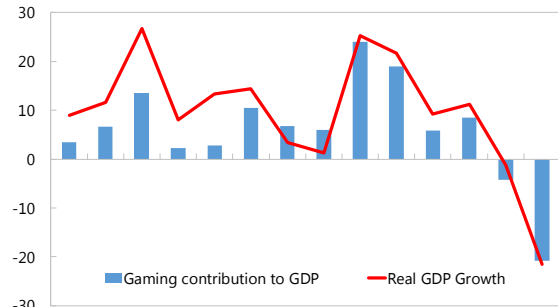


CONTEXT AND RECENT DEVELOPMENTS

1. Macao SAR is a small, open economy that has grown rapidly due to a surge in gaming tourism.

In the 15 years after the return to Chinese sovereignty in 1999, Macao SAR averaged real GDP growth of 10.6 percent. This impressive growth primarily reflects the de jure monopoly on gambling within China, the liberalization of the gaming sector to outside investment in 2002, and the rapid rise in consumer spending power of the Mainland. Now the largest casino center in the world with revenues more than four times that of Las Vegas, the gaming sector accounts for 48 percent of output and 77 percent of general government revenue (See Appendix III: Tourism Sector). The gaming boom has also led to a rapid rise in the demand for labor, pushing the unemployment rate below 2 percent and strongly increasing the role of migrant workers who now account for 39 percent of the total employed (See Appendix II: Labor Market). With a population of 646,800 people and an area of 12 square miles, Macao SAR today is considered among the most population-dense regions in the world.

Gaming Contribution to GDP Growth
(In percent, year-on-year growth)



2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

Sources: Haver Analytics; and IMF staff estimates.

2. However, the decade-long boom in gaming revenues came to an abrupt end in 2014.

Relative to the peak in early 2014, gaming exports fell by 50 percent and the economy has now contracted cumulatively by one third. The aggregate number of visitors remained broadly stable but there was a sharp fall in spending per visitor due to a contraction in the high-end casino business. High-roller “VIP” gaming revenue fell from US\$30 billion in 2013 to US\$16 billion in 2015. The sharp fall broadly mirrored developments in luxury spending elsewhere in the region (including in Hong Kong SAR) and followed the sustained anticorruption campaign on the Mainland. This fall in demand and a weaker outlook for the casino sector had knock-on effects on housing—prices have contracted cumulatively by 21 percent from their peak in 2014. The growth in private fixed asset investment also fell sharply from 43.7 percent in 2014 to 3.3 percent in 2015 but this mostly reflected the scheduled completion of large integrated resort construction projects.

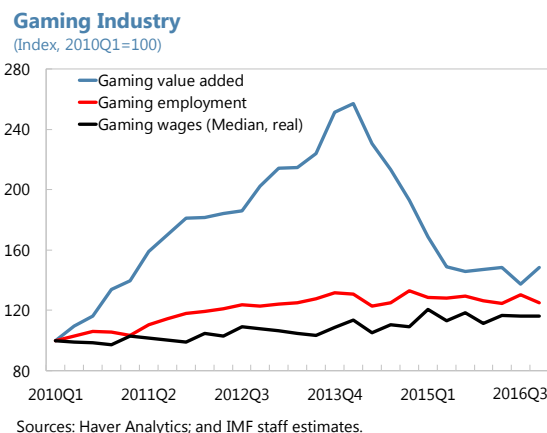
Visitor Arrivals and Gaming Spending per Capita



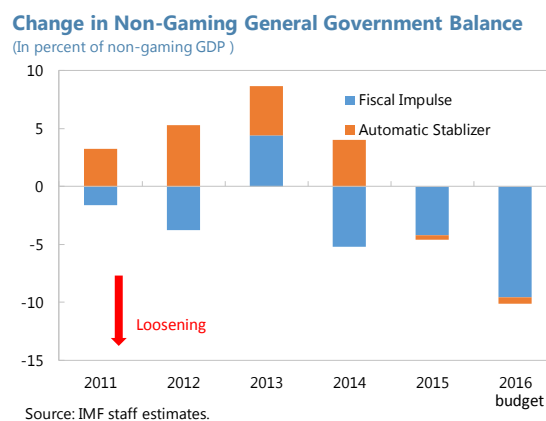
Sources: CEIC Data Company Ltd.; and IMF staff estimates.

3. Nonetheless, the spillovers of the shock to the rest of the economy have been surprisingly limited. Unemployment is 1.9 percent, up only 0.2 percentage points from the historical low in 2014. Median real wages have stabilized but remain up 7 percent over end-2014 levels. Meanwhile, in the financial sector, nonperforming loans are unchanged at just

0.1 percent despite a deceleration in credit growth from 36 percent in 2014:Q2 to 5.7 percent in 2016:Q3. The main reason for this resilience in the labor market and financial sector is that, as noted above, even though spending per tourist fell sharply, the number of tourists was broadly stable, implying limited scope to reduce the number of workers needed to run core functions in the tourism industry. Indeed, nonresidents, who returned to their country of origin in large numbers during the global financial crisis, have largely remained employed throughout this downturn. As a result, most of the contraction in revenues was absorbed in the form of lower extraordinary profits rather than reduced employment. This resilience in the tourism sector's demand for labor helped contain the fall in domestic consumption and deterioration in bank asset quality.



4. The fall in output would have been greater were it not for substantial fiscal loosening. The general government overall balance fell from 27 percent of GDP in 2013 to 13.7 percent in 2015. Moreover, the 2016 budget targeted a further loosening of 8 percentage points to reach a surplus of 5 percent of GDP in 2016 though current projections suggest that under-execution of expenditures will result in an end-year outcome closer to 6½ percent. The majority of the fiscal deterioration reflects the fall in gaming revenues, which are taxed at roughly 40 percent. However, the non-gaming fiscal balance, a better measure of the impact of fiscal policy on domestic demand, also widened materially, largely due to discretionary changes rather than automatic stabilizers. In particular, the fiscal impulse was driven by higher expenditures on investment and social benefits.



5. There was no other material macroeconomic response to the output contraction. As a result of the peg, the authorities do not control interest rate policy but they do use macroprudential measures—loan to value ratios, debt servicing ratios, and a special stamp duty—to safeguard financial stability from potential risks in the real estate market.¹ Nonetheless, despite the sizable correction in housing prices, the authorities considered there was no need to loosen these limits given that price levels remained well above those in 2012 when the measures were last tightened.

¹ There are three key macroprudential ratios aimed at residential real estate: 1) a debt service to income limit of 50 percent (introduced September 2010); 2) a special stamp duty on properties sold within one year of purchase (20 percent of cost of property) or two years of purchase (10 percent) (introduced April 2011); and 3) a maximum loan-to-value ratio ranging from 50 to 90 percent depending on cost of property (more stringent levels apply to nonresidents) (introduced October 2012).

Moreover, the volume of transactions and level of prices have started to recover.

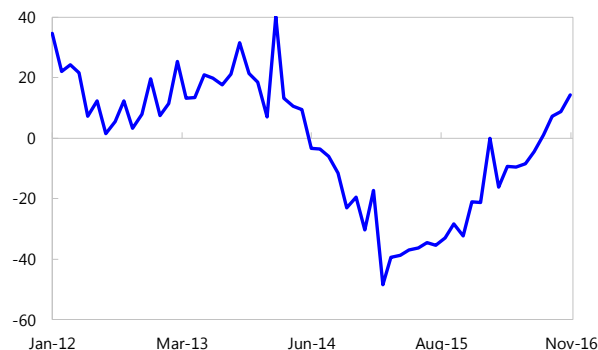
6. Looking ahead, Macao SAR faces a difficult transition to a new economic model, but fortunately does so from a position of strength. Even before the recent downturn, economic growth was expected to moderate to single digits over the medium term as gaming started to face constraints to land supply, government controls on the expansion of tables, and external competition. However, the urgency to find a more diversified economic model has been sharpened by the recent correction which is largely seen as permanent. To help with this transition, Macao SAR can draw on deep buffers. First and foremost, Macao SAR has zero gross public debt and fiscal reserves equal to 95 percent of GDP due historically to high taxes on gaming and a generally prudent expenditure policy. Second, the high public and private savings have contributed to 14 years of double-digit current account surpluses. As a result, Macao SAR is a net foreign creditor on the order of 280 percent of GDP; in addition to substantial private assets, foreign exchange reserves, critical to the credibility of Macao SAR's currency board linked to the Hong Kong dollar (and thus, in turn, to the U.S. dollar), amount to US\$18.9 billion, just under 100 percent of pataca M2.

OUTLOOK AND RISKS

7. Though the economy has bottomed and a nascent recovery has begun, 2016 will record the third consecutive annual contraction in real output. In the third quarter, sequential seasonally adjusted growth reached 8 percent, the first positive result in 10 quarters. Moreover, in November, gaming revenue posted the fourth consecutive month of annual growth. Nonetheless, the deceleration in domestic demand continued in 2016, contracting over 6 percent and putting a break on the recovery. In particular, the drag on investment from the end of the tourism-related building boom will continue and private consumption will moderate amid less wage growth, a sharp decline in the pace of immigration, and weaker credit. In 2017, an export recovery on a low base will lift growth above 2 percent despite continued weak domestic demand.

Gross Gaming Revenue

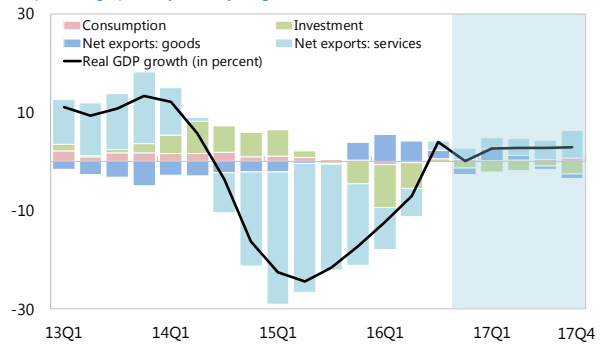
(In percent, year-on-year growth)



Sources: Macao Statistics and Census Services; and IMF estimates.

Real GDP: Contribution to Growth

(In percentage points, year-on-year growth)



Sources: Haver Analytics; and IMF staff estimates.

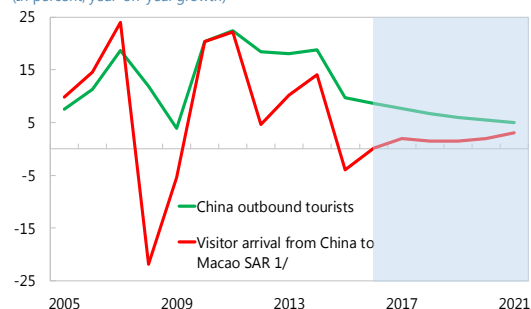
8. For the medium term, one can expect a moderation in growth, fiscal balances and current account surpluses compared to historical averages. Going forward, Macao SAR is well positioned to have sustainable growth in the low to mid-single digits. In addition to its still highly valuable gaming monopoly within China, it is a known tourist brand with significant geographic

proximity to—and cultural affinity with—the largest and fastest growing middle class in the world in Mainland China.

- Growth*—Growth in the medium term is now projected to settle around 3.5 percent, below the 5 percent forecast at the time of the last Article IV consultation. The lower potential growth reflects the partly permanent loss of high-spending visitors from the Mainland. In particular, this projection assumes that

 - growth will remain primarily a function of tourism for the foreseeable future despite some progress in diversification;
 - tourism visitor growth will gradually converge to the projected growth of outbound tourists from China as non-gaming facilities are developed further; and
 - spending per visitor will resume a modest increase but remain at a much lower level compared to the recent peak reflecting the permanent change in clientele.

China Outbound Tourists and Visitor Arrival in Macao SAR
(In percent, year-on-year growth)



Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff estimates.
1/ Before 2008, data included students and workers from China in addition to visitors.

- Fiscal Accounts*—Under unchanged policies, fiscal balances face two headwinds. First, tax revenues on gaming, which account for about three-quarters of total revenues, will remain permanently lower because gaming revenues are not expected to return to previous highs. In addition, progress on diversification of growth will help reduce the volatility of output but will also entail a less tax-rich composition given lower tax rates outside of gaming. And second, spending on pensions will continue to rise due to demographic pressures. In this environment fiscal surpluses will moderate in the medium term.
- Balance of Payments*—Public and private savings will moderate as a result of the weaker gaming revenues. Meanwhile, investment may tick up amid pressing infrastructure needs but capital outlays in the gaming sector are expected to moderate from the high pace of recent years. In this environment, the current account surplus will remain large, allowing continued reserve accumulation and private sector asset acquisition.

9. Risks are broadly balanced around this baseline outlook. Domestically, the critical parameter is whether infrastructure investment will remain adequate in terms of quality and quantity to absorb further increases in external demand; the move from VIP to mass market tourism likely requires a larger physical footprint to achieve the same amount of growth due to lower per capita tourist spending and there are already material infrastructure bottlenecks. But as a small, open economy that will remain primarily reliant on tourism even in the long term, the majority of risks to Macao SAR's outlook will be a function of external developments. The largest negative risk is naturally a sharp slowdown in China, particularly if accompanied by a material depreciation in the RMB against the dollar, which would directly affect external competitiveness. Given the dominant share of tourists that are from the Mainland, a large contraction in China's output would further weigh on gaming revenue. While the recent shock could be absorbed via a reduction in the gaming

sector's extraordinary profits, a further adjustment from current reduced revenue levels could be more consequential for employment and the broader economy. But even outside such a scenario, Macao SAR remains at risk to policy changes related to developments on the Mainland such as measures aimed at managing capital outflows. An additional downside risk is a faster than expected normalization of policy rates in the United States. Meanwhile, a key positive risk would be a further relaxation in the Mainland's still relatively strict visa policy for visits to Macao SAR: the Chinese population eligible to visit Macao SAR under the Individual Visitor Scheme (IVS) remains only 47 percent of total of which 34 percent is concentrated in one neighboring province (Guangdong).

10. Authorities' Views. The authorities shared the view that much of the recent fall in VIP gaming revenue was permanent and broadly agreed with staff's medium-term growth estimate of 3–4 percent. In the aftermath of significant volatility in output, they argued that lower but more stable growth going forward would be a welcomed outcome. Nonetheless, they saw considerable upside in both non-gaming tourism and financial services, particularly in light of ongoing high-level support from the Mainland (see below). In terms of fiscal policy, the authorities emphasized the strength of their balance sheet as a result of prudent policy during the boom years and argued that it positioned them well to invest in the non-gaming economy, including through competitive tax policy. On the external side, the authorities continued to view the ongoing credibility of the peg combined with the large foreign exchange reserves and strong net creditor position of the government and banking system as providing crucial buffers in the event of external shocks. In this context, staff's views on downside risks were generally viewed to be overly pessimistic—the authorities pointed to the resilience of the banking sector and external accounts in the face of the large dual shock to gaming demand and housing prices. They also did not see a loosening in the Mainland's visa policy as a priority: the goal is improving the length of stay and spending capacity of existing visitors more than expanding to new cities that have lower average income.

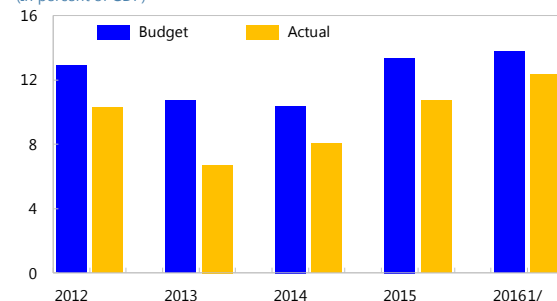
POLICIES

A. Near-Term Issues

Short-Run Fiscal Policy

11. Macao SAR would benefit from an explicit counter-cyclical fiscal framework as part of near-term budget preparation. As a small open economy reliant primarily on external demand, the economy faces substantial volatility in output. Over time, progress on diversifying the economy will help moderate but not eliminate such fluctuations. In this context, and given Macao SAR's substantial fiscal space, there is scope for Macao SAR to pursue more concerted counter-cyclical policy to help lean against the wind, offsetting sharp changes in private

Central Budget Government Expenditure (Excluding Transfers): Budget vs. Actual
(In percent of GDP)



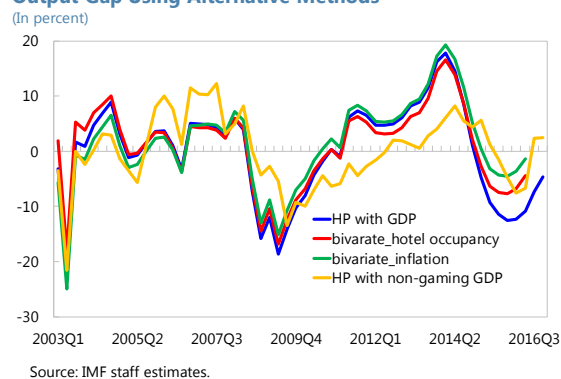
Sources: Financial Services Bureau; and IMF staff estimates.
1/ 2016 actual expenditure is staff estimates.

demand. Though looser fiscal policy will in part leak into higher imports, this channel is generally less pronounced in a fixed exchange rate regime because there is no resulting currency appreciation. At the same time, incorporating such a framework more explicitly into budget preparation will help avoid excessive loosening that could put pressure on the external position. It is important to note that for demand management via fiscal policy to work, the budget should better predict final fiscal outcomes: in recent years, expenditure execution has repeatedly fallen materially short of the budget (especially on capital spending), reducing its effectiveness as a macroeconomic tool (see Box 1: Short-Run Demand Management with Fiscal Policy).

12. Current estimates suggest that the output gap is closing, reducing the need for further stimulus going forward.

As discussed above, fiscal loosening, including discretionary expenditure increases, during the recent downturn helped avoid a greater contraction and the excess slack in the economy is now falling. One can see this recovery in both the gaming and non-gaming sectors and the output gap, measured by a range of indicators, is expected to be broadly closed by 2017 (See Box 2: Measuring the Business Cycle). As a result, automatic stabilizers, which are primarily gaming revenue in Macao SAR, will improve, boosting the fiscal result going forward. In this context, there is not a strong case on cyclical grounds for continued fiscal impulse in the non-gaming overall balance in 2017 as seen in recent years. In particular, the authorities should ensure that any temporary expenditure increases introduced during the downturn are allowed to expire as the economy recovers.

Output Gap Using Alternative Methods



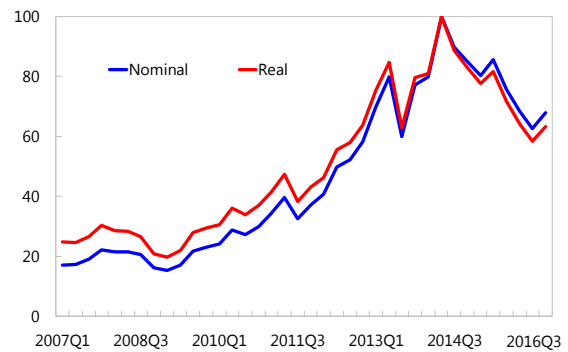
13. Authorities' Views. The authorities agreed that their prudent approach during the boom years and currently ample fiscal space allowed them to accommodate, rather than offset, sharp falls in tax revenue as a result of sudden downturns. They also agreed that the economy was recovering and expenditure increases were likely to slow in the near-term. However, there was some doubt about going further than automatic stabilizers, questioning whether demand management could be effective in a small open economy like Macao SAR. The authorities also underscored the importance of a cautious fiscal policy as critical to maintaining the credibility of the currency board.

Housing

14. Risks in the housing market appear broadly contained. Housing in Macao SAR experienced a remarkable boom: between end 2008 and mid-2014, prices rose by over 500 percent (nearly 400 percent in real terms). To some degree, this asset appreciation can be explained by fundamentals including rising real wages, financial deepening, and population growth amid a relatively fixed supply of land. In the period since mid-2014, prices have partially corrected, falling by over 30 percent, and are back at 2013 levels. However, only 0.1 percent of residential mortgage loans

have negative equity (and nonperforming loans are roughly the same magnitude).² This strength in asset quality likely owes to three factors. First, for most homeowners, prices are still above the purchase price given the size of the initial boom and the short period of the recent correction. Second, the average loan to value remains well below regulatory maxima. And third, average debt service to income has been consistently low at 25 percent. According to the most recent data, real estate prices and transactions have started to increase again, suggesting that the correction may have bottomed.

Housing Prices
(Index, 2014Q2=100)



Sources: CEIC Data Company Ltd.; and IMF staff estimates.

15. In light of these dynamics, the current macroprudential stance appears appropriate. An easing of macro prudential standards would be an appropriate response in the event of a rapid and self-reinforcing decline in housing prices that posed risks to financial stability and the broader economy.³ Current indications suggest, however, that existing standards remain appropriate, including the loan-to-value ratio and debt service-to-income ratio applied in Macao SAR. While house prices have fallen, the adjustment has been orderly and the market appears to be stabilizing without any significant stress on balance sheets or financial stability.

16. Current public concerns about housing affordability are best addressed through other means. To the degree there are social goals of improving the accessibility of housing, fueling demand via loosening macroprudential regulations amid tight supply may increase the price more than improve affordability. Instead, it would be more effective to provide targeted (means-tested) transfers and ensure that regulatory policy is adequate to support further private sector supply at market (rather than subsidized) prices. In this regard, efficient execution of housing plans for reclaimed land and well-targeted public housing supply will be important. Nonetheless, if the impact of speculative demand on real estate prices is a material concern, the authorities could consider more targeted macroprudential measures such as tighter loan-to-value ratios on second-home purchases.

17. Authorities' Views. The authorities shared the view that a loosening in macroprudential regulations was not necessary given current market fundamentals. They also shared the view that loosening in measures might actually reduce affordability unless supported by improvements to housing supply. The authorities were open to further exploration of some targeted measures at preventing excessive speculation. However, they highlighted that concerns about affordability had not fallen materially despite the price correction and there is already nascent evidence of a recovery in prices.

² Residential mortgage currently accounts for 22 percent of bank loans (commercial real estate accounts for another 21 percent.)

³ See "Staff Guidance Note on Macroprudential Policy," December 2014

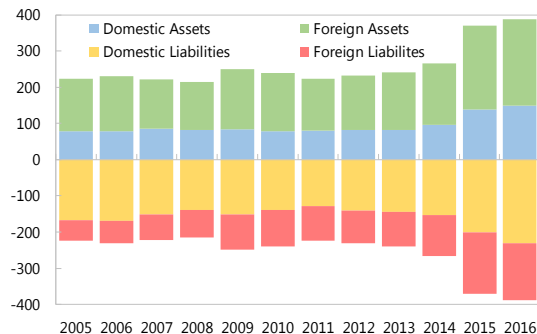
Financial Sector

18. Stepping back from the narrow housing issue, analysis of banking system balance sheets suggests that the sector remains sound. The large size of the banking system—assets of 375 percent of GDP at end-October 2016—suggests the need for supervisory caution (See Appendix I: Banking Sector). Nonetheless, it is useful to look at the domestic and foreign parts of the balance sheet separately as headline ratios can be misleading in Macao SAR.

- The domestic part of the banking system has strong foundations for liquidity and asset quality with a deposit-to-loan ratio of 118 percent and a nonperforming loan ratio of just 0.1 percent. The persistence of such high loan quality is somewhat surprising at the end of a sustained fall in output and raises some questions about ever-greening. However, the strength appears to reflect both the relative resilience of the economy (gaming operators still make large profits and unemployment is unchanged) and the fact that private sector leverage is relatively moderate: domestic corporate and household debt are 50 and 57 percent of GDP, respectively. There is a large degree of direct or indirect exposure to gaming but this is both somewhat inevitable given the structure of the economy and relatively safe given the strength of gaming operator balance sheets.
- The foreign side of bank balance sheets (231 percent of GDP in assets and 152 percent of GDP in liabilities) is more opaque but risks also appear contained. An obvious risk is that foreign liabilities are almost entirely deposits (99 percent of total) which are largely short term, raising the risk of a sharp fall in funding. However, three factors mitigate this risk. First, the vast majority of the foreign liabilities belong to branches of foreign banks suggesting it is difficult to view the balance sheets on a stand-alone basis. Second, roughly 85 percent of the liabilities to foreign banks (half of total foreign liabilities) are to related parties (parent or sister banks reflecting Macao SAR's role in corporate treasury management) which reduces the likelihood of a run. And third, the foreign liabilities are entirely used to purchase foreign rather than domestic assets, suggesting that in the event of a fall in funding, the banks can use their own foreign assets (provided liquidity and quality is adequate) rather than needing foreign exchange reserves. Nonetheless, particularly given the pegged exchange rate regime, supervisors should remain vigilant about the nature of the foreign borrowing (maturity, type of counterpart) and foreign investments (quality, liquidity).

Bank Balance Sheets

(In percent of GDP)



Sources: Haver Analytics; and IMF staff estimates

19. Authorities' Views. The authorities emphasized that the strength of the banking system—even after a dual shock to the gaming and housing sectors—was a testament to their supervision and the banks' own prudence. They recognized that the banks had aggressively sought out foreign funding and investment opportunities but argued that this was an appropriate business model given

the limited size of the domestic market. In general, the authorities believed that risks to funding were contained given the predominance of related-party exposures. Finally, they noted that they had substantially increased transparency surrounding banks' exposures to China (23 percent of foreign assets in 2016:Q3, down from a peak of 38 percent in 2014:Q2) on the recommendation of the last Article IV consultation.

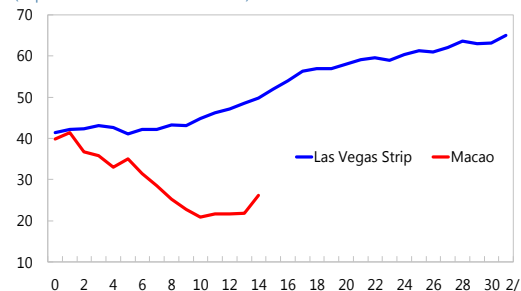
B. Medium-Term Issues

Raising Medium-Term Growth

20. The authorities have outlined an ambitious plan to diversify the sources of economic growth over the medium term. In summary, the plan seeks three types of diversification: 1) from high-end VIP gaming to mass-market gaming, 2) from gaming tourism to non-gaming tourism, and 3) from tourism to financial services. These three objectives made sense before the recent economic correction, and have taken on a new urgency in the aftermath of the recent (largely structural) contraction in output. While many of the specific micro-economic questions of such a growth strategy are outside the scope of an Article IV, some considerations are worthy of note:

- *From VIP to mass-market gaming:* This diversification has already made substantial progress with VIP gaming falling from almost 70 percent to roughly 50 percent of total where it has recently stabilized. Going forward, the mass market still has significant scope for growth reflecting the low penetration into the eligible Mainland market. Effective management of the money laundering risks is critical to a sustainable growth of gaming. However, supply-side bottlenecks may constrain Macao SAR's ability to accommodate the needed additional tourists. For this reason, execution of current infrastructure plans is likely the single most important part of the growth strategy going forward. The fact that the public sector's capital investment budget is consistently and materially under-executed suggests there is scope for improving public financial management.
- *From gaming tourism to non-gaming tourism:* At present, non-gaming tourism is only 26 percent of total, well below the 64 percent of Las Vegas. That said, at the pace of Las Vegas' own transition, it would take Macao SAR about 30 years to have a similar level of diversification. Meanwhile, many gaming centers worldwide have struggled to make the transition. Nonetheless, it remains premature to assess Macao SAR's potential in this area because it is only recently that gaming operators have invested in the necessary supply, in particular the adequacy of hotel rooms to attract large conventions and broader entertainment appropriate for the non-gaming visitor (e.g., families, elderly).

Non-Gaming Revenue 1/
(in percent of total tourism revenue)



Sources: David G. Schwartz, Nevada Casinos: Departmental Revenues, 1984-2015. Las Vegas: Center for Gaming Research, University Libraries, University of Nevada Las Vegas, 2016; and IMF staff estimates.
1/ Data for Las Vegas are for all casinos with gross gaming revenues of more than 1 million U.S. dollars per year, and data for Macao SAR is based on tourism receipts in National Accounts.
2/ Y axis represents time T. T=0 is 1984 for Las Vegas, and 2001 for Macao SAR.

- *From tourism to financial services*—The authorities' five-year plan highlights financial services—in particular, RMB settlement of external trade, financial leasing, and global wealth management—as the non-tourism export sector to develop further going forward. Given Macao SAR's relatively high median wage level, limited land supply, and small domestic market, financial services exports are a logical area to explore. Moreover, Mainland China's recent and high-level official support for Macao SAR's diversification into financial services is important. Nonetheless, further work would be useful to establish both Macao SAR's comparative advantage in these areas and the potential cost-benefit of seeking this business. In an area like RMB settlement for trade between China and Portuguese-speaking countries, Macao SAR's niche stems naturally from the common language and legal system as well as deep existing connections with those countries. However, the comparative advantage of becoming a form of offshore financial center for leasing and wealth management is less straight forward. It might require large cuts in the already low income tax rates to attract the necessary nonresident investors and professionals, with potentially limited spill-over benefits to local employment. Moreover, with lowering tax rates to attract nonresidents a core pillar of the growth strategy, it will be important that Macao SAR ensures a high standard for transparency of legal persons and trusts in line with international standards, in particular on the issue of beneficial ownership. In this regard, it is welcomed that Macao SAR passed the peer review by the OECD's Global Forum on Transparency and Exchange of Information for Tax Purposes and committed to start automatic exchange of information as of 2018.

21. Authorities' Views. The authorities broadly shared staff's characterization of the growth strategy but underscored the upside potential in several areas. In terms of the infrastructure necessary to accommodate mass-market gaming and non-gaming tourism, the authorities recognized the concern but emphasized that the government had taken note of the bottlenecks in capital spending and planned greater focus on absorptive capacity going forward. They also agreed that financial services would take time to have a material impact on headline growth given the low base. Nonetheless, they emphasized that even small inroads into the RMB settlement of trade with Lusophone economies could have a large impact given Macao SAR's size. In addition, they felt that they could be competitive in areas like leasing given i) the ability to afford a low tax rate, ii) the scope for business growth with Portuguese-speaking and "One-Belt, One Road" countries and iii) the considerable infrastructure investment envisioned in the nearby Mainland provinces. Finally, the authorities saw considerable scope for domestic employment benefits from financial services on the grounds that the local education system could supply the necessary higher-skilled labor force.

Medium-Term Fiscal Framework

22. Even though fiscal space is ample in the short-run, it is important that Macao SAR has a medium-term fiscal framework to ensure long-term fiscal sustainability and intergenerational equity. There are three key steps. The first is to develop long-term fiscal projections under current policies to determine how much of the current stock of fiscal reserves is already committed to future spending. In this regard, the projected rise in pension obligations (see below) and move away from the tax-rich gaming sector are critical. Second, one must determine how much of the fiscal reserve is needed to finance deficits that may arise from temporary shocks. This is a function of the expected volatility of the cycle

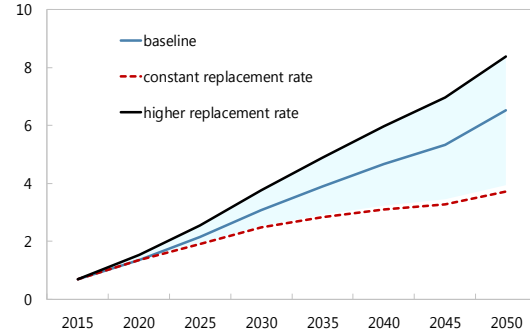
which may be high in Macao SAR given the narrow income base. And third, with the remaining “excess” fiscal reserve, one must determine how much should be invested inside Macao SAR as opposed to abroad. Though there are a variety of considerations, this hinges largely on the relative return from investing in infrastructure domestically versus the financial return from investing abroad.

23. A key long-term spending pressure stems from the projected speed of aging in Macao SAR.

The old-age dependency rate (the ratio of retired to working age populations) is projected to rise rapidly from 11 percent in 2015 to 45 percent by 2050, a faster pace than most advanced economies (see Box 3: First Pillar Pension System). Under current assumptions, this will increase pension spending from 0.7 percent of GDP to approximately 6.5 percent of GDP by 2050. Absent a parametric reform of the pension system, the recent capital injection by the government (37 billion MOP or roughly 10 percent of 2016 GDP) would not be adequate to cover long-term obligations, requiring further resources from elsewhere in the government (e.g., fiscal reserve fund). In terms of parametric reform, three of the options include linking the social contribution to the wage, indexing pension benefits to inflation, and increasing the retirement age from the current statutory rate of 65. Given expected years in retirement are similar to other advanced economies, priority should be given to the first two options, especially on pension benefit indexation, which would significantly dampen the long-term spending pressure by stabilizing the replacement rate (pension benefits in percent of per capita income).

Pension Spending

(In percent of GDP)



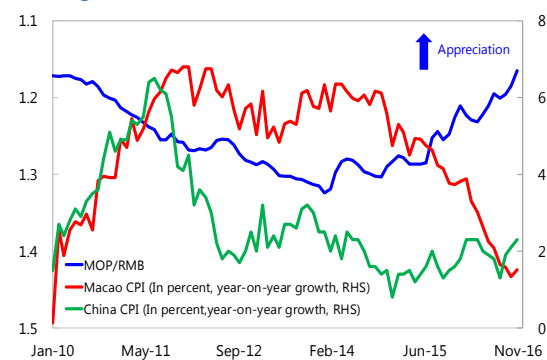
Source: IMF staff estimates.

24. Authorities' Views. The authorities emphasized that the fiscal position was strong with continued budget surpluses even after a large contraction in the economy. Moreover, the fiscal reserve, at 95.2 percent of GDP in 2015, would be even larger once the 2015 and 2016 surpluses were transferred to the fund. Nonetheless, they recognized that there was not an explicit medium-term framework in which to ground budgeting decisions. Such a framework would be useful in light of major public sector obligations including the investment needs of the new growth strategy, the social safety net expected by the public, and the rising pension obligations. With respect to staff's higher estimates of future spending obligations, the authorities broadly agreed on the methodology and would seek to update their estimates based on the latest available data.

External Sector Stability

25. The peg to the Hong Kong dollar continues to serve Macao SAR well, providing a credible nominal anchor. Though inflation reached a peak of 5.5 percent during the period of double-digit growth, expectations have remained broadly anchored. The success of the currency board is in large part due to steady application of the necessary supportive policies: adequate foreign exchange coverage, a liquid and

Exchange Rate and Inflation



Sources: Haver Analytics; and IMF staff estimates.

well-capitalized banking sector, prudent fiscal policy and flexible labor markets (particularly with respect to nonresidents working in Macao SAR). In terms of valuation, the exchange rate remains broadly consistent with medium-term fundamentals and desirable policies despite the recent real appreciation (See Appendix IV: External Sector Assessment).

26. Going forward, the importance of appropriate supportive policies may increase further amid new challenges. With China now accounting for two-thirds of tourism arrivals (and a higher share of tourist spending), the recent announcement by the PBC to move away from the dollar as a reference for the RMB could become significant for Macao SAR. The pataca (like the Hong Kong dollar) has appreciated 8 percent against the RMB since the second half of 2015. It is true that exchange rate movements in the past may not have had an obvious impact on tourist receipts. However, during the boom period, visits to Macao SAR were driven by high-net worth customers whose demand was likely relatively inelastic to higher costs. With the move to a mass-market model, price sensitivity will be greater going forward. In this regard, the gaming operators' recent reduction in non-gaming prices—the tourism price index has fallen by 13 percent due primarily to reductions in hotel prices—illustrates an important flexibility.

27. Authorities Views. The authorities continue to view the currency board as a critical part of the stability of the Macao SAR economy. They felt that a robust policy framework, in particular with respect to fiscal policy and strong external buffers, had provided the needed credibility for the exchange rate regime to be a lasting nominal anchor. The authorities recognized recent developments in the real exchange rate but emphasized the deflation in the tourism price index as evidence that Macao SAR can maintain competitiveness in the face of external pressures.

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28. The recent external shock underscores the importance of the authorities' strategy to transition to a more diversified economic model. The speed and size of the recent fall in external demand is a reminder of how narrow the export base had become during the boom years. Though the non-gaming economy was remarkably resilient, such volatility can undermine long-run growth by increasing macroeconomic uncertainty. In this regard, the authorities' strategy to diversify to mass-market gaming, non-gaming tourism, and financial services is important.

29. Fortunately, Macao SAR enters this transition from a position of strength. Prudent fiscal policy during the boom years has left the public sector with zero debt and almost 100 percent of GDP in fiscal reserves. Meanwhile, the high national savings rate has helped Macao SAR record repeated double digit current account surpluses and accumulate substantial foreign assets, reinforcing the credibility of the currency board.

30. In the near term, there is no need for further discretionary fiscal loosening given the closing output gap. Though the public sector has continued to record budget surpluses, the authorities appropriately loosened fiscal policy substantially during the recent downturn. Partly as a result of this approach, the output gap, measured by an array of methods is now closing. In this

regard, the authorities should avoid substantial further discretionary loosening in fiscal policy to avoid over-stimulating the economy.

31. Looking further ahead, the authorities should establish a medium-term framework to anchor fiscal policy and ensure long-run solvency. Taxing the economic rents of the gaming monopoly has left Macao SAR with abundant fiscal reserves. This provides a substantial opportunity to invest in human capital and close any infrastructure gaps. Though there is not an urgent concern, the authorities should establish long-run projections to better understand how much of the fiscal resources are accounted for, particularly with respect to future pension obligations.

32. With respect to the real estate market, there is no clear need to loosen macroprudential regulations. Macroprudential regulations specific to the housing market should be relaxed when there is a risk of a spiral of falling house prices, falling mortgage credit, and increased defaults. Current information—including healthy bank balance sheets and recovering prices—suggests this threshold has not been met. To the degree there is a social objective of increasing housing accessibility, this is best addressed by increasing the supply of market-priced units and providing targeted transfers to the most vulnerable.

33. The financial sector remains strong. Soundness indicators regarding asset quality, earnings, and liquidity remain remarkably robust given the size of the fall in output. This reflects the nature of the correction (which were largely absorbed by a fall in extraordinary gaming operator profits) and the prudence of regulations in recent years. The sheer size of the sector—particularly the supervisory challenge of monitoring the large foreign component of balance sheets—does warrant ongoing attention. But the nature of these exposures—largely branches to related parties—suggests risks are contained.

34. The currency board regime continues to serve Macao SAR well, though price flexibility will be increasingly important going forward. The phenomenal growth in the export sector since the return to Chinese sovereignty suggests that exchange rate competitiveness has not been a limiting factor. However, during much of this period, Macao SAR was depreciating against the RMB as a result of the peg, indirectly, to the U.S. dollar. With China now accounting for two-thirds of tourists and balance of payments pressures raising the potential for depreciation in the RMB, external competitiveness may be more of an issue going forward. In this regard, price flexibility, as displayed recently by the hotel sector, will likely be increasingly important.

35. It is proposed that the next Article IV consultation with Macao SAR take place on the standard 24-month cycle.

Box 1. Short-run Demand Management with Fiscal Policy

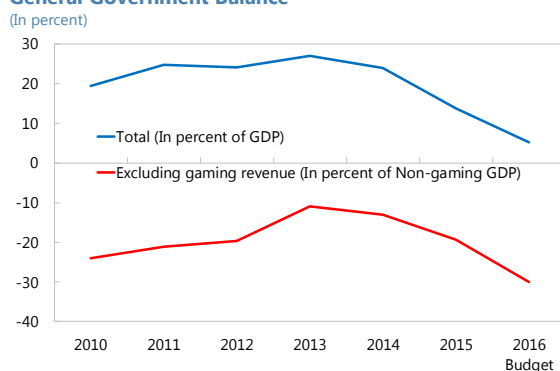
When left unchecked, substantial volatility in output can reduce long-run growth by increasing macroeconomic uncertainty. Fiscal policy can be a useful tool to moderate such volatility, partially offsetting sharp swings in private demand. To apply this approach to an economy like Macao SAR, several adjustments are needed to take into account the large role of the gaming sector, much the way resource-rich economies account for the commodity sector:

- First, the goal of short-run fiscal policy should not be to reduce the volatility of total output (as in most economies) but rather a subset more directly related to local welfare such as non-gaming GDP (effectively domestic absorption). For example, to the degree that a sharp fall in gaming revenues primarily manifested itself in lower profits for foreign owners of gaming operations, it is not clear that offsetting this with looser fiscal policy to stimulate domestic demand would be appropriate. However, if a shock to gaming led to a rise in unemployment and, as a result, a fall in private consumption or investment, fiscal loosening would be more appropriate.
- Second, to determine the appropriate fiscal stance going forward (as well as to assess past policy), one should focus on the best measure of the impact of fiscal policy on domestic absorption. In most economies, this would be the change in the cyclically-adjusted primary balance in percent of GDP. However, in Macao SAR, a useful indicator would be the non-gaming cyclically-adjusted primary balance in percent of non-gaming GDP. Including gaming in the numerator and denominator would prevent one from knowing whether changes in the fiscal result were due to fiscal policy or changes in external demand which are highly volatile and exogenous to fiscal policy.

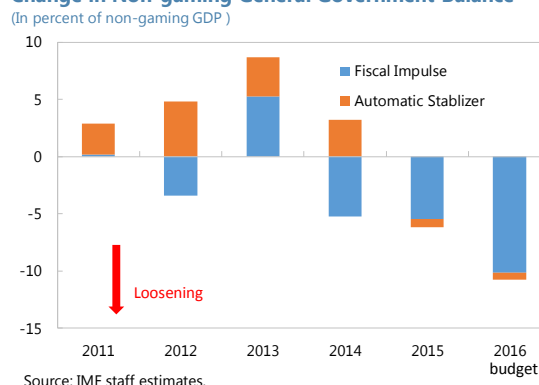
In recent years, the non-gaming fiscal balance in Macao SAR has loosened substantially from a deficit of around -10 percent of non-gaming GDP in 2013 to -30 percent in the 2016 budget. This has almost entirely been driven by discretionary loosening in policy (fiscal impulse) rather than automatic stabilizers. With this loosening, the non-gaming output gap has begun to close sharply in recent quarters.

The effectiveness of demand management via fiscal policy is not uniform across all economies but there is scope for impact in Macao SAR. Admittedly, in an open economy like Macao SAR, there tends to be a greater risk that a looser fiscal stance leaks into imports. However, this channel is generally less important in a fixed exchange rate regime. A looser fiscal position puts upward pressure on the interest rate which increases foreign demand for the currency. To maintain the fixed regime, the money supply must increase causing an additional increase in aggregate demand, reinforcing the fiscal stance.

General Government Balance



Change in Non-gaming General Government Balance



Box 2. Measuring the Business Cycle

With a cumulative 30 percent contraction in the economy, a key question is how much of the output shock is temporary as this informs the appropriate size and nature of policy response. This box identifies the cyclical position of Macao SAR using an array of methods, and finds that output gap is relatively moderate—ranging from -3 percent to -5 percent—but closing quickly.

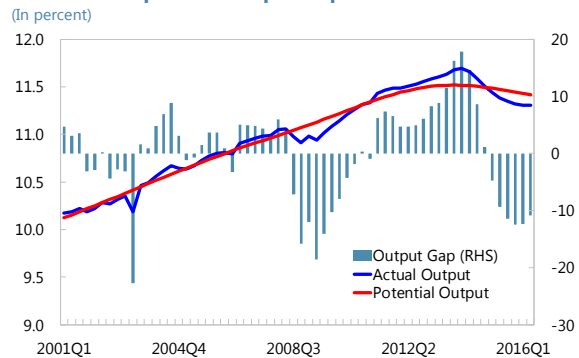
One can start with simple univariate HP filters.

- 1. Total Output:** A simple HP filter of quarterly GDP suggests the output gap in 2016:Q2 was about 10 percent, only slightly less than the 2009 recession. However, looking at aggregate output alone can be distorting, as HP filter tends to have the end-point biases and overstate the cyclical contraction, this is especially the case with such significant decline in headline growth.
- 2. Non-gaming GDP:** Similar to oil-exporting countries, Macao SAR enjoys monopoly rent from gaming exports, which also brings volatility to aggregate output. It is therefore useful to look at the non-gaming part of output, which is a better indicator of domestic absorption. Applying the HP filter to the non-gaming GDP yields a more modest output gap of seven percent at the peak and it has even turned slightly positive in the most recent data.

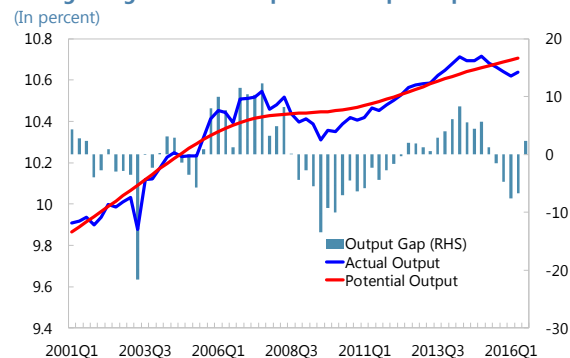
Alternatively, one can identify the cycle using bivariate filters that build on underlying macroeconomic relationships.

- 3. Output and inflation:** Building on the standard Phillips curve relationship, one can estimate the output gap filtering output and inflation. Inflation moderated from close to 6 percent in 2014 to below 2 percent recently. The degree of decline was much less than the GFC period, despite a similar oil price fall. The implied output gap is also lower, peaked at 5 percent has moderated to less than 2 percent by 2016:Q2.

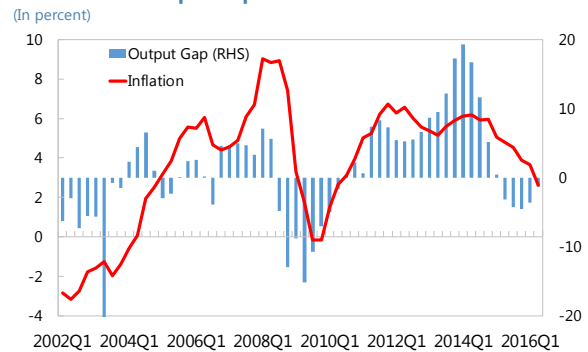
Potential Output and Output Gap --HP Filter



Non-gaming Potential Output and Output Gap --HP Filter



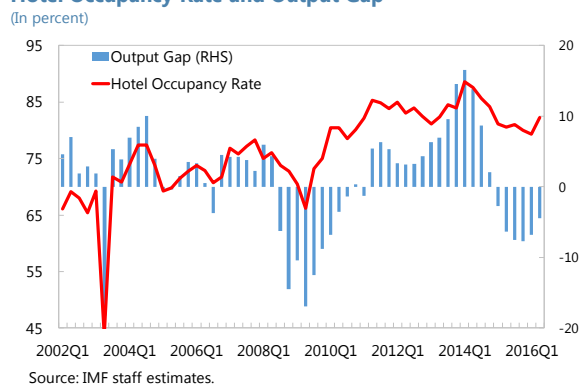
Inflation and Output Gap



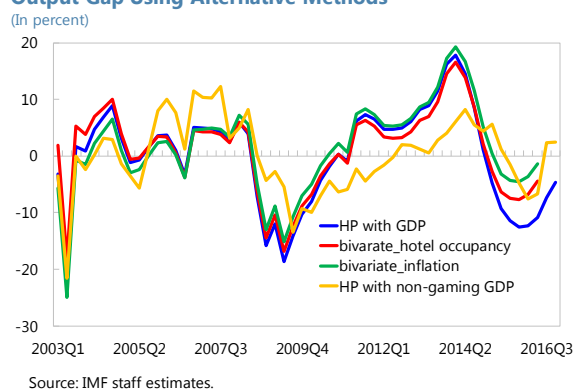
Box 2. Measuring the Business Cycle *(concluded)*

- 4. Output and hotel occupancy rate:** Given the outsized role of the tourism sector, hotel occupancy rate is another barometer for slack in the economy. Hotel occupancy rate has fallen from a peak of 90 percent to a still high 80 percent, suggesting limited slack in the real economy. The implied output gap based on bivariate filter estimates is 4 percent as of 2016:Q2.
- 5. Summary:** In total, the various methods tell a broadly consistent story on output gap dynamics but the results differ in magnitude. One can conclude that the output gap peaked at about 7 percent in 2016:Q1 but has since moderated to a range of 2–4 percent. Though some of these continue to suggest a material amount of slack, this remains modest given the size of the cumulative contraction in the economy. With the expected recovery, the output gap is expected to be closed by 2017.

Hotel Occupancy Rate and Output Gap



Output Gap Using Alternative Methods



Box 3. First Pillar Pension System

Macao SAR has a young population that is aging quickly. Such demographic pressures, combined with a large gap between contributions and benefits, will weigh on the first pillar pension system.

Macao SAR's first pillar pension is a mandatory pay-as-you-go system with relatively modest contributions and benefits. The monthly contribution is 90 MOP (30 employees, 60 employers), an increase from 45 in January 2017. This rate is low at 0.5 percent of local workers' median wage of 18000 MOP, versus an average of 20 percent in advanced economies. Benefits are higher—maximum monthly benefit is 3450 MOP or 19 percent of median salary and 4 percent of GDP per worker—but still low relative to other systems (30 percent in advanced economies).

The large gap between contributions and benefits requires additional funding. This includes a special contribution from the gaming sector, a special fee paid by employers of migrant workers, and an earmarked transfer from the government funded out of general tax revenue. Recently, government transfers have been increased in excess of the funding deficit to allow social security surpluses designed to fund future obligations.

Under current assumptions, there is a large actuarial pension imbalance due primarily to aging. Projecting future pension deficits is difficult because both contributions and benefits are adjusted on an ad hoc basis. Nonetheless, the old-age dependency ratio is expected to rise rapidly from 11 to 45 by 2050. Under current assumptions, this would result in a significant increase of pension spending, from 0.7 percent of GDP now to 6.5 percent by 2050. ^{1/} Assuming that contributions and government transfers stay constant in percent of GDP terms (1.6 percent), Macao SAR's pension system will face an actuarial imbalance of about 45 percent of GDP from 2015–2050 (including the fund's 15 percent of GDP in assets).

To meet these obligations, the pension system will need additional government transfers or a change in underlying parameters. The authorities could draw down ample fiscal reserves but this will reduce resources available for other investments. Alternatively, they could address the gap within the pension system itself. Three options are available:

- 1) *Link social contribution to wage.* The current contribution is fixed and adjusted in an ad-hoc manner. Specifying the contribution in percent of wages and increasing it from the current low level would help contain the deficit and improve income inequality.
- 2) *Index pension benefit to inflation.* In the past few years, the pension benefit has been adjusted frequently but lacks an explicit mechanism. Indexing it to inflation could help protect the poor, avoid a rapid increase in the future, and stabilize the replacement rate.
- 3) *Increase the retirement age from 65.* With rising life-expectancy, a corresponding adjustment in retirement age may also be considered. But given expected years in retirement are similar to other advanced economies, priority should be given to the first two options, especially on pension benefit indexation, which would significantly dampen the long-term spending pressure as shown in the scenario analysis.

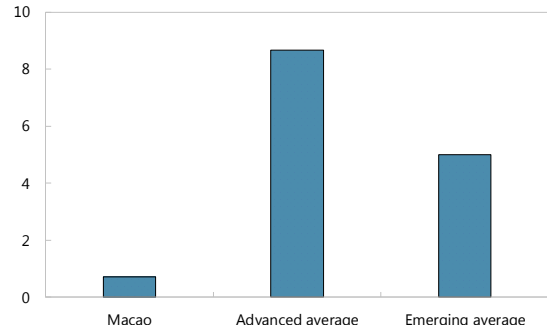
^{1/} This estimate takes UN population projections, assumes a moderate increase in the replacement rate (average pension over output per worker), a constant coverage ratio, and a constant labor participation rate.

Box 3. First Pillar Pension System (concluded)

Current pension spending in Macao SAR is low compared to other countries...

Pension Spending

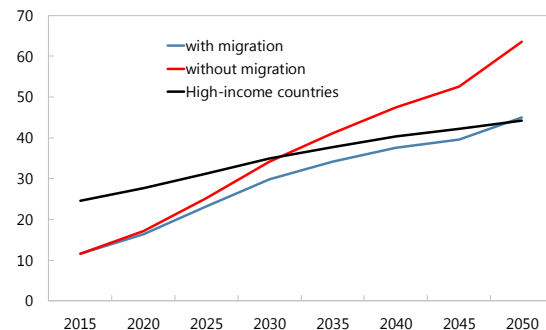
(In percent of GDP)



...but will face increasing upward pressure with more rapid aging.

Old-Age Dependence Ratio

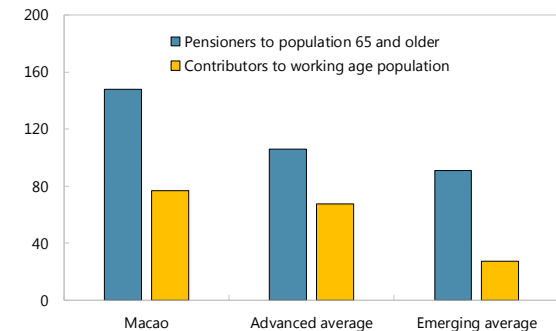
(Population 65+ in percent of population 15-64)



Pensioner coverage is high, reflecting the option of early retirement once reaching the age of 60...

Pensioner and Contributor Coverage

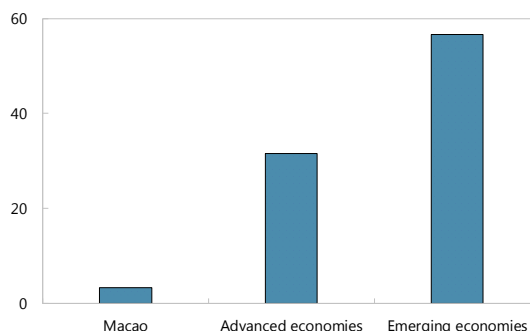
(In percent)



...while replacement rate is low compared to other countries, including when measured in percent of median wages.

Replacement Rate

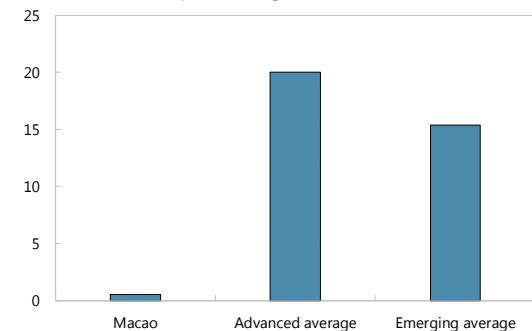
(Average pension in percent of per worker GDP)



...and contribution rate is even lower.

Contribution Rate

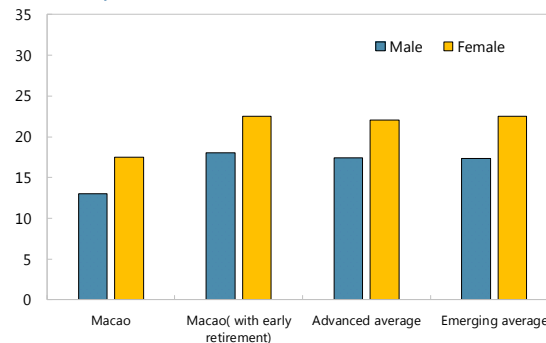
(Pension contribution in percent of wage)



Expected years in retirement are similar to other advanced economies with early retirement.

Expected years in retirement

(In number of years)



Source: IMF staff estimates.

Figure 1. Real Sector

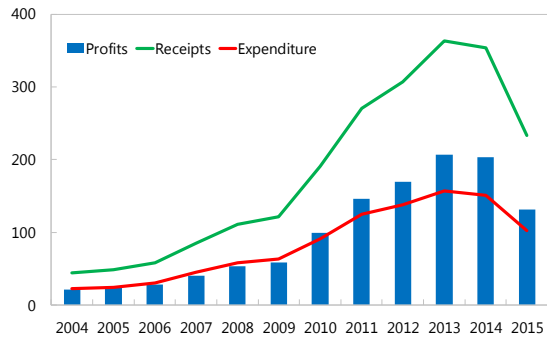
Growth slumped in 2015 due to a sharp contraction in tourism exports...

Real GDP: Contribution to Growth
(In percentage points)



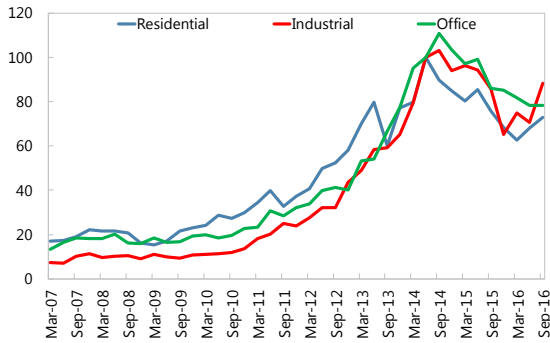
...thus far, this has primarily manifested itself in a fall in casino profits...

Gaming Sector
(In billion of MOP)



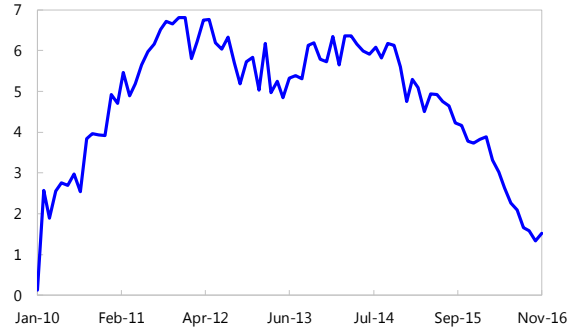
...and a material correction in housing prices.

Housing Prices
(Average price Index, June 2014=100)



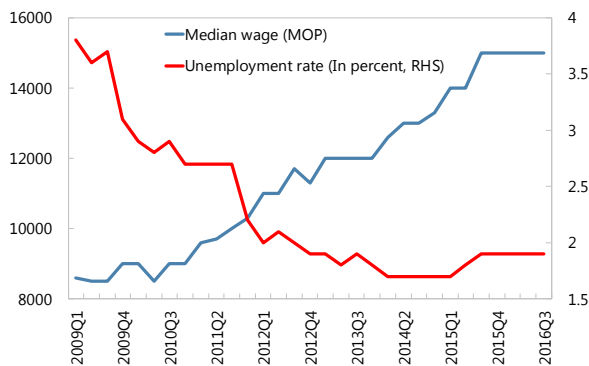
Inflation more broadly also moderated.

Inflation
(In percent, year-on-year growth)



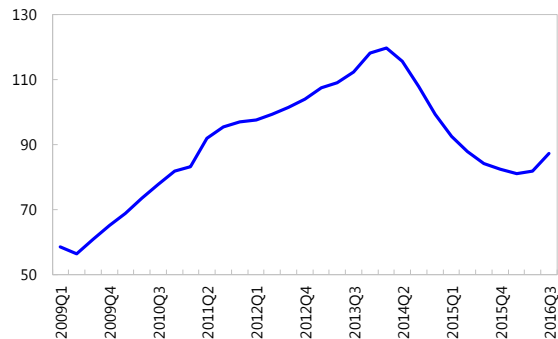
However, unemployment remains near historical lows and median wages are still up significantly in recent years.

Labor Market



Moreover, Q3 seasonally adjusted GDP shows nascent signs of a return to positive growth.

Real GDP
(In billion of MOP, Seasonally adjusted)



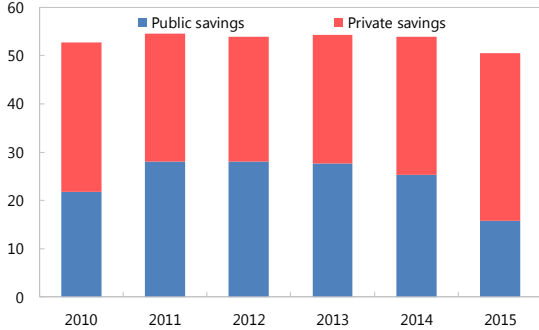
Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff calculations.

Figure 2. External Developments

Large private profits and fiscal surpluses have led to substantial national savings.

National Savings

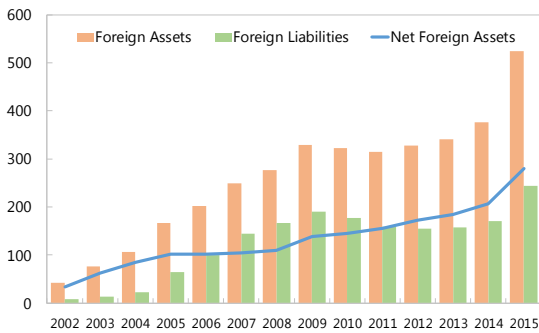
(In percent of GDP)



As a result, Macao SAR is now a large net foreign creditor...

Estimated International Investment Position

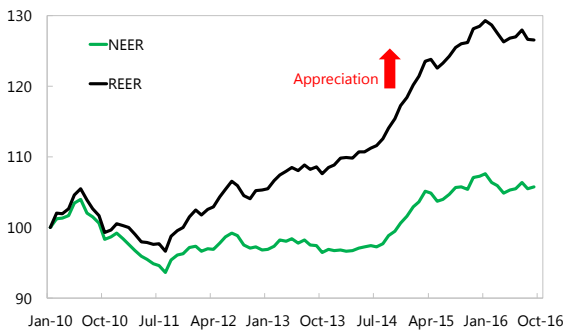
(In percent of GDP)



Going forward, export competitiveness could be vulnerable if there is a further depreciation in the RMB...

Effective Exchange Rate

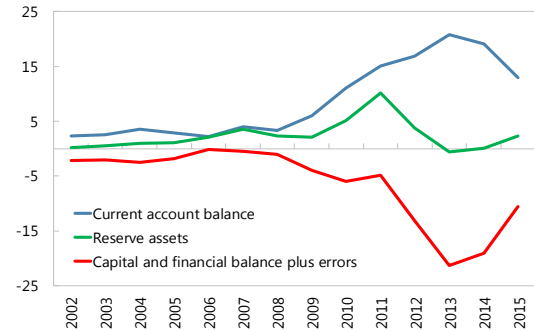
(Index, Jan.2010=100)



Given also limited domestic investment opportunities, Macao SAR regularly has large current account surpluses.

Balance of Payments

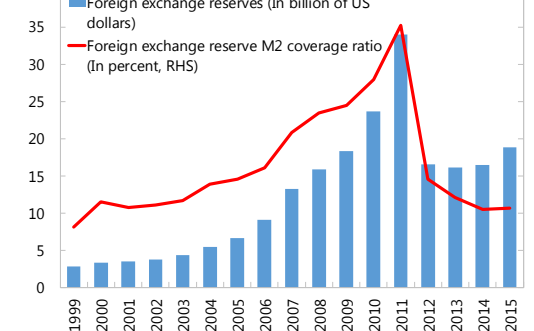
(In billion of US dollars)



...and reserves remain ample even after the large transfer to the fiscal reserve fund in 2012.

Foreign Exchange Reserves

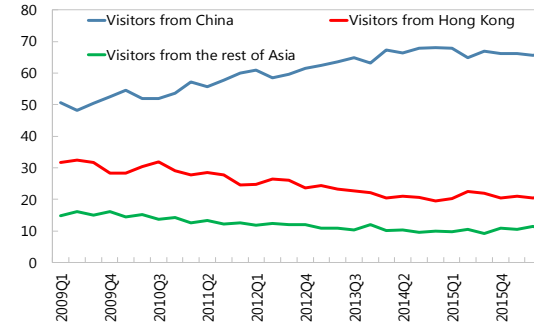
(In billion of US dollars)



...as two-thirds of tourists are from Mainland China.

Visitor Arrivals

(In percent of total visitor arrivals)

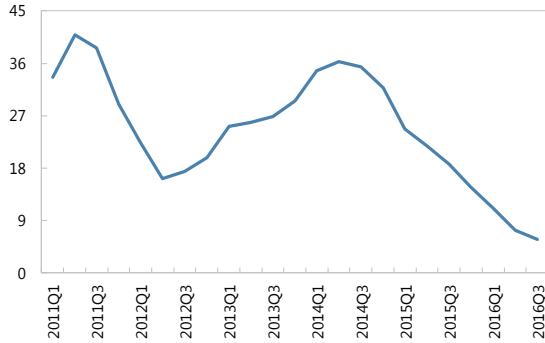


Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff calculations.

Figure 3. Banking Sector Developments

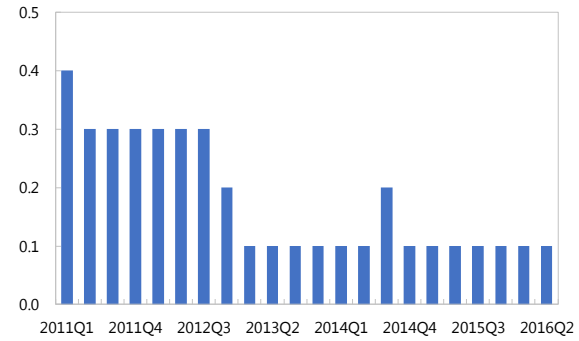
Amid the recent downturn, credit to the private sector has decelerated sharply...

Domestic Loans to Private Sector
(In percent, year-on-year growth)



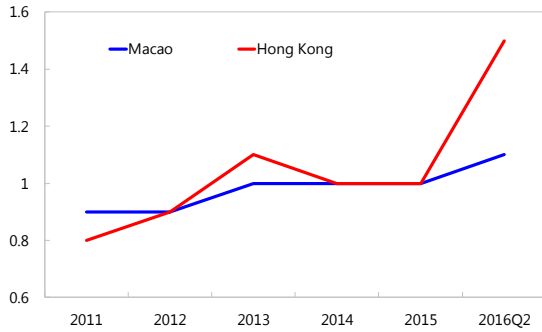
...but asset quality has remained high with extremely low NPLs...

Bank Asset Quality: Non-Performing Loans
(In percent of total loans)



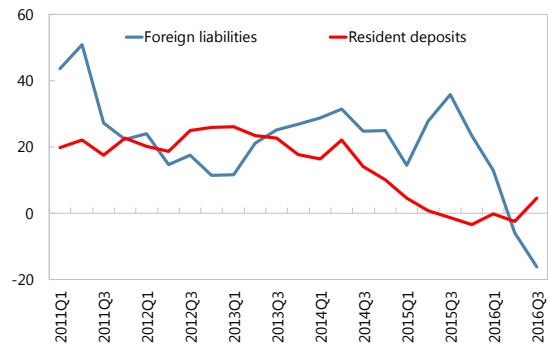
...and no sign of a hit to profits.

Banking Sector: Return on Assets
(In percent)



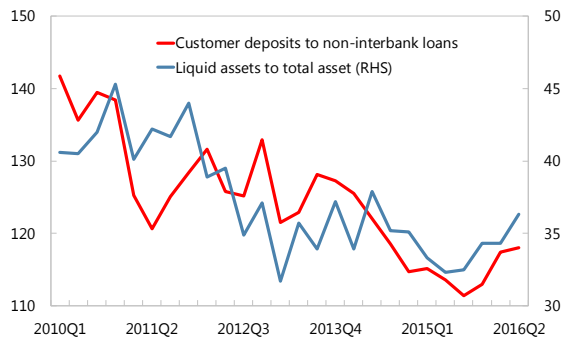
There has been some contraction in banks domestic and external funding...

Banking Sector: Resident Deposits and Foreign Liabilities
(In percent, year-on-year growth)



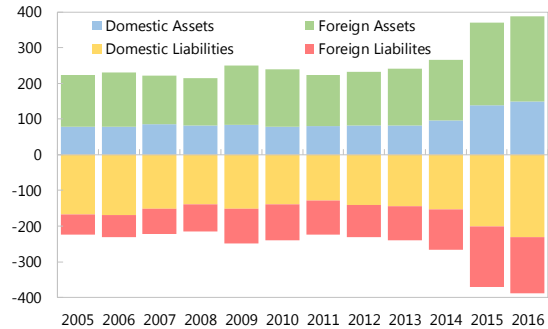
...but liquidity is robust amid a high deposit-loan ratio and ample liquid assets.

Bank Liquidity
(In percent)



Going forward, a key supervisory challenge will be monitoring the banking system's external portfolios, which are large relative to GDP.

Bank Balance Sheets
(In percent of GDP)

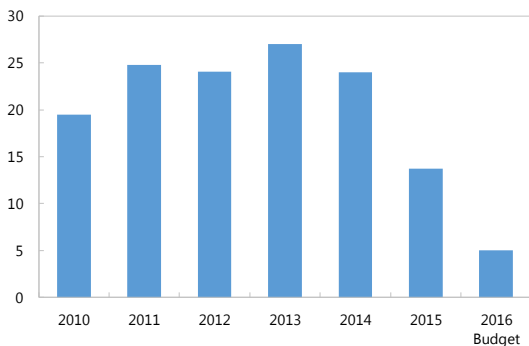


Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff calculations.

Figure 4. Fiscal Developments

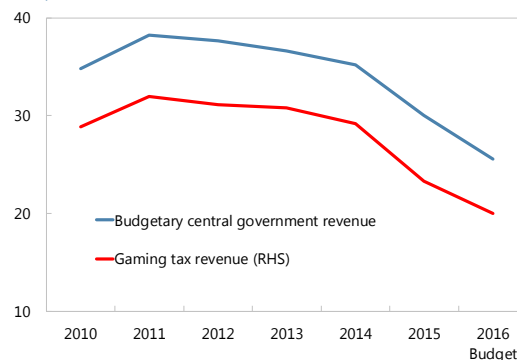
While remaining in surplus, the general government fiscal balance has declined sharply...

General Government Balance
(In percent of GDP)



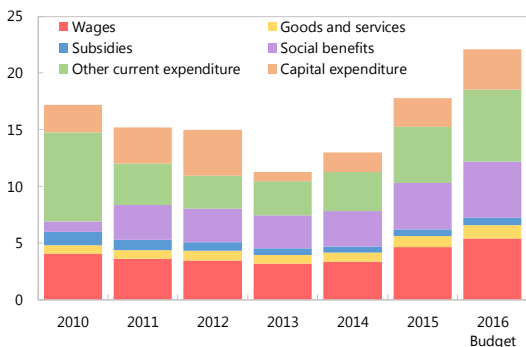
...due primarily to a sharp fall in gaming revenue.

Government Revenue and Gaming Tax Revenue
(In percent of GDP)



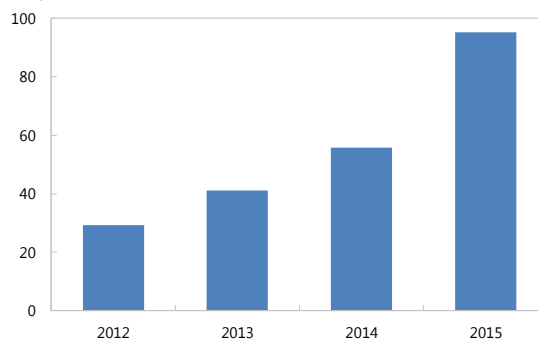
However, general government expenditures have also risen faster than GDP due primarily to investment and social benefits.

General Government Expenditure
(In percent of GDP)



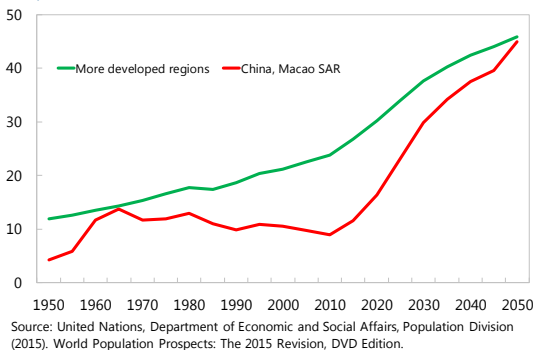
Macao SAR does have ample fiscal space given zero public debt and a substantial stock of fiscal reserves...

Fiscal Reserve
(In percent of GDP)



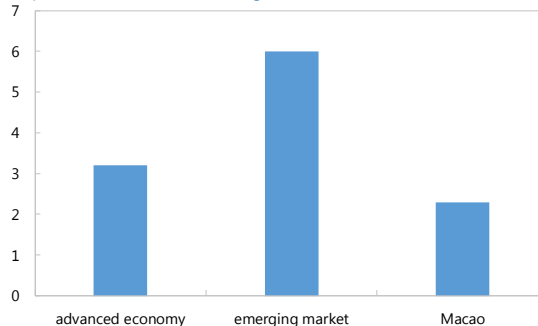
...but a sharp rise in aging will weigh on pension obligations in the future...

Old-Age Dependency Ratio 65+/(15-64)
(In percent)



...and public investment may need to rise to address tourism bottlenecks.

Public Investment
(In percent of GDP, 2010-2015 average)



Sources: CEIC Data Company Ltd.; Financial Services Bureau; United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision, DVD Edition; and IMF staff calculations.

Table 1. Selected Economic and Financial Indicators

	2010	2011	2012	2013	2014	2015	2016	2017
	Proj.							
(Annual percentage change, unless otherwise specified)								
National accounts								
Real GDP	25.3	21.7	9.2	11.2	-1.2	-21.5	-4.0	2.8
Total domestic demand	-0.4	13.9	10.3	6.5	16.7	2.8	-6.4	-2.4
Consumption	5.4	9.9	7.1	6.4	6.0	2.7	-0.3	1.1
Investment	-12.0	23.6	17.0	6.8	36.3	3.0	-14.8	-8.0
Net exports 1/	25.5	15.4	4.9	8.5	-7.9	-22.9	-0.1	4.2
Exports	39.7	25.7	10.5	13.2	-4.5	-26.7	-4.6	4.9
Imports	16.7	22.0	14.3	10.7	12.5	0.6	-8.8	-1.0
Gross capital formation (in percent of GDP)	13.3	13.8	14.7	14.1	19.6	25.1	22.3	20.0
National savings (in percent of GDP)	52.7	54.6	54.0	54.3	53.8	50.5	49.4	49.5
Prices and employment								
Headline inflation (average)	2.8	5.8	6.1	5.5	6.0	4.6	2.2	2.0
Terms of trade	-0.6	1.0	-1.8	0.0	0.2	0.8	0.0	0.0
Housing prices	33.5	33.6	38.4	42.6	22.0	-13.0	...	...
Median monthly employment earnings	5.9	11.1	13.0	6.2	10.8	12.8	...	...
Unemployment rate (annual average)	2.8	2.6	2.0	1.8	1.7	1.8	1.9	2.0
(In percent of GDP, unless otherwise specified)								
Fiscal accounts								
General government balance	19.5	24.8	24.1	27.0	24.0	13.7	5.1	7.5
Budgetary central government balance	18.1	22.1	21.8	23.5	20.5	8.7	1.1	5.5
Revenue	34.8	38.3	37.6	36.6	35.2	30.0	26.1	27.5
Expenditure	16.7	16.1	15.6	13.1	14.6	21.3	25.0	22.0
Extra-budgetary funds balance	0.4	1.4	1.0	1.0	0.9	0.6	0.0	0.0
Social security funds balance	0.9	1.3	1.3	2.5	2.5	4.5	4.1	2.0
Total public debt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fiscal reserve fund 2/	...	...	29.2	41.0	55.7	95.2	124.6	128.8
Balance of payments								
Current account	39.4	41.0	39.3	40.2	34.2	25.4	27.1	29.5
Goods	-20.2	-21.1	-21.0	-20.5	-21.4	-25.5	-23.8	-22.6
Services	75.3	79.4	79.0	80.7	74.7	64.7	64.0	65.3
Income	-15.7	-17.2	-18.8	-20.0	-19.1	-13.8	-13.1	-13.2
Financial account	-5.8	-6.3	-34.6	-35.4	-22.7	-5.4	-22.1	-22.3
FDI	14.0	3.9	6.0	3.0	1.9	1.3	1.4	1.4
Portfolio investment	-3.0	-5.1	-6.7	-24.1	-10.2	-26.9	-8.2	-7.3
Financial derivatives	0.0	-0.1	0.3	1.2	0.6	0.8	0.8	0.8
Other investment	-16.7	-5.0	-34.3	-15.4	-14.9	19.4	-16.0	-17.1
Errors and omissions	-15.4	-10.6	4.1	-6.0	-11.4	-14.9	0.0	0.0
Reserve asset	18.3	27.7	8.8	-1.1	0.1	5.1	5.1	7.2
Foreign exchange reserves (In billion of US dollars) 2/	23.7	34.0	16.6	16.1	16.4	18.9	...	...
Gross External Debt	113.1	127.8	119.2	120.1	133.5	199.2	189.9	191.9
(Annual percentage change)								
Financial sector								
Loans	31.6	31.2	26.2	31.4	29.0	10.3	...	...
Resident	29.3	28.5	18.4	29.6	31.8	14.8	...	...
Mortgages	45.6	25.3	29.2	25.9	19.9	10.1	...	...
Others	21.6	30.3	12.5	32.0	39.0	17.1	...	...
Nonresident	34.4	34.3	34.6	33.2	26.4	6.0	...	...
Interest rates								
Discount window base rate (level, %, eop)	0.5	0.5	0.5	0.5	0.5	0.8	...	...
Saving deposit rate (level, %, average)	0.0	0.0	0.0	0.0	0.0	0.0	...	...
MAIBOR 3-month (level, %, eop)	0.3	0.4	0.4	0.4	0.4	0.4	...	...
Tourism								
Visitor arrivals	14.8	12.2	0.3	4.4	7.5	-2.6	...	...
Gaming revenue	57.5	41.9	13.4	18.6	-2.5	-34.3	...	...
Exchange rate								
MOP per USD, period average	0.2	0.2	-0.4	0.0	0.0	0.0	...	...
Nominal effective exchange rate (avearge, +=appreciation)	-0.8	-5.0	1.7	-0.1	0.6	7.0	...	...
Real effective exchange rate (avearge, +=appreciation)	-0.2	-3.1	5.4	3.5	4.4	10.5	...	...
Memorandum items:								
Nominal GDP (in millions of US dollars)	28,123.7	36,708.0	43,031.8	51,552.4	55,347.8	45,415.0	44,071.0	45,689.1
Per capita GDP (in thousands of US dollars)	52.0	65.9	73.9	84.9	87.0	70.2	67.0	68.3

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

1/ Contribution to annual growth in percentage points.

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

Table 2. Medium-Term Macroeconomic Framework

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
								Proj.			
	(Annual percentage change)										
National accounts											
Real GDP	21.7	9.2	11.2	-1.2	-21.5	-4.0	2.8	1.7	2.2	2.8	3.5
Total domestic demand	13.9	10.3	6.5	16.7	2.8	-6.4	-2.4	-1.0	0.4	1.7	2.7
Consumption	9.9	7.1	6.4	6.0	2.7	-0.3	1.1	2.7	3.5	4.0	4.4
Investment	23.6	17.0	6.8	36.3	3.0	-14.8	-8.0	-7.6	-5.5	-3.4	-1.4
Net exports 1/	15.4	4.9	8.5	-7.9	-22.9	-0.1	4.2	2.2	1.9	1.9	2.1
Export	25.7	10.5	13.2	-4.5	-26.7	-4.6	4.9	3.0	3.1	3.8	4.3
Import	22.0	14.3	10.7	12.5	0.6	-8.8	-1.0	0.6	1.7	3.5	4.0
Consumer prices and employment											
Headline inflation (average)	5.8	6.1	5.5	6.0	4.6	2.2	2.0	2.2	2.4	2.6	2.8
Terms of Trade	1.0	-1.8	0.0	0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0
Unemployment rate	2.6	2.0	1.8	1.7	1.8	1.9	2.0	2.0	2.0	1.9	1.9
	(In percent of GDP)										
Gross capital formation	13.8	14.7	14.1	19.6	25.1	22.3	20.0	18.1	16.8	15.8	15.0
Gross national saving	54.6	54.0	54.3	53.8	50.5	49.4	49.5	48.6	47.5	46.2	45.1
	(In percent of GDP, unless otherwise specified)										
Balance of payments 2/											
Current account, net	41.0	39.3	40.2	34.2	25.4	27.1	29.5	30.5	30.7	30.5	30.1
Trade balance of goods and services, net	58.2	58.0	60.2	53.3	39.3	40.3	42.8	43.7	44.1	44.1	43.9
Goods balance	-21.1	-21.0	-20.5	-21.4	-25.5	-23.8	-22.6	-22.0	-21.5	-21.3	-21.0
Services balance	79.4	79.0	80.7	74.7	64.7	64.0	65.3	65.7	65.6	65.4	64.9
Income	-17.2	-18.8	-20.0	-19.1	-13.8	-13.1	-13.2	-13.2	-13.4	-13.6	-13.8
Primary Income	-13.6	-14.9	-15.7	-14.3	-8.0	-7.4	-7.5	-7.5	-7.6	-7.9	-8.1
Secondary Income	-3.7	-3.9	-4.2	-4.8	-5.8	-5.8	-5.8	-5.8	-5.8	-5.8	-5.8
Capital account, net	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financial account, net	-6.3	-34.6	-35.4	-22.7	-5.4	-22.1	-22.3	-21.9	-21.7	-21.3	-20.6
Direct investment, net	3.9	6.0	3.0	1.9	1.3	1.4	1.4	1.4	1.4	1.4	1.4
Portfolio investment, net	-5.1	-6.7	-24.1	-10.2	-26.9	-8.2	-7.3	-6.6	-6.4	-6.1	-5.8
Financial derivatives, net	-0.1	0.3	1.2	0.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Other investment, net	-5.0	-34.3	-15.4	-14.9	19.4	-16.0	-17.1	-17.4	-17.5	-17.3	-17.0
Errors and omissions, net	-10.6	4.1	-6.0	-11.4	-14.9	0.0	0.0	0.0	0.0	0.0	0.0
Reserve assets (net change)	27.7	8.8	-1.1	0.1	5.1	5.1	7.2	8.6	9.0	9.2	9.4
	(In percent of GDP)										
Fiscal accounts											
General government balance	24.8	24.1	27.0	24.0	13.7	5.1	7.5	7.1	6.8	5.5	4.9
Budgetary Central Government Balance	22.1	21.8	23.5	20.5	8.7	1.1	5.5	4.9	4.4	2.9	2.1
Revenue	38.3	37.6	36.6	35.2	30.0	26.1	27.5	27.2	27.1	26.1	25.7
Expenditure	16.1	15.6	13.1	14.6	21.3	25.0	22.0	25.9	25.5	25.1	24.7
Extra-budgetary funds balance	1.4	1.0	1.0	0.9	0.6	0.0	0.0	0.2	0.4	0.6	0.8
Social security funds balance	1.3	1.3	2.5	2.5	4.5	4.1	2.0	2.0	2.0	2.0	2.0
Memorandum items:											
Nominal GDP (in millions of MOP)	294,347	343,818	411,865	442,070	362,642	351,910	364,831	374,728	387,228	403,007	422,995
Exchange rate (MOP per USD, percent change)	0.2	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nominal effective exchange rate (percent change)	-5.0	1.7	-0.1	0.6	7.0	...	...	...	...	...	...
Real effective exchange rate (percent change)	-3.1	5.4	3.5	4.4	10.5	...	...	...	...	...	...

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

1/ Contribution to annual growth in percentage points.

2/ BPM6 methodology.

Table 3a. General Government Accounts

	2010	2011	2012	2013	2014	2015	2016 Budget	2016 Proj.	2017 Proj.
(In millions of MOP)									
Budgetary Central Government									
Revenue	78,320	112,621	129,384	150,749	155,489	108,857	91,696	91,696	100,391
Taxes	74,824	107,281	123,307	145,557	149,523	102,781	87,931	87,931	95,792
Personal Income	837	961	1,144	1,310	1,737	2,058	2,110	2,110	2,187
Corporate Income	2,376	2,801	3,276	3,645	4,575	5,898	4,411	4,411	4,573
Property	447	320	335	462	581	765	772	772	800
Goods and Services	70,843	102,787	117,961	139,536	141,861	93,489	79,990	79,990	87,559
Of which: Gaming	68,776	99,656	113,378	134,382	136,710	89,573	75,765	75,765	78,439
Other	321	413	592	603	770	572	649	649	672
Other Revenue	3,496	5,340	6,077	5,192	5,966	6,076	3,765	3,765	4,599
Expenditures	37,478	47,483	53,685	53,950	64,646	77,416	87,963	82,892	80,223
Wages	5,463	6,265	6,997	7,794	8,762	9,826	11,109	11,109	11,310
Goods and Services	1,686	2,198	2,836	3,156	3,396	3,544	4,325	4,325	4,484
Subsidies	2,192	2,277	1,324	1,598	1,725	1,491	1,261	1,261	1,416
Intra Government Transfers	11,154	16,909	18,244	26,213	28,997	38,418	39,506	39,506	34,588
To EBFs	8,448	12,509	13,086	14,210	16,426	19,911	22,102	22,102	23,643
To SSF	2,706	4,400	5,158	12,003	12,571	18,507	17,405	17,405	10,945
Social Benefits	643	7,112	7,700	8,717	10,002	10,545	12,167	12,167	12,614
Other Current	11,286	3,580	2,382	3,661	4,781	5,071	8,068	6,454	6,691
Capital Expenditure	5,056	9,142	14,202	2,812	6,983	8,521	11,526	8,069	9,121
Budgetary Central Government Balance	40,842	65,138	74,859	96,796	90,843	31,441	3,733	8,804	20,168
Extra-Budgetary Funds (EBFs or Autonomous Agencies)									
Revenue	12,458	17,154	18,359	20,418	23,007	24,319	26,866	26,866	28,047
Taxes and other Receipts	4,010	4,582	5,160	6,129	6,468	4,246	4,249	4,249	4,404
Transfers from Central Government	8,448	12,572	13,198	14,289	16,539	20,073	22,617	22,617	23,643
Expenditure	11,570	13,152	14,840	16,450	19,064	22,270	26,990	26,990	27,981
Wages	3,644	4,392	4,877	5,335	6,070	6,995	8,149	8,149	8,448
Subsidies	419	429	1,384	690	682	588	956	956	991
Grants	27	102	161	117	164	204	570	570	591
Social Benefits	744	846	1,130	1,100	1,184	1,326	1,614	1,614	1,855
Other Current	6,317	7,123	7,546	8,718	10,360	12,470	14,426	14,426	14,956
Capital Expenditure	419	259	(259)	490	604	687	1,275	1,275	1,459
EBF Balance	889	4,002	3,519	3,969	3,943	2,049	(124)	-124	66
Social Security Fund									
Revenue	2,939	4,939	5,789	12,658	14,006	19,621	18,894	18,894	12,489
Social Contributions	157	305	181	181	185	190	161	161	167
Transfers from Central Government	2,706	4,400	5,158	12,003	12,571	18,507	17,405	17,405	10,945
Other Revenue	77	234	451	475	1,250	925	1,329	1,329	1,378
Expenditure	814	1,191	1,412	2,311	2,844	3,410	4,428	4,428	5,320
Wages	44	61	70	76	89	100	118	118	123
Social Benefits	748	1,103	1,306	2,198	2,612	2,979	4,086	4,086	4,965
Other Current	19	26	28	34	143	331	224	224	233
Capital Expenditure	3	2	8	4	0	0	0	0	0
SSF Balance	2,125	3,747	4,377	10,347	11,161	16,212	14,466	14,466	7,169
General Government Balance	43,855	72,887	82,755	111,112	105,947	49,701	18,075	23,146	27,404
Revenue	82,564	117,742	135,176	157,533	163,392	114,218	97,434	97,434	106,340
Expenditure	38,709	44,918	51,693	46,498	57,557	64,678	79,875	74,804	78,937
Memorandum									
Fiscal Reserves 1/	...	...	100,240	168,899	246,337	345,055	...	438,450	469,891
Public Sector deposit	165,625	236,824	244,126	301,578	340,533	308,840	...	...	...

Sources: Financial Services Bureau; and IMF staff estimates.

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

Table 3b. General Government Accounts

	2010	2011	2012	2013	2014	2015	2016 Budget	2016 Proj.	2017 Proj.
	(In percent of GDP)								
Budgetary Central Government									
Revenue	34.8	38.3	37.6	36.6	35.2	30.0	26.1	26.1	27.5
Taxes	33.2	36.4	35.9	35.3	33.8	28.3	25.0	25.0	26.3
Personal Income	0.4	0.3	0.3	0.3	0.4	0.6	0.6	0.6	0.6
Corporate Income	1.1	1.0	1.0	0.9	1.0	1.6	1.3	1.3	1.3
Property	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Goods and Services	31.5	34.9	34.3	33.9	32.1	25.8	22.7	22.7	24.0
Of which: Gaming	30.6	33.9	33.0	32.6	30.9	24.7	21.5	21.5	21.5
Other	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2
Other Revenue	1.6	1.8	1.8	1.3	1.3	1.7	1.1	1.1	1.3
Expenditures	16.7	16.1	15.6	13.1	14.6	21.3	25.0	23.6	22.0
Wages	2.4	2.1	2.0	1.9	2.0	2.7	3.2	3.2	3.1
Goods and Services	0.7	0.7	0.8	0.8	0.8	1.0	1.2	1.2	1.2
Subsidies	1.0	0.8	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Intra Government Transfers	5.0	5.7	5.3	6.4	6.6	10.6	11.2	11.2	9.5
To EBFs	3.8	4.2	3.8	3.5	3.7	5.5	6.3	6.3	6.5
To SSF	1.2	1.5	1.5	2.9	2.8	5.1	4.9	4.9	3.0
Social Benefits	0.3	2.4	2.2	2.1	2.3	2.9	3.5	3.5	3.5
Other Current	5.0	1.2	0.7	0.9	1.1	1.4	2.3	1.8	1.8
Capital Expenditure	2.2	3.1	4.1	0.7	1.6	2.3	3.3	2.3	2.5
Budgetary Central Government Balance	18.1	22.1	21.8	23.5	20.5	8.7	1.1	2.5	5.5
Extra-Budgetary Funds (EBFs or Autonomous Agencies)									
Revenue	5.5	5.8	5.3	5.0	5.2	6.7	7.6	7.6	7.7
Taxes and other Receipts	1.8	1.6	1.5	1.5	1.5	1.2	1.2	1.2	1.2
Transfers from Central Government	3.8	4.3	3.8	3.5	3.7	5.5	6.4	6.4	6.5
Expenditure	5.1	4.5	4.3	4.0	4.3	6.1	7.7	7.7	7.7
Wages	1.6	1.5	1.4	1.3	1.4	1.9	2.3	2.3	2.3
Subsidies	0.2	0.1	0.4	0.2	0.2	0.2	0.3	0.3	0.3
Grants	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2
Social Benefits	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.5
Other Current	2.8	2.4	2.2	2.1	2.3	3.4	4.1	4.1	4.1
Capital Expenditure	0.2	0.1	(0.1)	0.1	0.1	0.2	0.4	0.4	0.4
EBF Balance	0.4	1.4	1.0	1.0	0.9	0.6	(0.0)	(0.0)	0.0
Social Security Fund									
Revenue	1.3	1.7	1.7	3.1	3.2	5.4	5.4	5.4	3.4
Social Contributions	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Transfers from Central Government	1.2	1.5	1.5	2.9	2.8	5.1	4.9	4.9	3.0
Other Revenue	0.0	0.1	0.1	0.1	0.3	0.3	0.4	0.4	0.4
Expenditure	0.4	0.4	0.4	0.6	0.6	0.9	1.3	1.3	1.5
Wages	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Social Benefits	0.3	0.4	0.4	0.5	0.6	0.8	1.2	1.2	1.4
Other Current	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Capital Expenditure	0.0	0.0	0.0	0.0	-	-	-	0	-
SSF Balance	0.9	1.3	1.3	2.5	2.5	4.5	4.1	4.1	2.0
General Government Balance									
Revenue	36.7	40.0	39.3	38.2	37.0	31.5	27.7	26.7	28.4
Expenditure	17.2	15.3	15.0	11.3	13.0	17.8	22.7	20.5	21.1
Memorandum									
Fiscal Reserves	...	...	29.2	41.0	55.7	95.2	...	124.6	128.8
Public Sector deposit	73.6	80.5	71.0	73.2	77.0	85.2	...	...	...

Sources: Financial Services Bureau; and IMF staff estimates.

Table 4. Balance of Payments 1/

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	Proj.										
	(In millions of US dollars)										
Current account, net	15,047	16,894	20,746	18,931	11,557	11,952	13,490	14,309	14,909	15,376	15,932
Trade balance of goods and services, net	21,374	24,977	31,053	29,506	17,828	17,743	19,540	20,521	21,393	22,259	23,265
Goods balance	-7,758	-9,017	-10,545	-11,831	-11,564	-10,468	-10,317	-10,324	-10,428	-10,747	-11,136
Exports of goods	1,061	1,400	1,493	1,787	1,959	1,567	1,599	1,663	1,762	1,870	1,986
Imports of goods	8,818	10,417	12,039	13,618	13,523	12,036	11,915	11,987	12,191	12,617	13,122
Services balance	29,131	33,994	41,598	41,337	29,392	28,211	29,856	30,845	31,821	33,007	34,401
Exports of services	32,224	37,805	45,233	45,224	33,343	32,128	33,735	34,747	35,789	37,113	38,672
Imports of services	3,093	3,810	3,635	3,887	3,951	3,917	3,878	3,901	3,968	4,107	4,271
Primary Income	-4,986	-6,404	-8,119	-7,924	-3,639	-3,243	-3,409	-3,499	-3,681	-3,965	-4,267
Secondary Income	-1,340	-1,679	-2,187	-2,651	-2,631	-2,548	-2,642	-2,713	-2,804	-2,919	-3,066
Capital account, net	1,329	0	-1	-2	-3	-3	-3	-3	-3	-3	-3
Financial account, net	-2,306	-14,908	-18,239	-12,569	-2,449	-9,719	-10,180	-10,270	-10,543	-10,750	-10,926
Direct investment, net	1,437	2,595	1,529	1,050	609	607	631	653	678	705	735
Inward	1,759	3,566	3,715	2,362	338	345	359	374	389	404	419
Outward	322	971	2,187	1,312	-271	-263	-272	-280	-289	-301	-316
Portfolio investment, net	-1,879	-2,880	-12,444	-5,664	-12,202	-3,612	-3,319	-3,104	-3,096	-3,083	-3,063
Inward	213	419	-175	1,142	-1,136	-965	-579	-290	-188	-56	113
Outward	2,093	3,299	12,269	6,806	11,066	2,647	2,739	2,815	2,908	3,026	3,176
Financial derivatives, net	-44	124	629	319	341	331	343	352	364	379	398
Inward	...	...	...	...	...	...	...	...	...	...	...
Outward	44	-124	-629	-319	-341	-331	-343	-352	-364	-379	-398
Other investment, net	-1,820	-14,747	-7,952	-8,274	8,803	-7,045	-7,835	-8,171	-8,488	-8,751	-8,996
Inward	6,457	4,347	10,565	9,776	17,561	1,756	1,054	896	851	868	911
Outward	8,277	19,094	18,517	18,051	8,757	8,801	8,889	9,067	9,339	9,619	9,908
Errors and omissions, net	-3,892	1,785	-3,079	-6,283	-6,781	0	0	0	0	0	0
Reserve assets	10,178	3,771	-572	77	2,325	2,230	3,307	4,036	4,363	4,622	5,003
	(In percent of GDP)										
Current account, net	41.0	39.3	40.2	34.2	25.4	27.1	29.5	30.5	30.7	30.5	30.1
Trade balance of goods and services, net	58.2	58.0	60.2	53.3	39.3	40.3	42.8	43.7	44.1	44.1	43.9
Goods balance	-21.1	-21.0	-20.5	-21.4	-25.5	-23.8	-22.6	-22.0	-21.5	-21.3	-21.0
Exports of goods	2.9	3.3	2.9	3.2	4.3	3.6	3.5	3.5	3.6	3.7	3.7
Imports of goods	24.0	24.2	23.4	24.6	29.8	27.3	26.1	25.5	25.1	25.0	24.8
Services balance	79.4	79.0	80.7	74.7	64.7	64.0	65.3	65.7	65.6	65.4	64.9
Exports of services	87.8	87.9	87.7	81.7	73.4	72.9	73.8	74.0	73.8	73.5	73.0
Imports of services	8.4	8.9	7.1	7.0	8.7	8.9	8.5	8.3	8.2	8.1	8.1
Primary Income	-13.6	-14.9	-15.7	-14.3	-8.0	-7.4	-7.5	-7.5	-7.6	-7.9	-8.1
Secondary Income	-3.7	-3.9	-4.2	-4.8	-5.8	-5.8	-5.8	-5.8	-5.8	-5.8	-5.8
Capital account, net	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financial account, net	-6.3	-34.6	-35.4	-22.7	-5.4	-22.1	-22.3	-21.9	-21.7	-21.3	-20.6
Direct investment, net	3.9	6.0	3.0	1.9	1.3	1.4	1.4	1.4	1.4	1.4	1.4
Inward	4.8	8.3	7.2	4.3	0.7	0.8	0.8	0.8	0.8	0.8	0.8
Outward	0.9	2.3	4.2	2.4	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
Portfolio investment, net	-5.1	-6.7	-24.1	-10.2	-26.9	-8.2	-7.3	-6.6	-6.4	-6.1	-5.8
Inward	0.6	1.0	-0.3	2.1	-2.5	-2.2	-1.3	-0.6	-0.4	-0.1	0.2
Outward	5.7	7.7	23.8	12.3	24.4	6.0	6.0	6.0	6.0	6.0	6.0
Financial derivatives, net	-0.1	0.3	1.2	0.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Inward	...	...	...	...	...	...	...	...	...	...	...
Outward	0.1	-0.3	-1.2	-0.6	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
Other investment, net	-5.0	-34.3	-15.4	-14.9	19.4	-16.0	-17.1	-17.4	-17.5	-17.3	-17.0
Inward	17.6	10.1	20.5	17.7	38.7	4.0	2.3	1.9	1.8	1.7	1.7
Outward	22.5	44.4	35.9	32.6	19.3	20.0	19.5	19.3	19.3	19.1	18.7
Errors and omissions, net	-10.6	4.1	-6.0	-11.4	-14.9	0.0	0.0	0.0	0.0	0.0	0.0
Reserve assets	27.7	8.8	-1.1	0.1	5.1	5.1	7.2	8.6	9.0	9.2	9.4
<i>Memorandum items:</i>											
Total External Debt (in millions of US dollars)	46,922.2	51,288.7	61,902.6	73,900.7	90,455.3	83,710.6	87,697.8	91,015.5	95,021.3	99,902.8	105,917.2
Banks	34,925.2	39,038.0	49,536.5	61,890.8	76,508.0	...	...	...	...	...	...
Non-bank entities	11,997.0	12,250.8	12,366.1	12,009.9	13,947.3	...	...	...	...	...	...
Foreign exchange reserves (in million of US dollars)	34026	16600	16146	16444	18893	...	...	...	...	...	...
Nominal GDP (in millions of US dollars)	36,708	43,032	51,552	55,348	45,415	44,071	45,689	46,929	48,494	50,470	52,973

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

1/ BPM6 methodology.

Table 5. Indicators of External Vulnerability

	2010	2011	2012	2013	2014	2015
Monetary and financial indicators						
Broad money (MOP bn)	243	298	375	441	487	473
Broad money (M2, annual percentage change)	14.5	22.6	25.8	17.7	10.4	-3.0
Loans (MOP bn)	246	322	407	535	690	761
Resident	130	168	198	257	339	389
Nonresident	115	155	208	277	351	372
Loans (annual percentage change)	31.6	31.2	26.2	31.4	29.0	10.3
Resident	29.3	28.5	18.4	29.6	31.8	14.8
Nonresident	34.4	34.3	34.6	33.2	26.4	6.0
Private domestic credit excl financial investment (MOP bn)	130.5	167.6	198.5	257.2	339.1	389.1
(Percent change)	29.3	28.5	18.4	29.6	31.8	14.8
Personal loans for house purchases (MOP bn)	47.4	59.4	76.7	96.6	115.8	127.5
(Percent change)	45.6	25.3	29.2	25.9	19.9	10.1
Other resident loans (MOP bn)	83.0	108.2	121.7	160.7	223.3	261.6
Balance of payments indicators 1/						
Exports (annual percentage change, U.S. dollars)	45.7	34.8	17.8	19.2	0.6	-24.9
Imports (annual percentage change, U.S. dollars)	21.4	29.7	19.4	10.2	11.7	-0.2
Current account balance (percent GDP)	39.4	41.0	39.3	40.2	34.2	25.4
Capital and financial account balance (percent GDP)	-5.7	-2.7	-34.6	-35.4	-22.7	-5.4
<i>Of which: gross foreign direct investment inflows</i>	12.9	4.8	8.3	7.2	4.3	0.7
Reserve indicators 1/						
Foreign exchange reserves (billions of US dollars)	23.7	34.0	16.6	16.1	16.4	18.9
Foreign exchange reserves to imports of GNFS (months)	31.1	34.0	14.0	12.4	11.3	13.0
Foreign exchange reserves to broad money (M2, percent)	78.2	91.4	35.3	29.2	27.0	31.9
Foreign exchange reserves (percent of GDP)	84.5	92.5	38.5	31.3	29.7	41.6
Banking sector						
Net foreign assets of banking sector (MOP bn) 2/	133	143	206	258	255	231
Banking system profits (MOP bn)	3.9	5.1	6.3	8.5	11.0	12.8
(annual percent change)	10.7	30.1	24.4	34.7	29.9	16.4
Nonperforming loans (MOP bn)						
To residents	0.8	0.8	0.6	0.4	0.7	0.9
To nonresidents	0.2	0.4	0.2	0.1	0.2	0.1
Financial Sector						
Policy rate: discount window base rate (eop)	0.5	0.5	0.5	0.5	0.5	0.8
Saving deposit rate (average)	0.0	0.0	0.0	0.0	0.0	0.0
Prime lending rate (average)	5.3	5.3	5.3	5.3	5.3	5.3
MAIBOR 3-month (eop)	0.3	0.4	0.4	0.4	0.4	0.4
Monetary bill yield (weighted average)	0.2	0.3	0.4	0.5	0.4	0.4
Residential property market						
Average transaction price: residential (MOP/sq. m.)	31,016	41,433	57,362	81,811	99,795	86,826
(Percent change)	33.5	33.6	38.4	42.6	22.0	-13.0
Tourism						
Visitor arrivals (person mn)	25.0	28.0	28.1	29.3	31.5	30.7
(Percent change)	14.8	12.2	0.3	4.4	7.5	-2.6
Gaming revenue (MOP bn)	189.6	269.1	305.2	361.9	352.7	231.8
(Percent change)	57.5	41.9	13.4	18.6	-2.5	-34.3
Memorandum items:						
Nominal GDP (USD mn)	28,124	36,708	43,032	51,552	55,348	45,415
Sources: CEIC; Haver Analytics; IMF, International Financial Statistics; national authorities; and IMF staff estimates and projections.						
1/ BPM6 methodology.						
2/ Excluding AMCM.						

Table 6. Financial Soundness Indicators
(In percent)

	2010	2011	2012	2013	2014	2015
	(In percent)					
Capital adequacy						
Regulatory capital to risk-weighted assets * 1/	14.4	14.1	14.6	14.8	14.2	15.1
Regulatory Tier I capital to risk weighted assets * 1/	12.1	11.7	11.9	11.2	9.9	11.6
Capital to assets **	4.2	4.0	4.0	3.7	3.6	4.3
Asset composition and quality						
Sectoral distribution of domestic credit to private corporations (% of gross loans)	53.1	52.0	48.8	48.1	49.2	51.1
Real estate	19.3	18.4	18.9	18.1	16.8	16.8
Construction	5.9	5.9	4.7	5.0	5.3	6.1
Manufacturing	2.4	2.4	1.6	1.4	1.3	1.3
Commercial	3.2	4.3	4.9	4.2	4.6	3.7
Public utilities	0.4	0.4	0.4	0.2	0.2	0.2
Restaurant, hotel and related services	6.2	5.0	3.7	2.6	2.8	4.1
Banking and financial businesses	0.1	0.2	0.1	0.5	0.7	0.3
Other industries	15.5	15.4	14.5	16.2	17.5	18.8
Total claims on government to gross loans	0.0	0.0	0.0	0.0	0.0	0.0
Asset quality						
Nonperforming loans (NPL) to gross loans *	0.4	0.3	0.2	0.1	0.1	0.1
NPL net of provisions to capital * 1/	0.3	0.7	0.3	-0.3	0.6	0.2
Earnings and profitability						
Return on assets *	0.8	0.9	0.9	1.0	1.0	1.0
Return on equity *	18.8	20.8	22.0	25.1	28.1	25.8
Interest margin to gross income *	56.3	63.8	70.4	78.2	77.7	68.4
Trading income to total income **	5.3	2.6	4.1	0.9	1.4	8.4
Noninterest expenses to gross income *	52.2	40.4	37.5	37.4	43.1	42.6
Personnel expenses to noninterest expenses **	43.9	50.3	53.7	48.8	51.2	49.4
Spread between reference loan and deposit rates, period average ** (basis points)	167.3	142.3	153.9	147.4	135.0	167.0
Liquidity						
Liquid assets to total assets *	45.3	44.0	37.1	37.2	35.1	34.3
Liquid assets to short-term liabilities *	69.3	66.2	61.7	63.6	59.0	59.6
Foreign currency-denominated loans to total loans **	82.0	84.8	83.5	82.8	83.7	82.4
Foreign currency-denominated liabilities to total liabilities **	82.8	81.8	81.5	83.5	84.2	83.5
Sensitivity to market risk						
Net open position in equities to Tier I capital 2/	0.4	0.6	0.2	0.2	0.9	3.8
Net open position in foreign exchange to capital *	187.8	182.3	143.9	139.8	143.1	124.1
Real estate markets						
Residential real estate loans to total gross loans **	24.1	23.2	23.5	21.7	21.6	22.0
Commercial real estate loans to total gross loans **	19.3	19.4	16.7	15.7	17.3	20.7
Sources: AMCM; and IMF staff calculations.						
* Core indicators ** Encouraged indicators						
1/ Locally incorporated banks only.						
2/ For all banks (trading book data only, excluding banking book data).						

Appendix I. Banking Sector

Sector Structure—Banking sector assets are 375 percent of GDP as of end-October 2016; the rest of the financial sector is small and is primarily composed of insurance funds (assets of 16 percent of GDP) and pension funds (4 percent of GDP). There are 29 banks in Macao SAR, of which 19 are branches of foreign banks, seven are subsidiaries of foreign banks, and three are local. The system is relatively concentrated with the three largest banks—Bank of China Macau, ICBC Macau, and Banco Tai Fung—holding 64 percent of system assets: The Herfindahl-Hirschman index (HHI) sits at 0.23 which is at the upper end of moderate concentration.

Balance Sheet—The sector can be divided into a domestic traditional banking system dominated by simple deposits and loans and a large foreign balance sheet reflecting primarily corporate treasury management, trade finance and offshore services. Excess domestic funding allows the sector to be a net foreign creditor (79 percent of GDP at end-October).

- **Domestic**—The domestic side is self-funding with a private sector deposit-loan ratio of 118 percent. Public sector deposits are large, increasing local funding by another 43 percent of GDP. Roughly half of all domestic loans are to individuals of which about 60 percent are mortgages. The other half of domestic loans are to corporates (20-25 percent go to each hotels and construction).
- **Foreign**—Foreign liabilities are largely deposits (99 percent of total), half of which are to foreign banks (primarily to related parties and short term). Foreign assets are evenly split between claims on banks and nonbanks. Banks claims are primarily by branches and to related parties.

Balance Sheet of Banking Sector

Percent of GDP	16-Oct
Total assets	375
Domestic assets	144
o/w Credit to private sector	114
Foreign assets	231
Claims on banks 1/	113
Claims on nonbanks	118
Total liabilities	375
Domestic liabilities	223
Private sector deposits	139
Public sector deposits	43
Foreign liabilities	152
Liabilities to bank: 2/	78
Short term	60
Medium to long term	18
Liabilities to nonbanks	73

Memo:	
1/ Percent to related parties 3/	72.6
2/ Percent from related parties 3/	85.2

3/ Estimated based on end-September 2016 ratios.
Sources: Haver Analytics; Macao authorities; and IMF staff estimates.

Earnings—About three-quarters of bank income comes from interest margins (as opposed to 40 percent in Hong Kong). Despite stable U.S. rates, interest differentials have risen from 135 bps in 2014 to 167 bps in 2015 largely due to rising foreign business where margins are higher. In 2013–16 period, average return on assets has been 1.0 percent in Macao SAR vs 1.1 in Hong Kong SAR.

Foreign Currency: Roughly half of resident deposits and 60 percent of domestic loans are consistently in Hong Kong dollars, reflecting inertia and transactional benefits rather than currency concerns. There has been a rise in local currency relative to RMB deposits since 2014 following the change in appreciation expectations on the Mainland.

Geographic exposure: Between end-2012 and mid-2015, the banking system increased its share of foreign assets in Mainland China from 24 percent to 38 percent of total before falling to 23 percent by mid-2016. External liabilities to the Mainland have a similar pattern, rising from 18 percent in 2012 to 26 percent by end-2014 before falling to 18 percent in recent data. In both cases, the recent fall in Mainland exposure has primarily benefitted Hong Kong SAR which now accounts for 38 percent of foreign assets and 52 percent of liabilities.

Appendix II. Labor Market

Macao SAR's labor market developments have been remarkable. Between 1999 and 2013, Macao SAR's unemployment rate steadily fell from 6.3 percent to 1.8 percent. In the three years since, the unemployment rate has continued to hover just under 2 percent despite an approximately 30 percent cumulative contraction in real output. Meanwhile, over the course of the full 16 years since returning to Chinese sovereignty, Macao SAR's median real wage growth has averaged 7 percent even as exports of goods and services have increased by 10 percent suggesting persistent external competitiveness. This labor market strength reflects a combination of policy choices and structural features unique to the Macao SAR economy.

Background: Macao SAR has a small population with relatively high labor force participation (74 percent compared to OECD average of 71 percent). The unemployment rate is low at 1.9 percent and, by construction, is entirely residents (migrants' residency status is linked to employment). In addition to the migrants living in Macao SAR, there are 61,000 migrants who live abroad (primarily in Mainland China) and commute to work daily in Macao SAR but are not included in the labor force. Thus, of the 458,000 employed in Macao SAR, 179,000 or 39 percent are migrants that either live there or commute (see table).

Key Labor Statistics 1/

Population (aged 16 and above)	548
Labor force	404
Resident	286
Migrants living in Macao SAR	118
Employed	397
Resident	279
Migrants living in Macao SAR	118
Unemployed	7
Resident	7
Migrants living in Macao SAR	0
Memo	
Total Employed in Macao SAR	458
Included in labor force	397
Migrants living abroad but working in Macao SAR	61
Total migrants working in Macao SAR	179

Sources: Haver Analytics; Macao SAR authorities; and IMF staff estimates.
1/ Data of 2015, figures are in thousands.

Labor Market Strength: The sustained structural improvement and cyclical resilience of the labor market reflect the following structural factors.

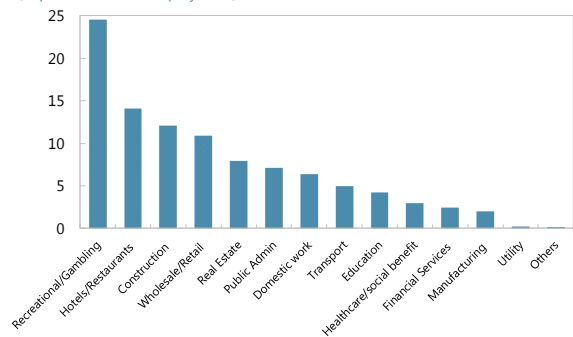
- *Nature of Labor Demand*—The key employing sectors (gaming, hotels, restaurants) are resistant to automation or outsourcing. They are also relatively moderate in skill requirements which eases ability to absorb new entrants. The gaming boom has therefore benefited low-skill workers in particular, resulting in a significant rise in labor participation and fall in unemployment.
- *Access to Migrants*—Decade of gaming boom has driven up labor demand far above the size of the local population. Thus, access to migrant labor supply both allowed Macao SAR to expand and prevented excessive upward wage pressure. During downturns, migrants absorb the shock to labor demand via emigration, keeping unemployment low.
- *Government Policies*—Regulations help provide negotiating leverage to labor that is uncommon in moderate skill sectors. For example, residents have employment priority over migrants and changes in wages must be agreed by both parties.
- *Monopoly Profits*—The gaming monopoly's outsized profits makes capital less likely to leave despite high taxation (39 percent of revenue) and strong regulatory requirements. It also provided buffer for casino owners to absorb the recent shock while leaving labor relatively unscathed.

Appendix II: Figure 1. Labor Market

Labor demand concentrates in a few tourism-related sectors, including gaming, hotel, construction, and wholesale and retail sales...

Structure of Labor Demand

(In percent of total employment)

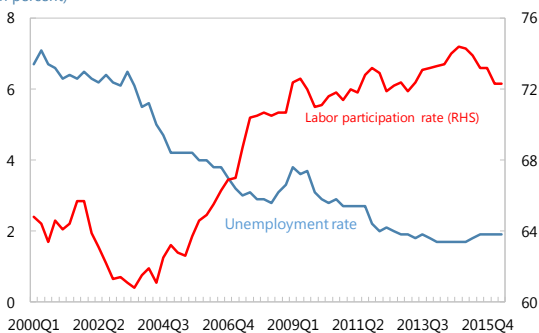


Sources: CEIC Data Company Ltd.; and IMF staff estimates.

The decade-long gaming boom has thus brought sustained improvement in the labor market, with rising labor participation and falling unemployment rate...

Rising Labor Participation and Falling Unemployment Rate

(In percent)

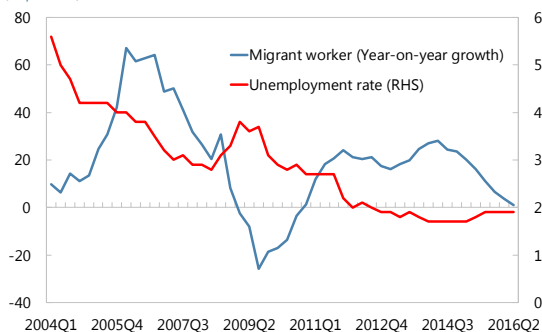


Source: Haver Analytics.

Unemployment rate only edged up slightly in economic downturns, as labor market shock mostly absorbed by migrant workers...

Unemployment Rate and Migrant Workers

(In percent)

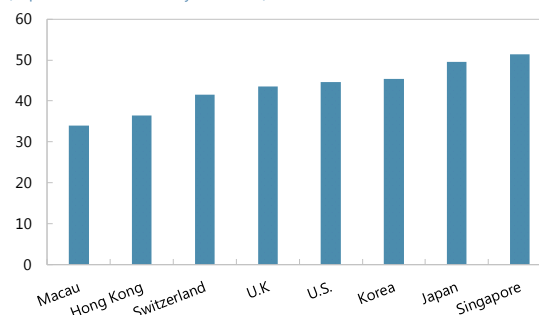


Source: CEIC Data Company Ltd..

...which generally require low to moderate skills

Workforce Education Attainment

(In percent, share of tertiary education)

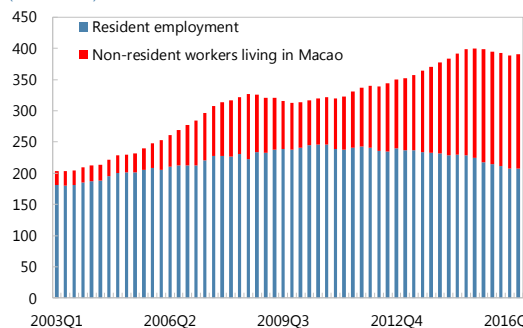


Sources: Macao authorities; and OECD.

...and increasing share of migrant workers as domestic labor supply became limited.

Employment: Resident and Non-resident Workers

(In thousand)

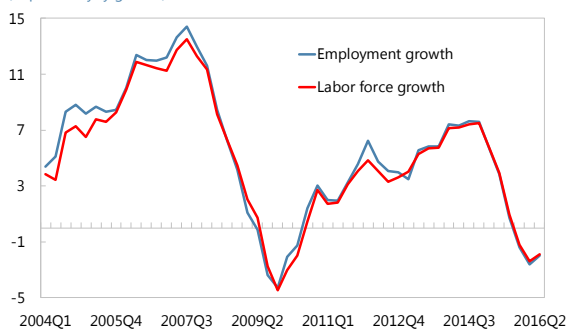


Source: CEIC Data Company Ltd..

...which led to a similar fall in both employment and labor force, leaving unemployment rate little changed.

Employment and Labor Force

(In percent, yoy growth)



Source: CEIC Data Company Ltd..

Appendix III. Tourism Sector

Macao SAR has a particularly concentrated economy. Tourism accounted for almost 90 percent of GDP at the peak and is now down to a still high 67 percent. As comparison, the average share of tourism in Caribbean economies is just 19 percent. Tourism is also large in absolute terms with Macao SAR generating the tenth largest dollar receipts in the world (fourth in Asia), a particularly impressive size given a population of just 647,000.

The large size of the tourism sector today has been driven by the sharp rise in visitors from Mainland China who now account for 66 percent of total (up from 22 percent in 1999). The strong Chinese tourism presence has been achieved despite a still controlled visa policy. Mainland Chinese can only visit by applying through the Individual Visitor Scheme (IVS)—which is only available in 49 cities accounting for 353 million people—or via group visits.

Gaming

The gaming industry consistently accounts for 73–80 percent of total tourism according to the national accounts and 94 percent of gaming operators' revenues. The sector is closely regulated with licenses granted to just six operators who run 38 casinos. There is not excessive market concentration with the three largest operators each accounting for about 20 percent of total market share.

Total gaming revenues were US\$29 billion in 2015, down from US\$45 billion at the 2013 peak. Macao SAR surpassed Las Vegas in absolute gaming revenues in 2006 and was almost seven times larger at the 2013 peak. The revenues can be broken down into those from VIP (high spending) and mass-market customers. The former accounted for 66 percent of total gaming revenues at the peak in 2013 but has since fallen to 55 in 2015 amid the broader fall in Chinese spending in the luxury sector in recent years.

Costs, which were US\$25 billion in 2015 (down from \$38 billion in 2013), can be broken down into taxes (40 percent), junket commissions (20 percent), nonlabor overhead (20 percent), and payroll (15 percent). The sector accounts for about 20 percent of total employment in Macao SAR (including migrants residing abroad), of which roughly one third are "dealers," who by law must be hired locally. The median real wage in the sector is currently 26 percent more than economy-wide level.

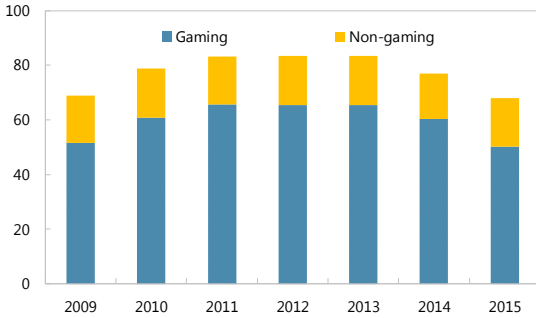
Non-gaming

Key sectors driving non-gaming tourism are hotels, restaurants, retail, entertainment, and conventions. Diversification away from gaming is a core government priority: the recently published five-year plan aims to increase the share of operators' non-gaming revenue from 6 percent to 9 percent by 2020. The recent surge in hotel capacity from 27,300 rooms in 2014 to an estimated 36,300 in 2016 is considered critical (Las Vegas has 62,000) as supply constraints previously limited the scope for hosting major events.

Appendix III: Figure 1. Tourism

Tourism: Gaming vs Non-Gaming Receipts 1/

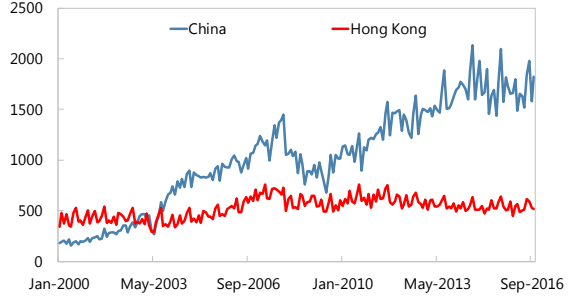
(In percent of GDP)



Sources: Haver Analytics; and IMF staff estimates.
1/ Data is based on exports of services in National Accounts.

Visitors by Origin: China vs. Hong Kong 1/

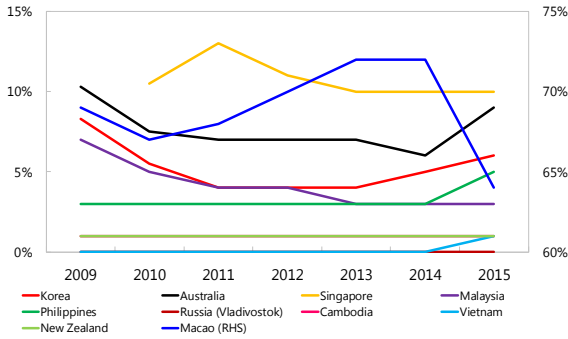
(Number of persons, in thousands)



Sources: Haver Analytics; and IMF staff estimates.
1/ Before 2008, data included students and workers from the origins in addition to the visitors.

Gaming Revenue by Market Share in Asia-Pacific Market

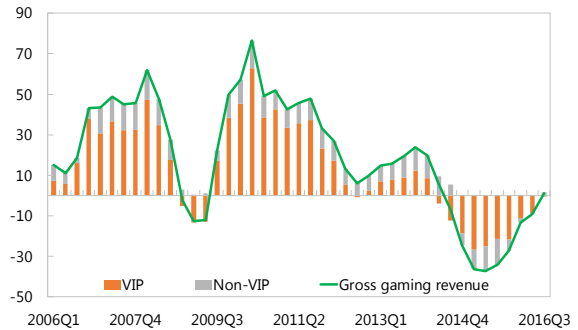
(In percent)



Source: IMF staff estimates.

Gaming Revenue: VIP vs. Others

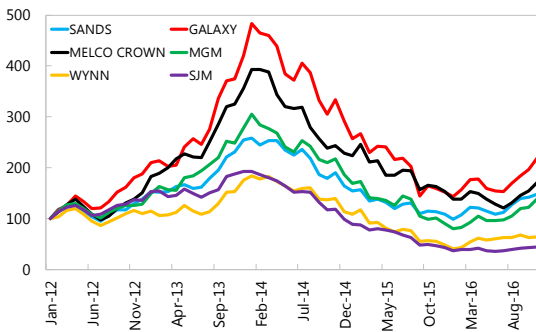
(In percent, year-on-year growth)



Sources: CEIC Data Company Ltd.; and IMF staff estimates.

Macao Casino Stocks' Performance

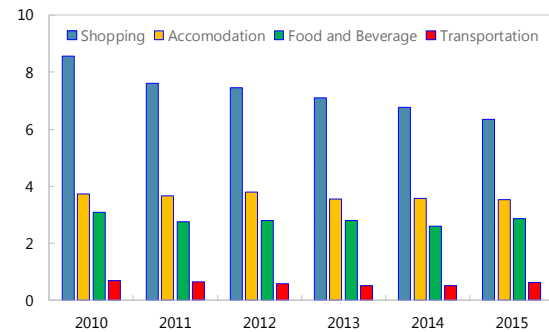
(Index, Jan.2012=100)



Sources: Bloomberg LP; and IMF staff estimates.

Visitor Spending by Type of Expense

(In percent of GDP)



Sources: DESC; and IMF staff estimates.

Appendix IV. External Sector Assessment

Staff assess Macao SAR's external position to be broadly consistent with medium-term fundamentals and desirable policies. Macroeconomic policies are largely appropriate, though there is scope for i) more domestic absorption in terms of infrastructure investment and ii) closer monitoring of the quality/liquidity of external assets and the durability of foreign liabilities.

Foreign Asset and Liability Position—Official international investment position data are not available. However, one can estimate Macao SAR's net foreign assets by calculating the cumulative sum of financial account flows. This approach suggests a large net foreign asset position of 279 percent of GDP (up from 184 percent of GDP in 2013 due primarily to the sharp contraction in output in recent years).⁴ Similar to other financial centers, Macao SAR has a very large gross external position driven by the banking sector. But the key drivers of the positive net creditor position are the public sector (fiscal and foreign exchange reserves) and nonbank corporates (gaming sector profits). 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.

Estimated International Investment Position

Percent of GDP	End-2015
Net foreign assets	279.6
Foreign assets	523.7
Banks	232.1
Foreign exchange reserves	41.6
Fiscal reserves	95.1
Other	154.9
Foreign liabilities	244
Banks	168.4
Other	75.6

Sources: Haver Analytics; and IMF staff estimates.

Current Account—In 2015, Macao SAR had a current account surplus of 25 percent of GDP, down from a peak of 41 percent in 2011 before the sharp contraction in tourism exports. Though the real effective exchange rate has appreciated recently (see below), the fall in exports appears to largely reflect external developments which significantly reduced spending by high net worth individuals from the Mainland on luxury goods and services. This shock was similar to an oil price shock, where the price of gaming rent has fallen, likely permanently. However, even after this shock, the current account surplus remains exceptionally high. For the most part, this reflects the monopoly rent on gaming and a small domestic market (limiting scope for re-investing those profits) rather than external imbalances. However, there is scope to increase investment materially given infrastructure bottlenecks that must be addressed to expand the scope of tourism. The EBA-lite current account regression estimates that the current account gap is 7 percent. However, similar to commodity exporters, the coefficient on fiscal balance in Macao should be much larger compared to an average country (typically twice as large), as both fiscal and current account balances are dominated by swings in the monopoly rent. After this coefficient adjustment, the current account is only 1 percent higher than fundamentals, hence broadly in equilibrium. The 1 percent gap reflects -1.1 percent residual, and 2.3 percent policy gap (fiscal policy 1.9 percent, reserve change 0.2 percent, and private credit 0.3 percent). The policy gap is not due to domestic policy, but driven

⁴ Such an estimate is imperfect as it excludes valuation changes but the large net creditor position is what one would expect given Macao SAR's average current account surplus of 30 percent of GDP over the 2002–15 period.

by trading partners, that is, too loose fiscal policy, excessive credit growth and FX intervention in trading partners.

Real Exchange Rate—Since end-2014, the Macao SAR pataca has appreciated by 8 percent in real effective terms reflecting dollar strength against both the euro and RMB. The fact that the Macao SAR exchange rate is pegged to the Hong Kong dollar (and in turn the U.S. dollar) even though 66 percent of tourism visitors are from Mainland China may pose competitiveness issues going forward if RMB depreciation were to continue recent trends. That said, thus far, there is no evidence of overvaluation. Macao SAR has lost some share of the Asian gaming market, falling from 77 percent in 2013 to 70 percent in 2015 primarily due to some redirection of high-spending VIP gaming tourists but this appears to reflect external factors (anti-corruption campaign, new gaming centers opening) rather than price concerns. The EBA REER index regression suggests REER to be more than 30 percent weaker than levels warranted by fundamentals and desirable policies. However, the REER model is in general not well suited for off-shore financial centers and does not reflecting the unique feature of Macao SAR as a gaming sector. Consistent with the 1 percent current account gap, staff assess REER gap to be around -2 percent, broadly in line with fundamentals.

Capital and Financial Accounts—Macao SAR's balance of payments can be characterized by two basic dynamics. First, strong tourism sector exports generate large current account surpluses which are invested abroad, driving large net capital outflows and the accumulation of foreign assets. And second, as an international financial center, banks acquire large foreign liabilities which are then re-invested abroad. This results in large two-way gross financial account flows and relatively small net outflows. The size of gross capital flows reflects in part the fact that the financial account is fully liberalized. Significant foreign assets (including contingent support from Mainland parent banks) and prudent financial regulation limit risks from potentially volatile capital flows.

FX intervention and reserves level—Because Macao SAR has a currency board arrangement, international reserves have been built up in a nondiscretionary way. The stock of reserves is about US\$19 billion (44 percent of GDP) as of 3Q:2016. In September, reserves fell below 100 percent of pataca M2 for the first time since 2000 but remain adequate for precautionary purposes. Macao SAR also holds significant fiscal reserves (US\$43 billion or 95 percent of GDP as of 2015) 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 investment (domestically and abroad) rather than supporting the exchange rate regime.

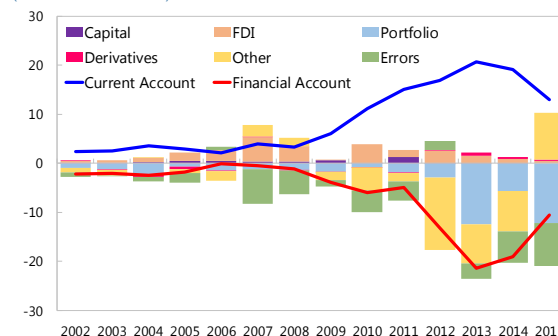
Macao SAR: Exchange Rate Assessment (Misalignment from medium-term fundamental, in percent)

	EBA-lite	Staff Assessment
Current account	7	1
REER	-14	-2

Source: IMF staff estimates.

Balance of Payments

(In billion of US dollars)



Sources: Haver Analytics; and IMF staff estimates.

Appendix V. External Sector Debt Sustainability Analysis

Macao SAR's external debt is high at almost 200 percent of GDP. Risks related to external debt are mitigated by Macao SAR's positive net asset position and the fact that much of the liabilities are obligations of bank branches to related parties. External debt as a percentage of GDP will moderate in near term as output normalizes but foreign borrowing will continue to rise in nominal terms as Macao SAR expands its role as an offshore financial center.

Background - As of end-2015, Macao SAR had an estimated US\$90 billion in external debt (199 percent of GDP). There is no public external debt. The private external obligations include US\$76 billion in bank liabilities and US\$14 billion in nonbank liabilities (see table).

- **Bank**—Commercial banks' external liabilities are dominated by nonresident deposits (99 percent of total). Approximately half of the deposit liabilities are to foreign banks, of which 85–90 percent are to "related" parties reflecting foreign banks' use of Macao SAR for corporate treasury management. Bank and nonbank creditors are primarily from Hong Kong SAR (52 percent) and Mainland China (18 percent).
- **Nonbank**—External borrowing by nonbank firms in Macao SAR is far lower but as in the case with banks, a significant portion reflects related party obligations: US\$5.8 billion of the total is categorized as direct investment (intracompany loans). A precise breakdown of the borrowers is not available but data from Dealogic suggests the obligations are primarily held by gaming operators.

	USD	% of GDP
Total	90.5	199.2
Bank	76.5	168.4
Deposit	75.8	166.9
To banks	42.2	93.0
O/w to related parties	37.7	83.1
To nonbanks	33.6	73.9
Debt securities and others	0.7	1.6
Nonbank	14.0	30.8
Direct investment	5.8	12.7
Loans	7.6	16.7
Trade credits	0.3	0.6
Other accounts payable	0.3	0.7

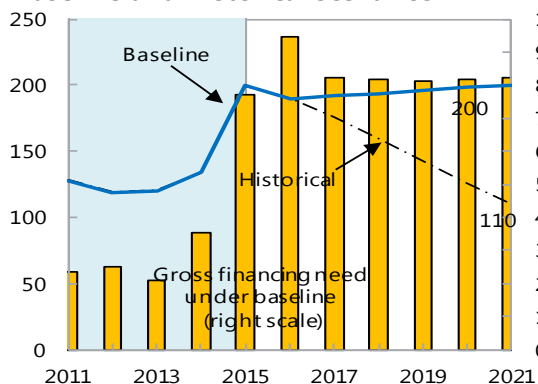
Sources: Haver Analytics; Macao SAR authorities; and IMF staff estimates.

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 have net foreign assets of 81 percent of GDP). Second, despite the sharp recent contraction, potential growth remains on the order of 4 percent. And third, the average de facto nominal interest rate according to the balance of payment is low at roughly two percent reflecting the dominance of deposit liabilities. Gross external debt is nonetheless expected to grow in nominal terms as Macao SAR seeks to expand its role as an international financial center.

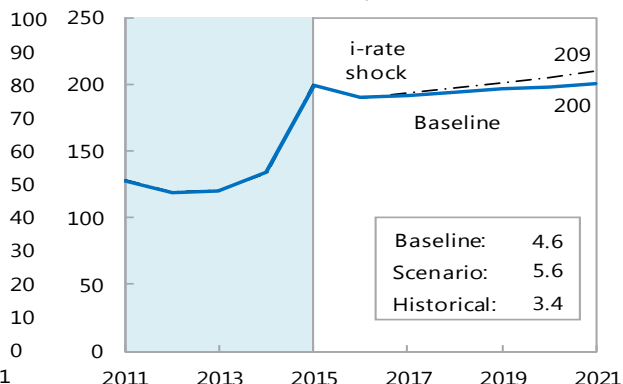
Risks—In general, headline debt levels likely overstate risks. Significant related-party lending reduces probability of a run and significant foreign assets increases ability of banks to fund withdrawals without relying on the monetary authority's foreign exchange reserves. That said, it is important to get a better sense of the maturity of nonresidents nonbank deposits in the banking system and the liquidity and quality of the assets that back them.

External Debt Sustainability: Bound Test 1/ 2/ (External debt in percent of GDP)

Baseline and historical scenarios

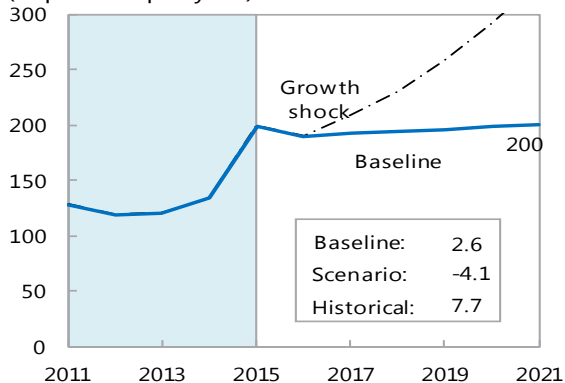


Interest rate shock (in percent)



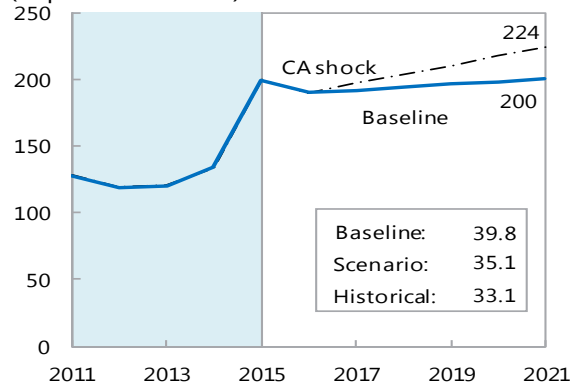
Growth shock

(in percent per year)

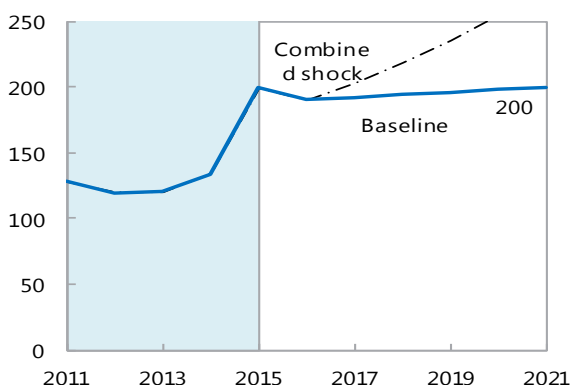


Non-interest current account shock

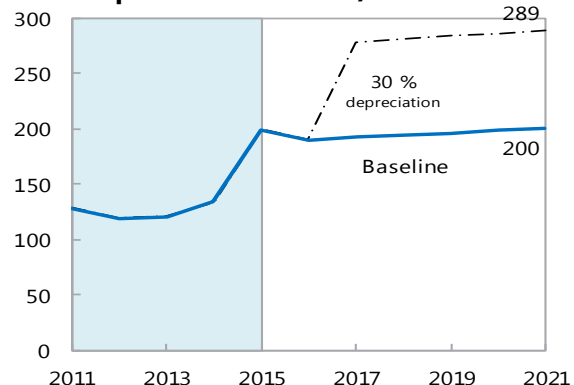
(in percent of GDP)



Combined shock 3/



Real depreciation shock 4/



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 2010.

External Debt Sustainability Framework, 2011–2021

(In percent of GDP; unless otherwise indicated)

	Actual					Projections						Debt-stabilizing non-interest current account 6/ 4.4	
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
Baseline: external debt	127.8	119.2	120.1	133.5	199.2	189.9	191.9	193.9	195.9	197.9	199.9		
Change in external debt	14.8	-8.6	0.9	13.4	65.7	-9.2	2.0	2.0	2.0	2.0	2.0		
Identified external debt-creating flows (4+8+9)	-65.2	-50.0	-53.1	-39.1	1.5	-16.2	-31.8	-30.8	-32.0	-32.9	-34.0		
Current account deficit, excluding interest payments	-42.8	-41.4	-42.2	-37.1	-32.0	-32.5	-36.2	-39.3	-41.4	-41.3	-41.0		
Deficit in balance of goods and services	-58.2	-58.0	-60.2	-53.3	-39.3	-40.3	-42.8	-43.7	-44.1	-44.1	-43.9		
Exports	90.7	91.1	90.6	84.9	77.7	77.8	78.7	79.0	78.8	78.6	78.1		
Imports	32.4	33.1	30.4	31.6	38.5	37.6	36.0	35.3	34.7	34.5	34.2		
Net non-debt creating capital inflows (negative)	2.2	8.0	6.8	3.6	0.8	3.7	3.7	3.7	3.7	3.7	3.7		
Automatic debt dynamics 1/	-24.6	-16.6	-17.8	-5.6	32.7	12.6	0.6	4.8	5.6	4.6	3.3		
Contribution from nominal interest rate	1.8	2.1	1.9	2.7	3.5	4.4	5.7	7.9	9.7	9.9	10.0		
Contribution from real GDP growth	-18.8	-10.1	-11.1	1.3	35.0	8.2	-5.1	-3.1	-4.1	-5.2	-6.7		
Contribution from price and exchange rate changes 2/	-7.7	-8.7	-8.6	-9.6	-5.8	-2.1	-1.6	-1.9	-2.2	-2.4	-2.7		
Residual, incl. change in gross foreign assets (2-3) 3/	80.0	41.4	54.0	52.5	64.1	6.9	33.8	32.8	34.0	34.9	36.0		
External debt-to-exports ratio (in percent)	141.0	130.8	132.5	157.2	256.2	244.0	243.8	245.5	248.6	251.7	255.9		
Gross external financing need (in billions of US dollars) 4/	8.6	10.7	10.7	19.6	35.0	41.6	37.6	38.4	39.4	41.2	43.5		
in percent of GDP	23.5	25.0	20.8	35.4	77.0	94.4	82.3	81.9	81.2	81.6	82.1		
						10-Year	10-Year						
Scenario with key variables at their historical averages 5/						189.9	176.0	159.4	142.7	126.0	109.6	-4.7	
Key macroeconomic assumptions underlying baseline						Historical Average	Standard Deviation						
Real GDP growth (in percent)	21.7	9.2	11.2	-1.2	-21.5	7.7	13.3	-4.0	2.8	1.7	2.2	2.8	3.5
GDP deflator in US dollars (change in percent)	7.3	7.3	7.7	8.7	4.6	6.8	2.6	1.1	0.9	1.0	1.1	1.3	1.4
Nominal external interest rate (in percent)	2.1	2.0	1.9	2.4	2.2	3.4	1.9	2.2	3.1	4.2	5.2	5.2	5.3
Growth of exports (US dollar terms, in percent)	34.8	17.8	19.2	0.6	-24.9	14.8	19.6	-2.8	4.9	3.0	3.1	3.8	4.3
Growth of imports (US dollar terms, in percent)	29.7	19.4	10.2	11.7	-0.2	11.8	15.7	-5.2	-0.8	0.7	1.8	3.5	4.0
Current account balance, excluding interest payments	42.8	41.4	42.2	37.1	32.0	33.1	9.4	32.5	36.2	39.3	41.4	41.3	41.0
Net non-debt creating capital inflows	-2.2	-8.0	-6.8	-3.6	-0.8	-6.4	3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7

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).

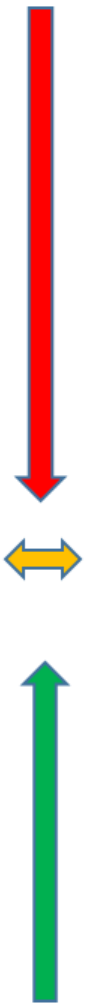
3/ For projection, line includes the impact of price and exchange rate changes.

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.

6/ Long-run, constant balance that stabilizes the debt ratio assuming that key variables (real GDP growth, nominal interest rate, dollar deflator growth, and non-debt inflows in percent of GDP) remain at their levels of the last projection year.

Appendix VI. Risk Assessment Matrix

	Nature of Threat	Likelihood	Impact	Recommended Policy Response
	Further policy changes in Mainland China (anti-corruption measures, capital outflow restrictions) that directly affect tourism.	Low	High. Could sharply reduce tourism spending from the mainland which accounts for over two-thirds of total.	Continue progress on issues related to financial integrity of gaming sector and accelerate efforts to diversify the tourism offerings and the overall economy.
	Faster than expected withdrawal of loose monetary policy in the U.S. which corresponding strengthening of the U.S. dollar against other currencies.	Medium	Medium. Given the indirect peg to the U.S. dollar, this would result in an increase in the cost of credit and, likely, a real effective appreciation. The financial sector is well-capitalized helping limit the risks but such a development would weigh on the recovery.	Focus on ensuring the flexibility of prices in the tourism sector to help maintain competitiveness during episodes of nominal appreciation.
	Sharp slowdown and outsized RMB depreciation in China, leads to real appreciation of pataca and undermining competitiveness.	Low	High. Visitor arrivals from Mainland China would fall, reducing Macao's exports, fiscal revenue and overall growth.	As above, focus on the flexibility of prices and diversification of economy. In addition, fiscal reserves can be used to smooth the fall in private demand.
	Increased intra-Asian supply of gaming opportunities, providing competition for Macao.	High	Low. Gaming revenue and tourist arrivals would drop and impact Macao's overall growth.	Maintain status as a world-class gaming destination while continuing recent progress in establishing non-gaming options of similar caliber.
	Chinese demand/rebalancing going better/worse.	Medium	High. Successful rebalancing reform would support Macao's gaming and tourism revenues as household incomes in the Mainland China continue to grow, but Macao would be heavily impacted in terms of growth if the rebalancing is going worse.	Take advantage of the Mainland China' transition by undertaking reforms and public investment to enhance human capital, upgrade infrastructure, and make resources and financing available to new sectors.
	Faster diversification of economic model.	Medium	High. Faster diversification would support Macao's efforts to build the tourism and leisure center, and maintain a sustainable growth in the medium term.	Improve public investment on infrastructure, education, and health as well as support for SMEs.
	Additional land reclamation to reduce land supply constraint, increasing scope for additional social housing and other non-gaming development.	Low	Medium. Additional land would support the diversification of tourism offerings and mediate the tension in housing affordability, leading to investment growth and tourism revenue.	Ensure a comprehensive plan on land distribution for tourism and social housing supply to make full use of additional land.
Relaxation of the anti-corruption campaign and visa policy.	Low	High. VIP gaming revenue would increase as more high-rollers back to Macao casinos and larger Chinese population would be eligible to visit Macao, which would boost overall gaming revenue.	Monitor the policy update in mainland China and improve the AML/CFT measures in the gaming sector.	

1/ Downside risks are represented by the red arrow, upside risks by the green arrow, and neutral risks by the yellow arrow.