foreign subsidiaries and branches. Consequently, foreign currency-denominated deposits and lending play an important role in the banking system. The banking system is overall profitable and well-capitalized. A bank-by-bank stress testing reveals that the banking system appears resilient to severe distress scenarios, including credit, interest rate, liquidity, and FX depreciation shocks. However, some not systemically important banks may be vulnerable in a scenario of a significant fall in the value of collateral and a large increase in NPLs.

### The Banking System's Key Features

**1. Macao SAR's banking system is sizeable and dominated by subsidiaries and branches of foreign banks.** Out of the thirty-four banks operating in Macao SAR, seven are foreign subsidiaries, twenty-one are branches, five are domestic private banks, and one is government-owned. As of end of 2022, the sector employed 7,249 people, accounting for about 2 percent of the total employed workforce and contributed around 13 percent to the gross value added. The banking system is large relative to the size of the economy. For example, the total asset of the banking system is about 1312 percent of the GDP, out of which majority are foreign banks that account for 1287 percent of the GDP, while domestic banks contribute 25 percent.<sup>2</sup> Subsidiaries and branches of foreign banks have approximately the same size representing 608 percent and 679 percent of GDP, respectively.



**2. Foreign currency denominated deposits play a key role in banks' funding.** Foreign currency deposits dominate the liabilities of banks (excluding equities), constituting 78 percent of the banking system's total deposits and 40 percent of its liabilities. The share of foreign currency-denominated deposits can be up to 88 percent in some domestic banks, 86 percent in some subsidiaries, and more than 50 percent in almost all branches. Likewise, lending in foreign currency is also considerable, accounting for about 82



<sup>1</sup> Prepared by Mouhamadou Sy (MCM previously APD) and Danila Smirnov (APD).

<sup>2</sup> In the remaining of the text, the term "domestic banks" cover both domestic private banks and the government's postal savings office.

percent of total loans. This ratio is high for both domestic and foreign banks, irrespective of their type or size, with many lending almost exclusively in foreign currency. The loan-to-deposit ratio in foreign currency is well-balanced—at or below 100 percent—in many banks, particularly in domestic banks and foreign subsidiaries.<sup>3</sup> However, branches exhibit a higher average loan-to-deposit ratio in foreign currency, standing at about 140 percent, suggesting direct funding in FX from their parent-banks or other offshore financing. Finally, about 75 percent of foreign liabilities have less than one year maturity.

**3. Foreign banks are the main drivers of the aggregate profitability of the system.** The average return-on-equity (ROE) was approximately 9.4 percent while the average interest margin to gross income ratio was 75 percent in 2022. However, a notable difference across banks exists: domestic banks recorded an ROE of -0.8 percent in contrast to 6.5 percent for subsidiaries and 26 percent for branches. The lack of profitability of domestic banks is not driven by outliers, with half of them reporting negative after-tax profits in 2022. Despite all domestic banks having positive net interest income, large non-interest expenses and losses on investment in securities appear to be the main drivers of their lack of profitability.

**4. The banking system is overall well-capitalized though there are pockets of vulnerabilities in some banks.** Both domestic and foreign subsidiaries are well-capitalized, with capital adequacy ratios (CAR) well-above the minimum requirement of eight percent. While aggregate non-performing loans (NPLs) to gross loans conceals significant variation among banks. Several banks have NPL ratios that are well-above the overall average. However, the lack of NPLs data by sector hinders a more granular assessment of the asset quality of the banking system.

**5. Banks meet provisioning requirements.** Regulatory requirements stipulate that provision rates for pass and special mention loans should be at least 1 percent while substandard, doubtful, and loss loans should have provisions of at least 40 percent, 80 percent, and 100 percent, respectively.<sup>4</sup> Applying these regulatory thresholds reveals that all the banks have enough provisioning for the NPLs. Nevertheless, some banks hold less provisions than others, affecting their resilience to potential increase in NPLs.

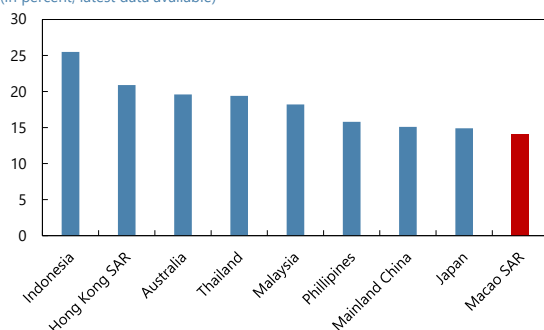
<sup>3</sup> Only one private bank has a high loan-to-deposit ratio in FX, at about 270 percent.

<sup>4</sup> See the notice No. 012/2021-AMCM.

### Appendix VI. Figure 1. Macao SAR: Selected Financial Indicators by Bank Type and Compared to Peers

#### Regulatory Capital to Risk-Weighted Assets

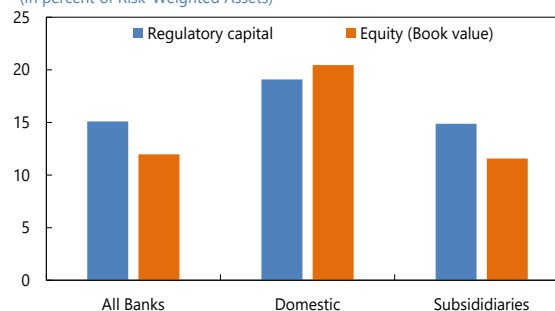
(In percent, latest data available)



Sources: IMF, *Financial Soundness Indicators*; and AMCM.

#### Capital Adequacy

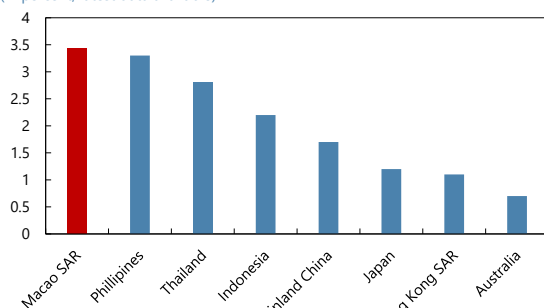
(In percent of Risk-Weighted Assets)



Sources: AMCM, IMF staff calculations

#### Nonperforming Loans to Total Gross Loans

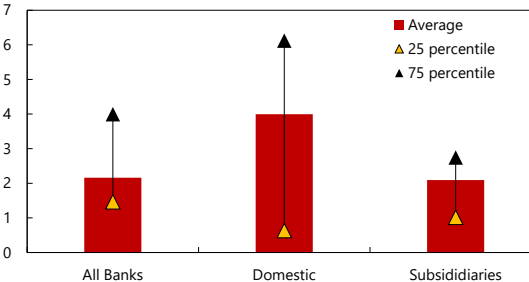
(In percent, latest data available)



Sources: IMF, *Financial Soundness Indicators*; and AMCM.

#### NPLs Ratio

(Percent)



Sources: AMCM; and IMF staff calculations.

### Appendix VI. Box 1. Macao SAR: Banking Through Branches

**Branches of foreign banks play an important role in Macao SAR's banking system, constituting about two-thirds of the banking institutions.** They account for about half of the banking system's total asset and about 46 percent of total gross loans to customers. Notably, deposits held by branches account for 36 percent of the banking system's total deposits and are mostly long-term and foreign currency denominated. The branches have their parent banks situated in different countries or jurisdictions with a notable share in Mainland China and Hong Kong SAR.

**Branches of foreign banks tend to be more profitable and liquid compared to other banks.** For example, their return-on-equity significantly outperforms the average for the system, standing at approximately 26 percent vs 10 percent. Additionally, they have a much better coverage of short-term liabilities by liquid assets. Their average NPL—1.1 percent—is also below the average.

**However, all branches are not alike.** Despite better average headline numbers, substantial heterogeneity exists. For example, in some branches NPLs are considerably above the system average. Some branches are also among the least profitable banks and seven branches out of 21 have large exposures to their top five customers—higher than 50 percent of their total assets. Finally, lending in FX tends to be high in many branches though it is often matched with high deposits in foreign currency.

## Stress Testing the Banking System

**6. Macao SAR's banking system appears resilient to major shocks.** The main stress testing scenarios that cover severe credit risk, liquidity risk, interest rate risk, and FX risk indicate that the banking system is overall resilient. However, the level of resiliency varies across banks.

**7. The banking system can withstand major credit shocks.** The two credit risk stress tests considered assume: i) each bank's NPLs increase by two-fold and ii) 10 percent of each bank's pass loans are downgraded to special mention loans, and all special mention loans are downgraded to NPLs.<sup>5</sup> Neither of the shocks is expected to lead to the immediate collapse of any single bank, and the minimum regulatory CAR requirement is honored by all banks. Specifically, for the first and second shock respectively the CARs are expected to decrease by 1 and 2.2 percentage points. However, if the value of collateral held by banks falls significantly, the need for additional provisioning combined with a large increase in NPLs may result in some non-systemically important banks marginally breaching the CARs minimum requirement of 8 percent.<sup>6,7</sup>

**8. Banking system has enough liquidity to withstand two weeks of bank runs, with no exceptions for individual banks.** In the liquidity stress test exercise, we assumed a constant rate of 15 and 3 percent of daily withdrawal for demand and time deposits respectively. In addition, we assume that 95 percent of liquid assets will be available each day while for non-liquid assets only 1 percent. The exercise suggest that all banks are able to meet their cash outflow needs comfortably for at least two weeks.

**9. A hike in interest rates could negatively affect some banks, though all have more than enough capital to absorb it.** The interest rate shock corresponds to an increase in the policy rate by 525 basis points. This is equivalent to the increase in the policy rate by the Monetary Authority of Macao (AMCM) following the recent increase in worldwide inflation. The shock assesses how changes in interest rate-sensitive assets and liabilities affect the capital of banks. Assets and liabilities are categorized into three time-to-repricing buckets (3 months, 3-6 months, and 6-12 months). The buckets are used to calculate the net impact of the interest rate shock on banks' net income. The stress test also considers the impact of interest rate hikes on the value of banks' bond portfolios assuming that bonds are "marked-to-market". The simulations shows that an increase in the policy rate by 525 basis points, that represents the last hike, induces a decrease in the average CAR of about 0.8 percentage points with all banks meeting the minimum CAR requirement. Few banks benefit from the increasing interest rates because they hold more (short-term) interest rate-sensitive assets than liabilities while holding at the same time few bonds in their books. However,

<sup>5</sup> These scenarios represent the raise of the NPLs in line with the historical stress to the financial sector during the COVID-19 pandemic.

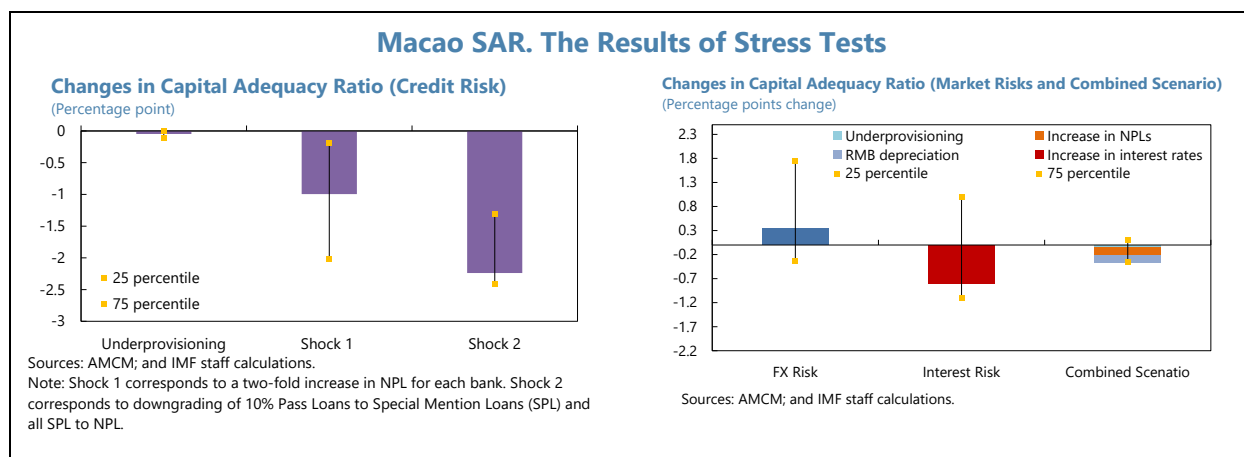
<sup>6</sup> The threshold level of the haircut on collateral that is required to result in one bank breaching the CAR requirement as around 75%, which speaks to the resilience of the system.

<sup>7</sup> Some shocks have materialized, including a considerable increase in NPLs by end-2023. A further increase in NPLs will potentially bring more banks closer to the CAR requirement threshold.

many banks are negatively affected, particularly those holding a large share of bonds in their balance sheets through “marked-to-market” valuation.

**10. A large and positive net open position in FX shield Macao SAR’s banks from an ER depreciation risk.** Given the strong peg, large appreciations or depreciations of the *Macao Pataca* (MOP) is very unlikely. In fact, the largest depreciation and the largest appreciation with respect to the US dollar were only about 1 percent and 0.7 percent from 2002 to 2022 based on annual data, respectively. The simulations assume a worst-case scenario in which the exchange rate depreciates by 10 percent. Such a large depreciation will heavily benefit banks with a positive net open position and negatively hurts banks with negative net open position. Considering that Macao SAR’s banking system had a large and positive net open position in foreign currency worth 55.6 billion of MOP (44.5 percent of regulatory capital) at the end of 2022, a depreciation benefits most banks. The only bank that experiences a large decline in its CAR following a 10 percent depreciation has a large negative net position worth about 11 percent of its assets. But its post-shock capital remains far above the minimum regulatory capital following the large depreciation. Moreover, banks are also resilient to a 10 percent appreciation of the MOP against the USD (very unlikely scenario, given the peg) as well as a 10 percent appreciation or depreciation against the RMB.

**11. Finally, we test the resilience of the Macao SAR’s banking system to a combination of shocks that reflect the spillovers from the contraction of the Mainland property sector.** These shocks include a 10 percent depreciation of the RMB, and an increase in the NPLs of Macao SAR banks’ exposure to the Mainland property sector. We proxy the exposure by using the aggregate share of the RMB loans in the banks’ portfolio and the bank-specific shares of construction sector loans. The joint shock reduces the CARs by 0.7 percentage points for domestic banks and doesn’t affect the average CARs of foreign banks. Nevertheless, the system is expected to stay resilient, with all of the banks meeting the regulatory CAR requirement.



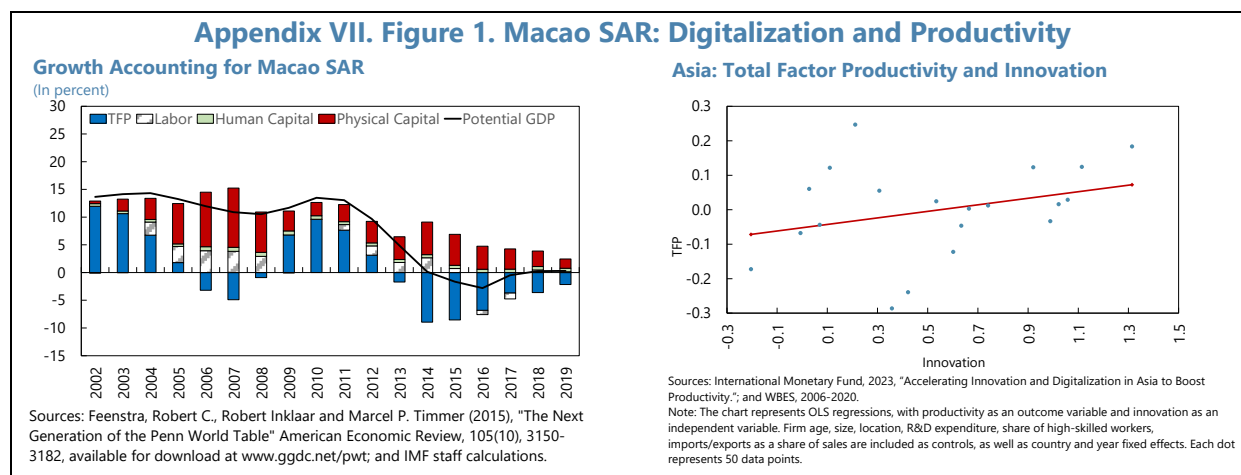
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Cihák Martin (2007), “Introduction to Applied Stress Test”, International Monetary Fund, Working Paper No. 07/59.

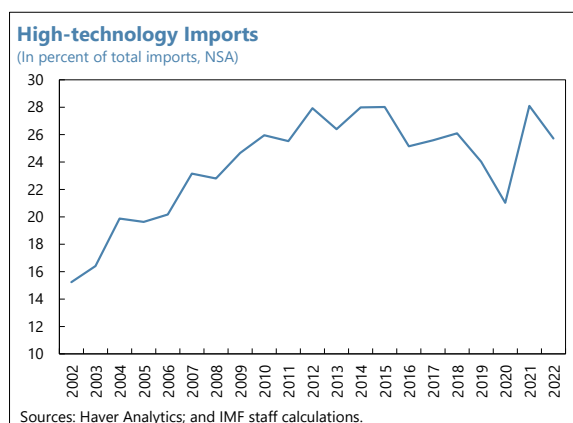
## Appendix VII. Digitalization: A Way to Boost Macao SAR's Productivity<sup>1</sup>

**1. Macao SAR's GDP growth has been declining prior to the pandemic.** Real GDP growth averaged to about 3 percent in 2016-19 compared to 11 percent during 2002-09 (Figure 1). The growth slowdown was largely driven by declining productivity growth and reduced contribution of labor supply to growth. At the same time the contribution of human capital to the growth was very modest.



**2. Digitalization and innovation can be important drivers for productivity growth.** The literature suggests a positive impact of digitalization on productivity through improving efficiency, streamlining processes, and enhancing communication and collaboration. There is also some evidence that digitalization can boost labor supply. During the pandemic, digitalization has helped to reducing labor productivity losses in advanced economies. The recent IMF (2023) study that looks at the role of innovation and digitalization for productivity growth suggest that more innovative and digitalized Asian firms tend to be more productive. According to the literature, the availability of digital skills, spending on R&D, investments in digital infrastructure, and regulatory burden on firms are key factors determining the effectiveness of digitalization efforts.

**3. Macao SAR has experienced a significant increase in digitalization over the past decade (Figure 2).** The number of Internet users in 2022 were about 52 percent higher compared with 2013. This was driven by doubling of internet use



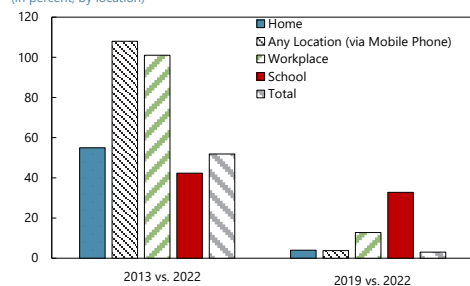
<sup>1</sup> Prepared by Fang Li (APD).

via mobile phones and in workplace. During this period, there was also a substantial increase in the number of internet users at home (about 55 percent) and at school (about 42 percent). As a result, about 70 percent of employed people and 46 percent of pupils used internet in 2022. Nevertheless, internet penetration rate in Macao SAR remains below most of advanced Asia economies. Moreover, the share of high-technology import in total has declined before the pandemic, though this pattern has reversed during the pandemic.<sup>2</sup>

**Appendix VII. Figure 2. Macao SAR: The Evolution of Internet Use, 2013-2022**

**Growth in Internet Use**

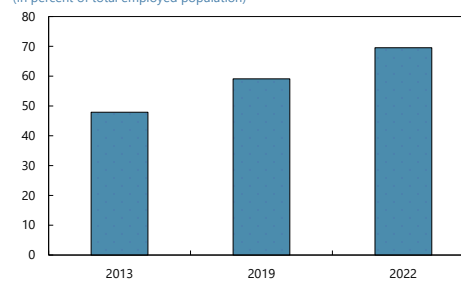
(In percent, by location)



Sources: Statistics and Census Service (DSEC); and IMF staff calculations.

**Internet Use in Workplace**

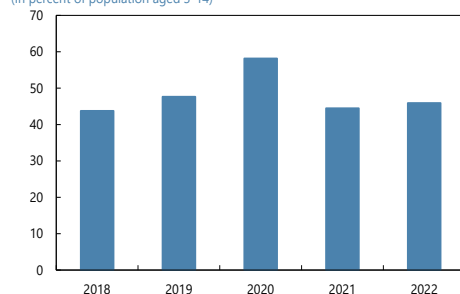
(In percent of total employed population)



Sources: Statistics and Census Service (DSEC); and IMF staff calculations.

**Internet Use in School**

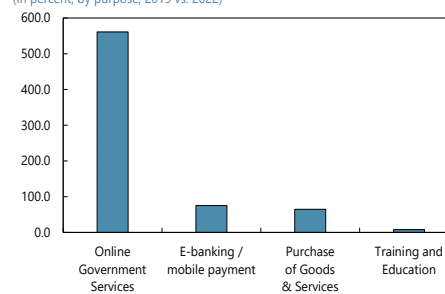
(In percent of population aged 3-14)



Sources: Statistics and Census Service (DSEC); and IMF staff calculations.

**Growth in Internet Use**

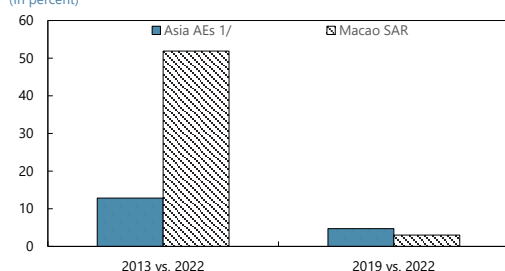
(In percent, by purpose, 2019 vs. 2022)



Sources: Statistics and Census Service (DSEC); and IMF staff calculations.

**Growth in Internet Users**

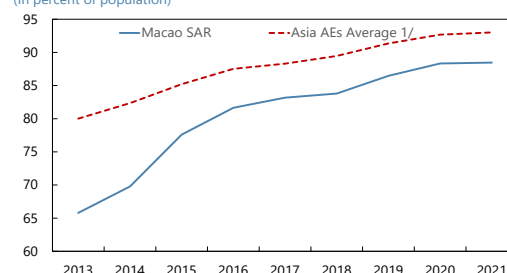
(In percent)



Sources: Statista; ITU; Internet Live Stats; DataReportal; and IMF staff calculations.  
1/ Asia AEs include Hong Kong SAR, Korea, New Zealand, Singapore, Australia, and Japan.

**Individuals Using the Internet**

(In percent of population)

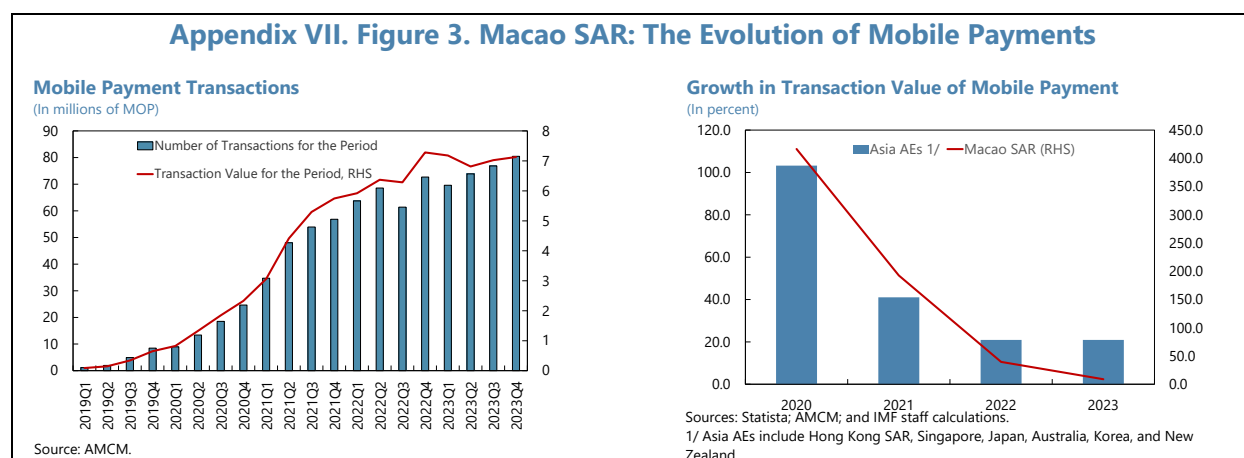


Sources: World Bank, *World Development Indicators*; ITU; and IMF staff calculations.  
1/ Asia AEs include Hong Kong SAR, Korea, New Zealand, Singapore, Australia, and Japan.

<sup>2</sup> Based on Eurostat definition ([untitled \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1)), high-technology imports include: Power Generating Machinery and Equipment, Pro/Scientific/Controlling Instr/Apparatus NES, Office Machines/Automatic Data Processing Mach, Telecomm/Sound Recording/Reprod Apparatus/Equip, Electrical Machinery/Electrical Household Equip, Medicinal and Pharmaceutical Products, Photo/Equip/Supp/Optical Goods/Watches/Clocks, Inorganic Chemicals, Dyeing, Tanning and Coloring Materials, Machinery Specialized For Particular Industries, Metalworking Machinery



**4. Digitalization has surged during the pandemic.** During the pandemic, the number of internet users in school increased by about 33 percent, while at the workplace by about 13 percent. In 2022, the number of online government service users also increased tremendously compared with 2019. Macao SAR experienced the fastest increase in mobile payments compared with peers. The number of mobile payment transactions reached over 80 million in 2023Q4 from 1 million in 2019Q1, while the value of mobile payment transactions increased nearly 80 times. The number of mobile payment terminals and QR code signs as of 2023Q4, has increased nearly four times relative to 2019Q1. This was facilitated by several initiatives launched by the AMCM, such as the “Simple Pay” integrated payment service.<sup>3</sup> The AMCM has also introduced and integrated other fintech products, including Easy Transfer, remote on-boarding, and remote cross-border payments, to bring convenience to residents and tourists.



**5. A comparative analysis of Macao SAR with peer economies suggests a room for policies to facilitate digitalization.** Specifically:

- **Human capital:** Macao SAR has a relatively high tertiary education enrollment rate, and students have strong academic performance in PISA exams. However, as emphasized during the 2022 Article IV consultation discussions, the availability of skills in Macao SAR do not match the skill demand of the sectors that the government intend to develop (Country Report No. 2022/121). Therefore, investing in outcome-orientated occupational and on-the-job training as well as strengthening science-business linkages would facilitate the acquisition of skills and help narrow skill gaps. In addition, administrative requirements for hiring non-resident skilled workers could be streamlined to help compete for foreign talent.
- **IT infrastructure:** While Macao SAR ranks high on the availability of secure Internet servers, the IT infrastructure can be further improved.

<sup>3</sup> With Simple Pay, all local QR code payments can be accepted on one point-of-sale terminal (POS).

- R&D spending: Macao SAR spends quite low on R&D and hires less researchers per million inhabitants compared with peers. Macao SAR also lags in terms of the number of patents per million researchers. Policies should focus on improving the design and targeting of Macao SAR's R&D tax incentives and scaling up public spending on basic research and improving small and medium enterprises' access to finance and digital technologies.
- Regulatory environment: The analysis suggest that Macao SAR has room to improve its regulatory environment. As recommended during the 2022 AIV consultation discussions, increasing regulatory predictability, raising the effectiveness of the judiciary, and strengthening the protection of property rights as well as streamlining labor and business regulations will increase Macao SAR's attractiveness to domestic and foreign investors and facilitate resource reallocation toward expanding sectors.

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Borowiecki, M., Pareliussen, J., Glocker, D., Kim, E. J., Polder, M., & Rud, I. (2021). The impact of digitalisation on productivity: Firm-level evidence from the Netherlands.

## Appendix VIII. Data Issues Annex

**Figure 1. Macao SAR: Data Adequacy Assessment for Surveillance**

Figure 1. Macao SAR: Data Adequacy Assessment for Surveillance							
Data Adequacy Assessment Rating 1/							
B							
Questionnaire Results 2/							
Assessment	National Accounts	Prices	Government Finance Statistics	External Sector Statistics	Monetary and Financial Statistics	Inter-sectoral Consistency	Median Rating
	A	A	A	C	A	A	A
Detailed Questionnaire Results							
Data Quality Characteristics							
Coverage	A	A	A	C	A		
Granularity 3/	A		A	C	A		
			NA		A		
Consistency			NA	NA		A	
Frequency and Timeliness	A	A	A	B	A		
<p>Note: When the questionnaire does not include a question on a specific dimension of data quality for a sector, the corresponding cell is blank.</p> <p>1/ The overall data adequacy assessment is based on staff's assessment of the adequacy of the country's data for conducting analysis and formulating policy advice, and takes into consideration country-specific characteristics.</p> <p>2/ The overall questionnaire assessment and the assessments for individual sectors reported in the heatmap are based on a standardized questionnaire and scoring system (see IMF <i>Review of the Framework for Data Adequacy Assessment for Surveillance</i>, January 2024, Appendix I).</p> <p>3/ The top cell for "Granularity" of Government Finance Statistics shows staff's assessment of the granularity of the reported government operations data, while the bottom cell shows that of public debt statistics. The top cell for "Granularity" of Monetary and Financial Statistics shows staff's assessment of the granularity of the reported Monetary and Financial Statistics data, while the bottom cell shows that of the Financial Soundness indicators.</p>							
A	The data provided to the Fund is adequate for surveillance.						
B	The data provided to the Fund has some shortcomings but is broadly adequate for surveillance.						
C	The data provided to the Fund has some shortcomings that somewhat hamper surveillance.						
D	The data provided to the Fund has serious shortcomings that significantly hamper surveillance.						
<p><b>Rationale for staff assessment.</b> : Macao SAR compiles quarterly and annual estimates of GDP by expenditure category, at current prices and in volume terms. The volume measures are derived using annual chain linking methods. The estimates by type of activity (production approach) are compiled in current prices and in volume terms only at annual frequency.</p> <p>The Statistics and Census Service produces a monthly consumer price index (CPI) and the current weights were derived from the 2017/18 household income and expenditure survey.</p> <p>Macao SAR compiles and disseminates detailed annual consolidated general government fiscal statistics (covering the budgetary and extrabudgetary central government, and the social security fund) consistent with the GFSM 2014 framework for inclusion in the Government Finance Statistics Database, along with summary quarterly general government fiscal statistics. Additionally, Macao SAR does not have general government debt yielding "NA" in data quality characteristics related to granularity and consistency.</p> <p>The Monetary Authority of Macao (AMCM) compiles and disseminates annual balance of payments (BOP) statistics following the methodology and classification of the sixth edition of the Balance of Payments and International Investment Position Manual (BPM6). However, there is no publication of external debt data as well as International Investment Position (IIP) Statistics. Lack of these data is not conducive to strengthening the balance sheet approach framework.</p> <p>The Monetary Authority of Macao (AMCM) reports, on a timely basis, monthly monetary data to STA for publication in IFS. The AMCM should also consider collecting bank-by-bank data on sectoral distribution of NPLs and interbank credit.</p> <p>Finally, the deviation from the median assessment ("A") is due to the lack of publication of external debt data as well as International Investment Position (IIP) Statistics. Therefore, the Data Adequacy Assessment Rating yields "B" as the data provided has some shortcoming but is broadly adequate for surveillance.</p>							
<b>Changes since the last Article IV consultation.</b> No changes.							
<b>Corrective actions and capacity development priorities.</b>							
<b>Use of data and/or estimates different from official statistics in the Article IV consultation</b> . External debt data is proxied by the foreign liabilities of the banking sector from the Balance of Payments.							
<b>Other data gaps.</b>							

**Figure 2. Macao SAR: Data Standards Initiatives**

Macao SAR participates in the Enhanced General Data Dissemination System (e-GDDS) and first posted its metadata in August 2007.

**Figure 3. Macao SAR: Table of Common Indicators Required for Surveillance**

	As of March 21st, 2024				Publication under the Data Standards Initiatives through the National Summary Data Page			
	Data Provision to the Fund							
	Date of Latest Observation	Date Received	Frequency of Data <sup>1</sup>	Frequency of Reporting <sup>6</sup>	Expected Frequency <sup>6,7</sup>	Macao SAR	Expected Timeliness <sup>6,7</sup>	Macao SAR
Exchange Rates	Mar-24	Mar-24	D	D	D	D	NA	1D
International Reserve Assets and Reserve Liabilities of the Monetary Authorities <sup>1</sup>	Feb-24	Mar-24	M	M	M	...	1M	1M
Reserve/Base Money	Jan-24	Mar-24	M	M	M	M	2M	35D
Broad Money	Jan-24	Mar-24	M	M	M	M	1Q	35D
Central Bank Balance Sheet	Jan-24	Mar-24	M	M	M	M	2M	35D
Consolidated Balance Sheet of the Banking System	Jan-24	Mar-24	M	M	M	M	1Q	35D
Interest Rates <sup>2</sup>	Jan-24	Mar-24	M	M	M	D	NA	1D
Consumer Price Index	Feb-24	Mar-24	M	M	M	M	2M	3W
Revenue, Expenditure, Balance and Composition of Financing <sup>3</sup> —General Government <sup>4</sup>	Q3/23	Dec-23	Q	Q	A	...	3Q	...
Revenue, Expenditure, Balance and Composition of Financing <sup>3</sup> —Central Government	Q3/23	Dec-23	Q	Q	Q	Q	1Q	3M
Stocks of Central Government and Central Government-Guaranteed Debt <sup>5</sup>	...	...	...	...	Q	...	2Q	...
External Current Account Balance	2022	Dec-23	A	A	Q	A	1Q	8M
Exports and Imports of Goods and Services <sup>8</sup>	2022	Jan-24	M	M	M	M	12W	1M
GDP/GNP	Q4/23	Feb-24	Q	Q	Q	Q	1Q	2M
Gross External Debt	NA	NA	NA	NA	Q	...	2Q	...
International Investment Position	NA	NA	NA	NA	A	...	3Q	...

<sup>1</sup> Includes reserve assets pledged or otherwise encumbered, as well as net derivative positions.

<sup>2</sup> Both market-based and officially determined, including discount rates, money market rates, rates on treasury bills, notes and bonds.

<sup>3</sup> Foreign, domestic bank, and domestic nonbank financing.

<sup>4</sup> The general government consists of the central government (budgetary funds, extra budgetary funds, and social security funds) and state and local governments.

<sup>5</sup> Macao SAR has no government debt.

<sup>6</sup> Frequency and timeliness: ("D") daily; ("W") weekly or with a lag of no more than one week after the reference date; ("M") monthly or with lag of no more than one month after the reference date; ("Q") quarterly or with lag of no more than one quarter after the reference date; ("A") annual; ("T") irregular; and ("NA") not available.

<sup>7</sup> Recommended frequency of data and timeliness of reporting under the e-GDDS and required frequency of data and timeliness of reporting under the SDDS and SDDS Plus. Any flexibility options or transition plans used under the SDDS or SDDS Plus are not reflected.

<sup>8</sup> Goods trade data from external statistics are available are provided monthly. Services trade data in BOP format are released annually with the current account statistics.