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This bulletin is compiled by the Research Division (RD) of the Maldives Monetary Authority (MMA). It covers developments in the domestic and international economy during the fourth quarter of 2019. The analyses are based on information provided by relevant government authorities, commercial banks operating in the country, public enterprises and other private sector sources, as at 11 February 2020. Where actual data is not readily available, estimates have been made by RD based on available information. The timely receipt of data is therefore crucial to the compilation of this publication and the analyses contained herein.

The cover page features an image taken from the MVR 500 note. The image depicts a wood worker carving an intricate design, illustrating the theme 'Our Ancestral Craftsmanship'.

Contents

Recent Economic Developments

Articles

Statistical Appendix

Abbreviations

BPT	business profit tax
CPI	consumer price index
GDP	gross domestic product
G-GST	general goods and services tax
GIR	gross international reserves
GST	goods and services tax
IMF	International Monetary Fund
MMA	Maldives Monetary Authority
NDA	net domestic assets
NFA	net foreign assets
NPL	non-performing loan
PMI	purchasing managers' index
PSIP	Public Sector Investment Programme
T-GST	tourism goods and services tax
UK	United Kingdom
US	United States
WEO	World Economic Outlook

RECENT ECONOMIC DEVELOPMENTS

Overview

Based on latest incoming economic data, activity in the key sectors of the economy remained strong during Q4-2019, partially reflecting the commencement of the peak season of the tourism sector. Both tourist arrivals and bednights witnessed buoyant growth during the quarter. Meanwhile, the construction sector performance also improved during the period, with both the import expenditure on construction-related items and commercial bank credit to construction activities depicting marked growth. As for wholesale and retail trade, high frequency data for the sector point to muted activity, while fish exports remained subdued during the review quarter.

The rate of inflation picked up to 0.86% in Q4-2019, after recording -0.04% during Q3-2019. This was mainly due to the increase in housing rent, prices of food items; particularly vegetables and also fruits to some extent, restaurants and cafés, motorcycles as well as outpatient care services. In contrast, inflation was weighed down by the decline in cost of domestic passenger air transport, audio and video recording equipment, and fish prices. Additionally, fall in prices of clothing and footwear; and furniture and household equipment also exerted downward pressure on inflation during the quarter.

Looking at the fiscal side, total government revenue (excluding grants) recorded an increase during Q4-2019, primarily owing to the increase in tax revenue, while non-tax revenue also observed a growth during the quarter. The rise in tax revenue stemmed mainly from growth in import duties, followed by receipts from both withholding tax and airport service charge. As for total expenditure (excluding debt amortisation), growth was driven by sizable increases in both capital and current expenditure. Capital expenditure rose, stemming from growth in spending on Public Sector Investment Programme projects. Meanwhile, the increase in current expenditure was due to significant expenses incurred as grants, contributions and subsidies; operational consumables and administrative services.

With regard to monetary developments, broad money growth accelerated to 10% at the end of December 2019, after recording 7% at the end of September 2019. On the components side, growth in broad money was contributed mainly by the increase in transferable deposits and other deposits of the banking system. The growth in demand deposits during the quarter reflected the increase in such deposits denominated in both foreign and local currency. On the sources side, the growth in broad money was driven by the surge in net foreign assets of the banking system, while net domestic assets remained largely unchanged during the period.

On the external sector front, total merchandise exports observed a decrease during Q4-2019. This was entirely owing to the decline in domestic exports, which offset the growth in re-exports during the quarter. In contrast, total merchandise imports recorded an increase during the quarter, mainly contributed by the growth in the imports of construction-related items (particularly wood, metal, cement and aggregates), as well as transport equipment and parts. The growth in merchandise imports was offset to a significant extent by the decline in import expenditure on furniture, fixtures and fittings.

International Economic Developments

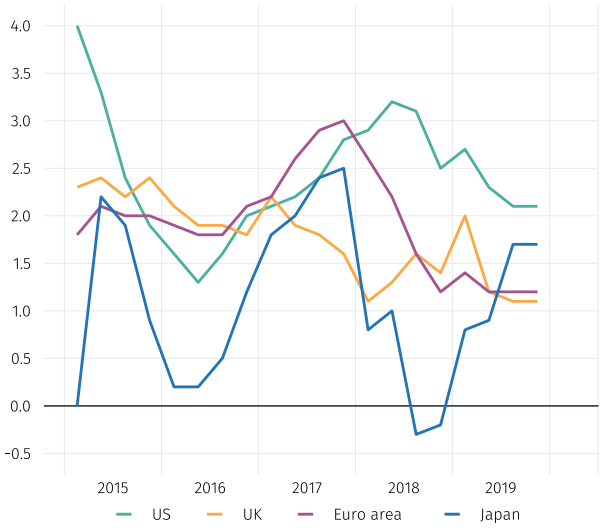
Global Output

Global economic growth was moderate in the final quarter of 2019, as major advanced economies; and emerging markets and developing economies remained in a downward trajectory, owing to global trade tensions as well as country-specific factors. However, some of these economies showed improvements during Q4-2019, owing to easing business sentiments amid diminishing bilateral trade and geopolitical tensions. Hence, growth[1] is estimated at 2.9% for 2019—0.1 percentage point lower than the estimates made in October 2019, due to the prevalent downside risks in the global economy.

Looking at the advanced economies, the US economy witnessed a moderate acceleration in growth, from 2.1% in Q3-2019 to 2.3% in Q4-2019, signalling steady but slower growth towards the end of 2019. This reflected positive contributions from personal consumption expenditure, and federal as well as state and local government spending. Additionally, positive contribution from falling imports amid ongoing bilateral trade tensions were curtailed by negative contribution from non-residential fixed investment during the quarter (Figure 1).

Based on preliminary Eurostat flash estimates for euro area, the region recorded a growth rate of 1.0% in Q4-2019, down from 1.2% in the preceding two quarters. This moderation in growth primarily reflected subdued manufacturing and investment, owing to elevated uncertainty in the external environment. Nevertheless, growth was underpinned by robust private consumption, as labour market improvements continued to drive expansion, alongside favourable financing conditions in the region. Looking at the main economies in the region, economic growth in Germany remained unchanged due to overall weak economic developments, despite the strong consumption expenditure, while economic growth in France decelerated over the period as a result of falling household consumption, investment and muted trade. Meanwhile, economic activity in

Figure 1: Real GDP Growth in the Advanced Economies, 2015 - 2019
(annual percentage change)



Source: OECD Database

[1] International Monetary Fund, 'World Economic Outlook (WEO) January Update 2020'.

Italy remained unchanged on the back of political instability. However, economic growth in Spain outperformed the other economies in the region, driven by robust exports.

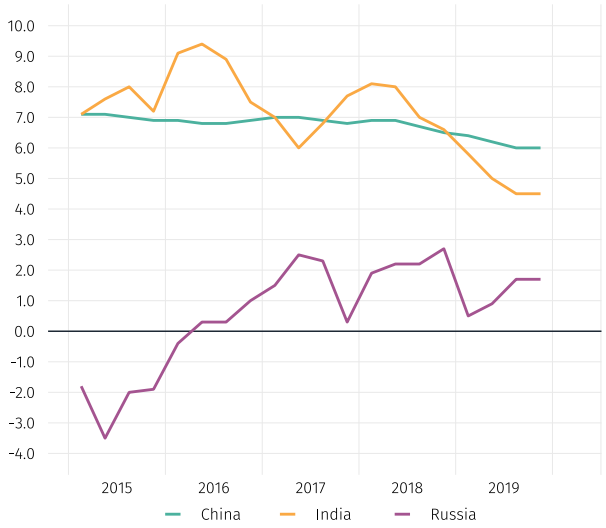
Meanwhile, growth in the United Kingdom (UK) economy dropped to 1.1% in Q4-2019 from 1.2% in Q3-2019. This was mainly on account of the negative contribution from the fall in production industries. Further, the drop in output mirrored the widespread slowdown in services industries—which accounts for nearly 80% of Gross Domestic Product (GDP)—owing to loss of business confidence, on the back of the Brexit-related domestic political uncertainty.

In Japan, activity pointed towards a contraction by the end of Q4-2019, affected by weakened exports, production and business environment, reflecting the muted global economic situation and natural disasters. Growth continued to be underpinned primarily by domestic demand, depicted by the moderate increase in private consumption as the effect of the October tax hike began to fade slowly. In addition, fixed investment by businesses and improved labour market situation contributed positively to the economy during the period.

Looking at the emerging markets and developing economies, economic growth in China remained unchanged at 6.0% in the last quarter of 2019, supported by the partial trade deal negotiation with the US towards the end of 2019. Growth in the economy was aided by increased industrial production and retail sales. Meanwhile, value-added of the primary industry reached a record level, while improved market sentiments provided momentum to the services sector during the period (Figure 2).

Based on the available economic indicators, the Russian economy improved in Q4-2019 fuelled by

Figure 2: Real GDP growth in the Emerging Economies, 2015 - 2019
(annual percentage change)



Source: OECD Database

buoyancy in final consumption. Further, retail trade and industrial production continued to grow owing to robust domestic demand. However, a noticeable slowdown was observed in Russian exports due to subdued external demand and weakened business sentiments amid the global economic slowdown.

Incoming data for India posted a moderate recovery after registering a growth rate of 4.5% in Q3-2019, amid broad-based uncertainties across the global economy. As such, industrial production moved to expansionary territory towards the end of 2019, with services sector signalling upward direction due to improved business sentiments. However, weakened domestic conditions resulted in a deteriorating manufacturing sector and declining exports during the period.

Global Inflation

Global inflation remained fairly muted in Q4-2019, underpinned by falling energy prices and subdued global demand. Against this backdrop, headline inflation eased across both advanced;

and emerging markets and developing economies. Meanwhile, core inflation was contained in most of the advanced economies; although core inflation declined in some of the emerging markets and developing economies due to the pass-through effects from currency appreciations.

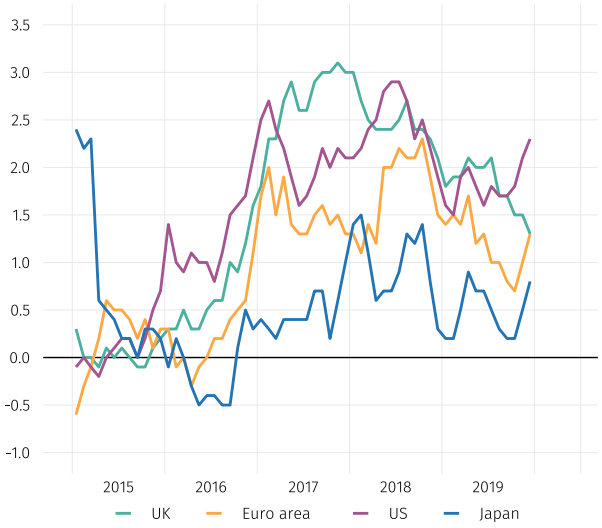
Looking at price developments in the advanced economies, inflation in the US accelerated moderately and stood at 2.0% during Q4-2019. The acceleration in inflation mostly stemmed from higher services and housing prices; followed by an increase in price of medical care-related goods. Meanwhile, the decline in price of energy-related commodities and services; and apparels partly contained the upward inflationary pressure on prices during the period (Figure 3).

In the euro area, the rate of inflation, as measured by the annual change in the Harmonised Index of Consumer Prices (HICP), remained unchanged at 1.0% during Q4-2019. Inflation in the region was mainly contributed by cost of services, as well as food, alcohol and tobacco prices. Meanwhile, downward pressure from falling energy prices kept inflation muted during the quarter.

The annual rate of inflation in the UK stood at 1.4% in Q4-2019, down from 1.8% in the previous quarter, reflecting an overall fall in prices of all goods category. As such, major downward inflationary pressure stemmed from price of electricity, gas and other fuel-related items. In addition, price of tobacco and wine, along with decline in accommodation rates also contributed to this slowdown, which was partially offset by the upward contribution from clothing accessories and footwear prices.

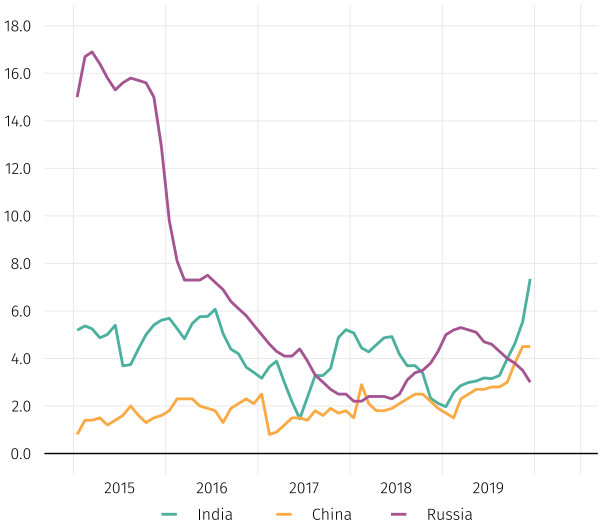
In Japan, the inflation rate accelerated to 0.5% in Q4-2019, up from 0.3% in Q3-2019. The rise in inflation reflected the increase in prices of food, housing;

Figure 3: Inflation Rate in the Advanced Economies, 2015 - 2019
(percent)



Source: Thomson Reuters Database

Figure 4: Inflation Rate in the Emerging Economies, 2015 - 2019
(percent)



Source: Thomson Reuters Database

and culture and recreation. However, school fees and communication-related prices fell during the quarter. In addition, the decline in price of energy-related items; and vegetables and seaweeds further weighed down the price level in the economy.

Turning to the emerging markets and developing economies, the rate of inflation in China hiked to 4.3% in the review quarter from 2.9% in Q3-2019, reflecting rising meat prices due to high domestic demand. Amid the African swine flu and cyclical factors, price of pork soared during Q4-2019, leading to an increase in price of pork substitutes such as beef and mutton. Other upward contributions stemmed from health care, education; and culture and recreation-related items. Meanwhile, cost of transportation and communication fell owing to muted global oil prices during the period (Figure 4).

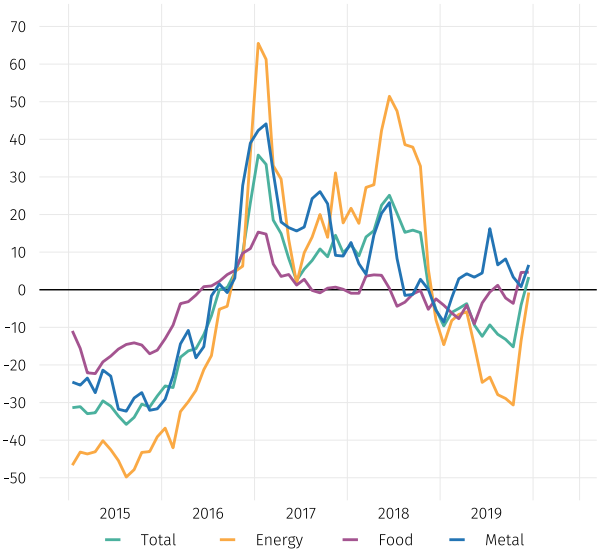
In India, the rate of inflation soared to over 8.0% during Q4-2019 when compared with the previous quarter, driven by the surge in prices of food, health; and personal care and effects. As such, price of retail food items—which accounts for nearly half of India's Consumer Price Index (CPI) basket—increased considerably owing to significant upward contribution from vegetables. Additionally, the rise in telecom tariffs further added to the hike in prices in the economy. Meanwhile, price of fuel-related items was the only downward contributor during the period.

Meanwhile, the rate of inflation in Russia declined to 3.4% during the quarter, down from 4.3% during Q3-2019; below the Bank of Russia's target rate of 4.0%. The decline in inflation was mainly driven by higher supply weighing down on food prices and appreciation of ruble since the beginning of 2019. In addition, subdued consumer demand and fading of temporary base effect on the prices of individual products due to the introduction of Value Added Tax (VAT), exerted downward pressure on prices during Q4-2019.

Commodity Prices

According to the World Bank Commodity Price Index, the developments in global commodity prices were mixed during Q4-2019. The energy prices declined sharply in annual terms while the non-energy prices recorded an increase. In quarterly terms, both energy and non-energy prices rose moderately in Q4-2019. During the period, non-energy prices were supported by higher food and beverage prices, while price of metals witnessed a slight decline (Figure 5).

Figure 5: Commodity Prices, 2015 - 2019
(annual percentage change)



Source: World Bank

Price of crude oil recorded an average of US$60.3 per barrel[2] during Q4-2019, representing an annual decline of 6%. However, oil prices grew moderately in quarterly terms aided by both supply and demand-side factors. In Q4-2019, prices weakened

[2] Quarterly average of Brent, West Texas Intermediate and Dubai Fateh.

during the earlier part of the quarter, mostly due to supply concerns arising from high freight rates in October, coupled with the downside risks in the global economy. Meanwhile, prices gained during the remainder of the quarter owing to easing US-China trade tensions, improving financial market sentiments; and expectations of a better oil market arising from the market stabilization efforts by the extension of the Declaration of Cooperation.[3] On the demand-side, seasonal factors supported crude oil prices arising from higher refinery runs to meet global demand for winter oil products as well as the robust seasonal crude demand, mainly from Asia.

Turning to major commodities in the non-energy index, metal prices fell slightly by 1% in annual terms during Q4-2019, partially reflecting mixed movements within the metal components. The prices were influenced by receding US-China trade-related dispute and rebounding of global manufacturing activity, especially in China. With regard to global food prices, the World Bank food price index showed an annual growth of 4%, reflecting the overall rise in prices of major food items during the quarter. Similarly, the prices of beverages rose at the same rate as food prices, owing to higher cocoa and Arabica coffee prices.

Global Trade

Export indices for most of the advanced economies as well as emerging markets and developing economies showed mixed developments in both annual and quarterly terms. When compared with Q3-2019, the US experienced the only significant reduction among advanced economies, primarily due to its worsening relations with its trading partners. From the emerging markets and developing economies, Russia experienced an improvement in its exports, followed by China and India. Despite falling since the beginning of 2019, merchandise imports in both advanced economies; and emerging markets and developing economies signalled a recovery during the latter half of 2019.

Turning to the Purchasing Manager's Index (PMI), most of the advanced economies; and emerging markets and developing economies signalled slowdown in Q4-2019 when compared with Q4-2018; while most of the emerging markets and developing economies remained in the expansionary trajectory during the period when compared with Q3-2019. Consequently, in the advanced economies, PMI fell significantly in annual terms for Japan, followed by US, UK and Euro area. Looking at the emerging markets and developing economies, Russia and India registered an annual decrease, while PMI for China signalled a slight expansion during Q4-2019. Despite showing signs of weakening, the service sector remained promising in 2019 backed up by resilient consumer spending.

Global Financial Markets

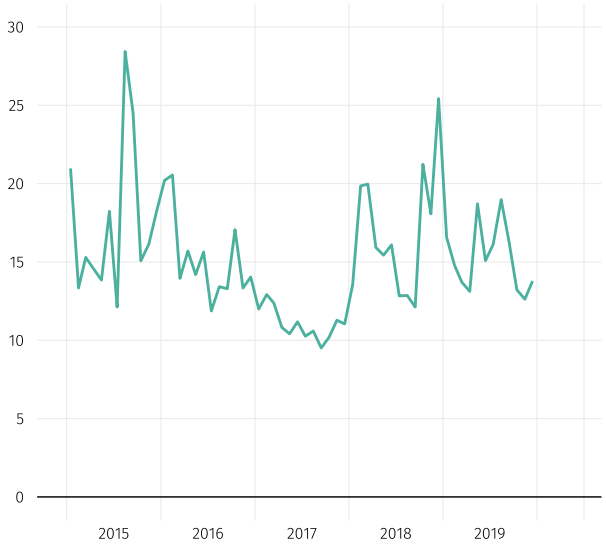
The financial market conditions remained broadly accommodative in the advanced economies; and emerging markets and developing economies, with most of the central banks opting to keep policy rates unchanged during the last quarter of 2019. However, in Q4-2019, the US Federal Reserve and the Bank of Russia cut down their policy rates to offset headwinds arising from the slowdown in global growth and inflation. Meanwhile, a considerable rise in share prices was observed during the review quarter coupled with a further decline in the implied volatility of the US stock market (measured by VIX). Similarly, the yield on

[3] A collaboration between Oil Producing and Exporting Countries (OPEC); and non-OPEC countries to voluntarily adjust production, beginning from 2017.

UK and US sovereign bonds increased, while the negative yield on Euro and Japanese sovereign bonds declined in Q4-2019 when compared with Q3-2019. However, in the emerging and developing economies, the yield on Russian sovereign bonds fell, while Chinese and Indian sovereign bonds witnessed a slight increase when compared with Q3-2019 (Figure 6).

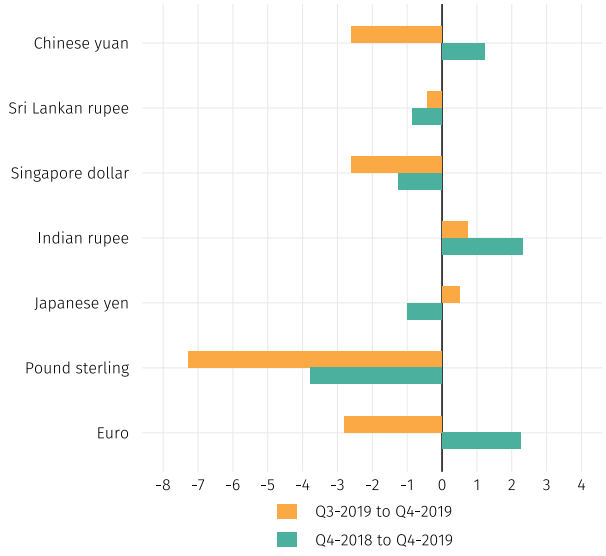
In the foreign exchange market, the overall performance of the US dollar against the currencies of Maldives' major trading partners was mixed in Q4-2019 in both annual and quarterly terms (Figure 7). The US dollar appreciated against euro, Sri Lankan rupee, Chinese yuan and Indian rupee; while it depreciated against Japanese yen, pound sterling and Singapore dollar in Q4-2019 when compared with Q4-2018. In quarterly terms, US dollar weakened against pound sterling, Singapore dollar, euro and Chinese yuan in Q4-2019; while, it appreciated against Indian rupee, Sri Lankan rupee and Japanese yen during the period.

Figure 6: Volatility Index, 2015 - 2019
(percent)



Source: Thomson Reuters Database

Figure 7: Exchange Rates, Q4-2019
(percentage change)



Source: Thomson Reuters Database

Economic Developments in the Maldives

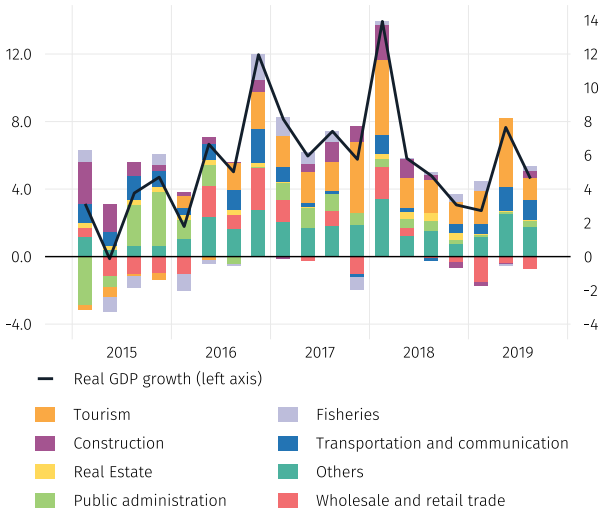
Real Economy

Gross Domestic Product

According to latest Quarterly National Accounts[4] estimates released by the National Bureau of Statistics, the annual real GDP moderated to 4.6% in Q3-2019 from 7.7% in Q2-2019 and 4.8% in Q3-2018 (Figure 8). However, given that the real GDP data for Q3-2019 used in this analysis is based on advance estimates, this data is subject to change in upcoming revisions.

In Q3-2019, real GDP growth was mainly contributed by the tourism sector (1.3%), followed by transportation and communication (1.1%) and education (0.5%). Tourism sector recorded a strong growth in Q3-2019 as well, registering 5.4%. Moreover, transportation and communication; and education continued the robust growth momentum with annual growth rates of 9.2% and 16.3%, respectively. Additionally, construction sector grew by 5.7% following contractions in the previous three quarters, while wholesale and retail trade continued its contraction with an annual decline of 8.3%.

Figure 8: Contribution to Real GDP Growth by Economic Sectors, 2015 - 2019
(annual percentage change, percentage point contribution)



Source: National Bureau of Statistics

Tourism

Reflecting the commencement of the peak season, the tourism sector depicted solid growth during Q4-2019, as indicated by the notable growth posted by the key indicators of sector performance. As such, tourist arrivals observed a 12% growth in annual terms, and totalled 451,197 tourists (Figure 9). Bednights also grew by 12%, while the average duration of stay remained constant at 6.3 days in Q4-2019 when compared with Q4-2018 (Figure 10). Reflecting these developments, the estimated tourism receipts grew by 7% compared with the corresponding quarter of 2018, totalling US$876.3 million in Q4-2019.

Strong domestic demand from the main source markets, coupled with increased air connectivity continued to bolster tourist arrival growth in the Maldives, which reflects the increased

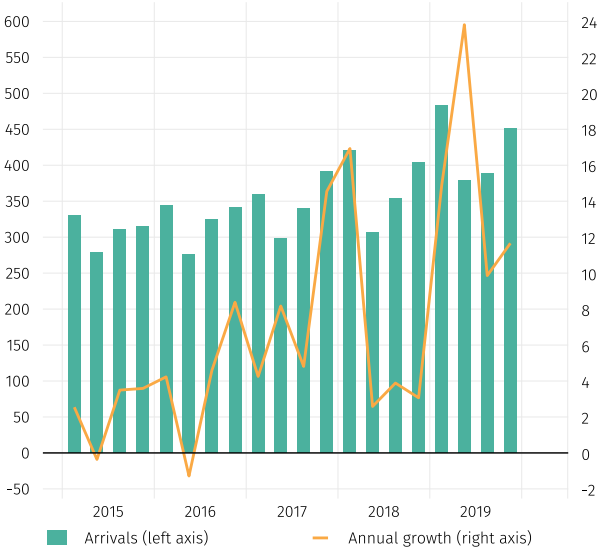
[4] Quarterly National Accounts data was available up until Q3-2019 at the time of this publication. Advance estimates data are released with a four month lag.

flight movements to the country, as well as commencement of two new airlines—Gulf Air and Air Italy in October 2019. Following double-digit annual growth in the international flight movements to the Maldives in the previous three quarters of 2019, there was a moderate growth of 7.2% during Q4-2019 when compared with Q4-2018, which is an increase of over 200 flights.

The growth in tourist arrivals was predominantly driven by increased arrivals from Europe; and the Asia and the Pacific region, which accounted for 53% and 38% of the total tourist arrivals, respectively (Figure 11). Tourist arrivals from Europe recorded an annual increase 14%, bolstered by the growth in arrivals from Italy (24%), Russia (26%) and United Kingdom (13%) as well as from emerging markets, such as Poland, France and Spain. However, the biggest market from Europe, Germany, only recorded an annual growth of 1%. Meanwhile, tourist arrivals from the Asia and the Pacific region registered an annual growth of 7%, almost entirely driven by the remarkable increase in arrivals from India, which registered a 48% annual growth rate during the quarter. However, arrivals from China—the single largest market accounting for 12% of the total tourist arrivals for the quarter—observed a 12% decline. It is noteworthy that tourist arrivals from other emerging markets, such as the US, also contributed to the growth in tourist arrivals during Q4-2019.

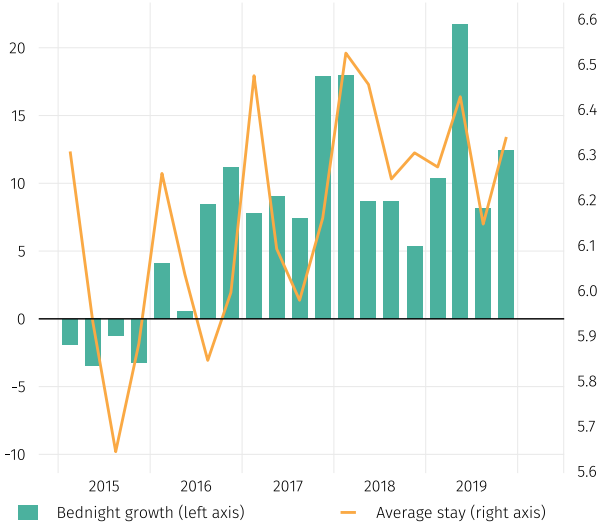
On the supply side, the total number of resorts in operation increased to 152 during Q4-2019, up from 136 resorts recorded during Q4-2018. Concurrently, guesthouses in operation rose by 89 year-on-year, totalling 607 by the end of Q4-2019. In line with these developments, the average operational bed capacity of the tourism industry in Q4-2019 expanded by 6,600 beds, to 49,677 beds, which represented a 15% increase in annual terms. Looking at share of

Figure 9: Inbound Tourist Arrivals, 2015 - 2019
(thousands, annual percentage change)



Source: Ministry of Tourism

Figure 10: Bednight Growth and Average Stay, 2015 - 2019
(annual percentage change, days)



Source: Ministry of Tourism

total operational bed capacity, resorts dominated at 72%, while guesthouses accounted for 19%. As the increase in operational bed capacity outpaced the increase in bednights within the industry, the average occupancy rate fell to 62% in Q4-2019 from 64% during the corresponding quarter in 2018. Meanwhile, the average occupancy rate of resorts declined to 74% in Q4-2019 from 77% in Q4-2018.

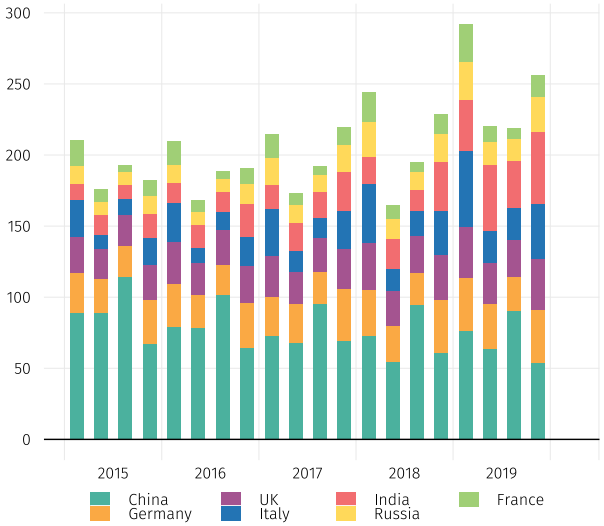
Construction

The performance of the construction sector improved during Q4-2019, as indicated by the available short-term indicators for the sector, such as import expenditure on construction-related items and commercial bank credit to construction sector.[5]

Construction-related imports, which includes wood, metal, cement and aggregates as well as other construction-related items, rose by 14% during Q4-2019 when compared with the corresponding quarter of 2018. It is worth noting that the increase in such imports has come after a continued declining trend since Q4-2018.

Although a substantial portion of the financing for public infrastructure projects, resort development and social housing development is sourced externally, commercial bank credit to the construction sector remains an important indicator to gauge the performance of the sector. As such, bank credit to construction activities saw a 6% annual growth during Q4-2019, predominantly owing to the rise in loans for the construction of residential housing and new resort development. It was observed that bank credit for renovation of resorts declined significantly in Q4-2019, when compared with Q4-2018.

Figure 11: Arrivals from Major Inbound Markets, 2015 - 2019
(thousands)



Source: Ministry of Tourism

Fisheries

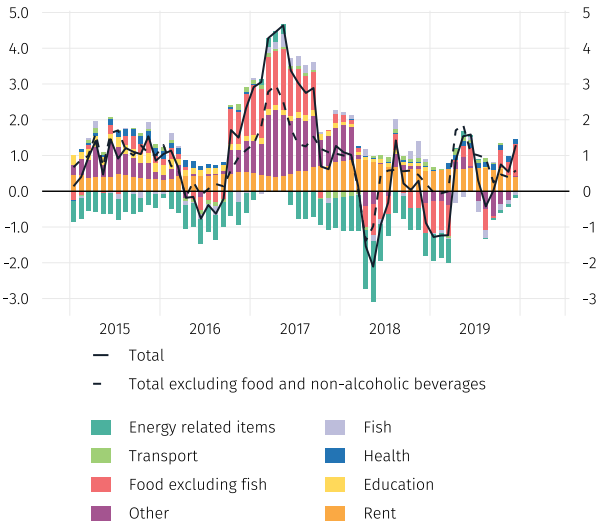
Activity in the fisheries sector contracted during Q4-2019, as indicated by the decline in both fish purchases by fish processing companies, as well as the volume of fish exports. Following positive growth rates throughout the year, fish purchases by fish processing companies declined by 15% in annual terms, and totalled 21,233.3 metric tons during Q4-2019. The substantial decline was largely driven by a fall in purchases of skipjack tuna, which was partially offset by the increase in purchases of yellowfin tuna. Conversely, following positive growth rates in Q3-2019, the fourth quarter of the year observed a 44% decline in the volume of fish exports, which totalled 13,321.7 metric tons. The substantial decline was largely driven by a significant decrease in the export volume of frozen skipjack tuna, followed by canned or pouched tuna exports. This was offset to an extent by an increase in the volume of frozen yellowfin tuna exports during the quarter.

[5] Construction-related loans include loans to the construction sector, real estate sector and tourism sector (for new resort development, resort renovation and construction of guesthouses). Hence, this figure will differ from the loans to the construction sector reported under Monetary Developments (Credit to Private Sector).

Wholesale and Retail Trade

Activity in the wholesale and retail trade depicted muted growth during Q4-2019, as evidenced by the main indicators for the sector—private sector imports (excluding tourism) and bank credit to the sector. In this regard, private sector imports (excluding tourism) posted a 23% growth when compared with the corresponding quarter of 2018. Accordingly, such imports rose to US$474.7 million in Q4-2019 when compared with the US$385.2 million recorded during Q4-2018. Meanwhile, commercial bank credit to the sector showed a marginal annual increase for the second consecutive quarter, after declining consecutively for five quarters.

Figure 12: Contribution of Sub-Categories to CPI Inflation (National), 2015 - 2019
(annual percentage change, percentage point contribution)



Source: National Bureau of Statistics

Inflation

The rate of inflation (as measured by the annual percentage change in the Consumer Price Index [CPI] at the national level) picked up to 0.86% in Q4-2019, after recording -0.04% in Q3-2019. When compared with Q3-2019, the rate of inflation increased to 0.41% during the review quarter. The acceleration in CPI inflation during the quarter was mainly owing to increase in housing rent, prices of food items; particularly vegetables and fruits to some extent; restaurants and cafés, motorcycles as well as outpatient care services. On the contrary, this was offset to an extent by downward pressure from decline in cost of domestic passenger air transport, audio and video recording equipment, fish, clothing and footwear as well as furniture and household equipment (Figure 12).

Delving into the major categories of the CPI, rentals paid by tenants, exerted the most amount of upward pressure on inflation, recording an annual increase of 3.7% during the quarter. This was followed by growth in prices of food items, which primarily reflected the growth in vegetable prices, which rose by 39.9%, mainly owing to the growth in other fresh or chilled vegetables category. The 106.7% growth in the other vegetables (fresh or chilled) category during Q4-2019 was due to significant increases in price of onions. During the quarter, onion prices increased reflecting supply constraints in India. Meanwhile, fruit prices increased by 3.4%, broadly due to growth in prices of citrus and dried fruits.

As for other major categories, prices in the restaurants and cafés category rose by 5.1% during Q4-2019, while cost of purchasing motorcycles observed a 4.5% growth during the period. Likewise, mirroring the 4.1% increase in cost of outpatient care services, prices in the health category rose, contributing further to the upward pressure on inflation during the quarter.

In contrast, cost of passenger air transport was the main contributor to the downward pressure on inflation during Q4-2019. As such, passenger air transport category observed a fall of 14.8%, mainly reflecting the decline in domestic air transport prices amid the airfare reductions by the national carrier—Maldivian. The decline in

the transport category was contributed further by the reduction in price of petrol during the quarter which reflected the decline in global oil prices. The price of petrol was reduced four times by the State Trading Organisation over the year. The last of these reductions was made on 15 July 2019, which saw petrol price reduced by MVR1.0 per litre, to MVR10.1 per litre. Meanwhile, the information and communication category also declined, mainly owing to the 17.3% decrease in cost of audio and video recording equipment.

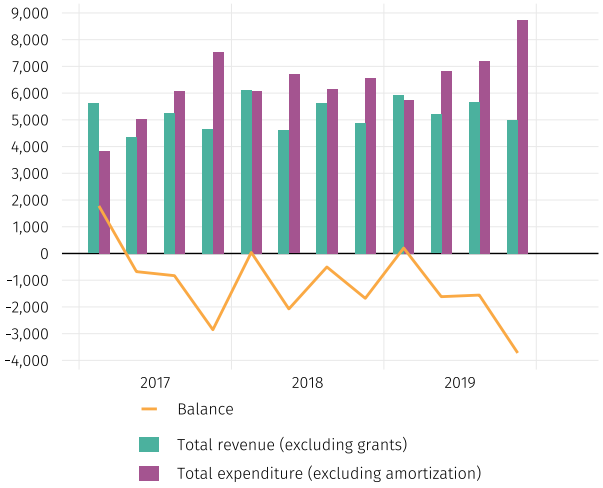
Similarly, fish prices also recorded a decline during the quarter, broadly due to the 7.4% fall in prices of dried, salted or in brine or smoked fish products; as well as the 2.8% decline in prices of live, fresh, chilled or frozen fish category. Additionally, reflecting the fall in cost of household furniture and furnishing, the household equipment category declined, while clothing and footwear category also recorded a fall during the period. These declines partly mirrored year-end sales of such products.

Public Finance[6]

Total government revenue (excluding grants) increased by MVR111.5 million during Q4-2019 when compared with Q4-2018 and totalled MVR5.0 billion at the end of the period (Figure 13). This was mainly on account of an increase in tax revenues, which grew by MVR98.4 million during the quarter, accounting for 70% of the total revenue over the period. Meanwhile, non-tax revenues also registered an annual growth of MVR22.0 million during the review period.

The growth in tax revenue during the quarter was primarily driven by an increase in import duties,

Figure 13: Government Revenue and Expenditure, 2017 - 2019
(millions of rufiyaa)



Source: Ministry of Finance
Note: Figures do not accord with the methodology of IMF's GFS Manual 1986.

combined with a noticeable growth in collection of withholding tax over the period. As such, import duties posted an annual growth of MVR87.5 million, while revenue from withholding tax rose by MVR29.4 million during the quarter. Mirroring the increase in international passenger movements, airport service charge recorded an increase of MVR24.7 million. Meanwhile, tourism goods and services tax (T-GST), the single largest source of tax revenue, also observed a growth of MVR7.6 million, reflecting the commencement of the peak season in the tourism sector. However, general goods and service tax (G-GST), registered a decline for the second consecutive quarter, recording a decline of MVR54.6 million in annual terms. Turning towards other major revenue categories, business profit tax (BPT) also registered a decline of MVR6.4 million while revenue from green tax showed a slight growth (Figure 14).

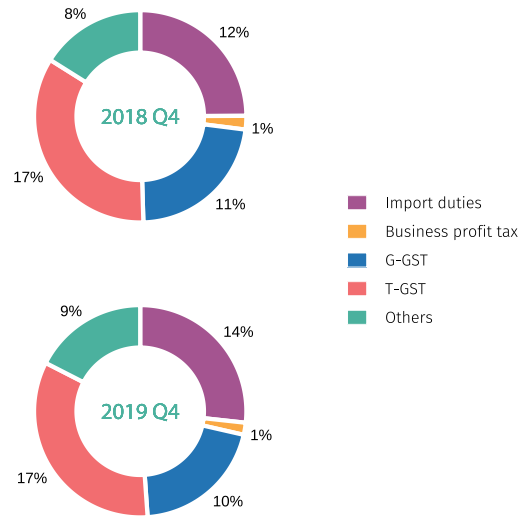
Non-tax revenues, which comprised 30% of the total revenue, observed a marginal growth in annual terms and totalled MVR1.5 billion at the end of Q4-2019. This was on the back of a remarkable growth in other fees and charges, which was

[6] Government revenue and expenditure data as at 29 January 2020. These figures might vary due to ongoing data reconciliation.

largely offset by a significant decline in dividends from state owned enterprises (SOEs). As such, revenue from other fees and charges recorded a growth of MVR226.2 million, while dividends from SOEs declined by MVR205.3 million. In addition, declines were observed in revenue from land acquisition and conversion fee; and fines and penalties, which fell by MVR34.0 million and MVR33.5 million, respectively. In contrast, revenue from airport development fee recorded an increase of MVR25.2 million to curb further dampening of non-tax revenues.

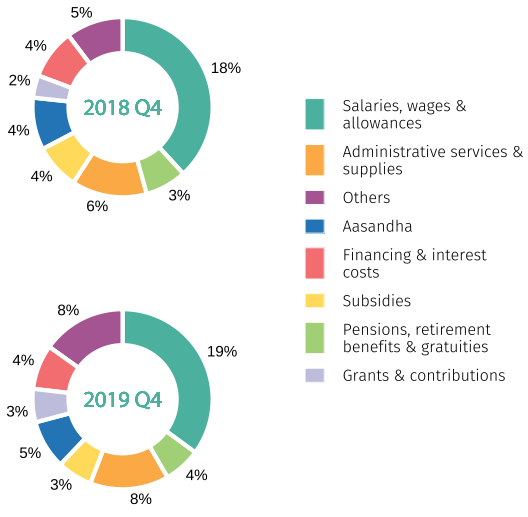
Total expenditure (excluding debt amortisation) recorded a substantial growth of MVR2.2 billion in annual terms and totalled MVR8.7 billion during Q4-2019. This was driven by significant increases in both capital and current expenditure, which posted growths of MVR1.3 billion and MVR839.7 million, respectively. The rise in capital expenditure largely mirrored an MVR688.6 million increase in spending on Public Sector Investment Program (PSIP) projects. PSIP projects picked up towards the end of the year after stalling at the beginning of the year due to delays in the procurement process. In line with this, expenditure on development projects also showed a growth of MVR392.5 million over the period. Similarly, current expenditure observed a significant increase during the period on account of a substantial rise in administrative and operational expenses. Administrative and operational expenses grew by MVR662.0 million during the quarter stemming from expenses incurred as grants, contributions and subsidies; operational consumables and administrative services. Particularly, the increase in grants, contributions and subsidies partially reflected the introduction of Student Breakfast Program during the year. Meanwhile, salaries and wages recorded an increase of MVR148.3 million during the quarter, mirroring increases in both expenditure on salaries and wages; and allowances to employees (Figure

Figure 14: Composition of Tax Revenue, 2018 - 2019



Source: Ministry of Finance

Figure 15: Composition of Recurrent Expenditure, 2018 - 2019



Source: Ministry of Finance

15). This partly reflected both the increase in the number of government employees compared to previous year, as well as the introduction of non-practice allowance by some government offices during the year.

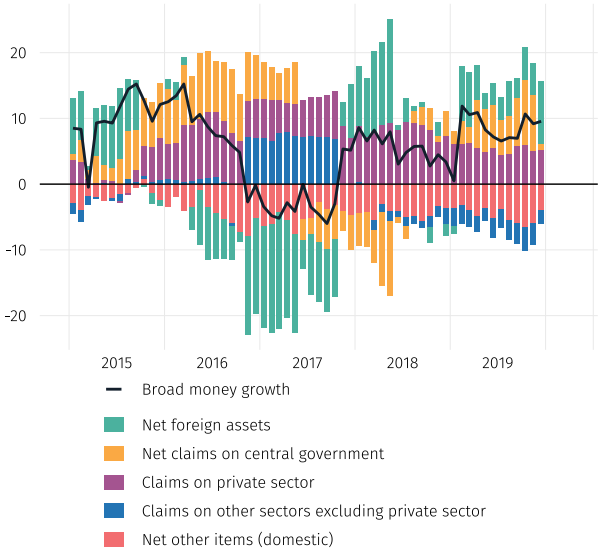
Money and Banking

Broad Money

The annual growth in broad money (M2 or money supply) accelerated to 10% at the end of December 2019, after recording 7% at the end of September 2019. On the components side, this was largely contributed by a significant increase in transferable deposit base (demand deposits) as well as other deposits (savings and time deposits) of the banking system. As such, demand deposits—which accounted for 71% of the money supply during the period—grew by 8%, after recording a 7% annual growth at the end of September 2019. The growth in demand deposits during the period stemmed from the increase in such deposits denominated in both foreign currency and local currency. Likewise, the growth in foreign currency deposits was driven by the increase in such deposits by the private sector and public non-financial corporations, while the increase in local currency deposits can be attributed to the slowdown in the decline in deposits of private non-financial corporations (Figure 16).

Other deposits, which accounted for 20% of money supply, maintained its remarkably high growth over the period, recording 20% at the end of December 2019, after registering a growth of 14% at the end of September 2019. This improvement reflected the rise in both foreign currency savings and time deposits as well as an increase in local currency savings and time deposits during the period. However, currency outside depository corporations—which accounted for 8% of money supply—recorded an annual decline of 2%, a slight

Figure 16: Contribution to Broad Money, 2015 - 2019
(annual percentage change, percentage point contribution)



Source: Maldives Monetary Authority

improvement from the 5% decline recorded at the end of September 2019.

On the sources side, the growth in broad money was driven by the upsurge in net foreign assets (NFA) of the banking system, which recorded an annual growth of 32% at the end of December 2019, while the growth in net domestic assets (NDA) of the banking system remained broadly unchanged. Looking at the developments in NFA, the increase in NFA stemmed from the rise in NFA of both the MMA and commercial banks. The growth in NFA of MMA can be primarily attributed to a fall in foreign liabilities, while the growth in the NFA of commercial banks was mainly due to the increase in foreign currency deposits held abroad. Meanwhile, the stagnation in NDA was mainly on the account of the decline in NDA of the MMA, despite an increase in NDA of commercial banks during the period. The decline in NDA of MMA stemmed from increase in deposits of the central government. As a result, a significant slowdown was observed in the growth in net claims on central government by the banking system. However, net claims on central government by

commercial banks grew significantly by MVR2.5 billion and amounted to MVR10.3 billion at the end of December 2019, largely reflecting the annual expansion in government securities. Additionally, commercial banks' credit to the private sector continued to grow during period.

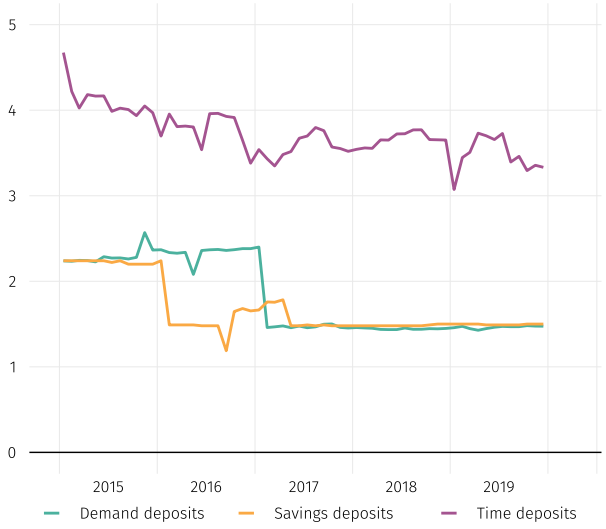
Credit to Private Sector

Credit to the private sector continued to grow and stood at MVR24.5 billion at the end of December 2019. This marked an annual growth rate of 8% (MVR1.7 billion), registering a slight acceleration when compared to September 2019. During the quarter, credit extended to tourism, construction, commerce and as personal loans accounted for the highest shares of credit over the period. Credit extended to the tourism sector (which accounted for 37% of total private sector credit) registered a 6% annual growth, largely due to the significant rise in credit extended as working capital combined with credit extended for new resort development. Meanwhile, credit extended to the construction sector rose by 10% largely driven by the growth in credit lent for the construction of residential housing. However, similar to the previous quarter, a decline was observed in credit extended to the commerce sector, stemming from a decrease in credit extended to restaurant and cafés. In contrast, credit extended as personal loans continued to a show remarkable growth, recording 34% at the end of the period, reflecting the rise in credit for credit cards and consumer durables.

Interest Rates

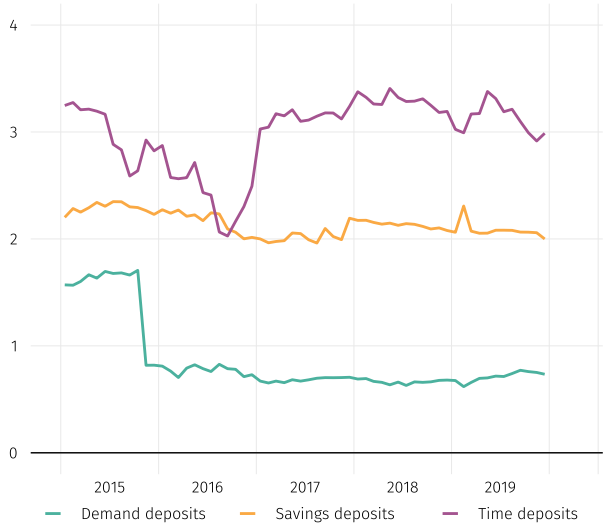
As for interest rates, the rates on both local and foreign currency demand deposits registered an annual increase at the end of December 2019, while rates on both local and foreign currency time deposits (maturity of six months to one year) decreased during the period. As for

Figure 17: Interest Rate on National Currency Deposits, 2015 - 2019
(weighted average)



Source: Maldives Monetary Authority

Figure 18: Interest Rate on Foreign Currency Deposits, 2015 - 2019
(weighted average)



Source: Maldives Monetary Authority

savings deposits, interest rates on local currency denominated savings deposits remained largely unchanged, while foreign currency savings deposits decreased over the period (Figure 17 and 18).

With regard to interest rates of loans to private sector, interest rates on local currency denominated private sector loans increased during the period, while the rates on foreign currency denominated private sector loans declined (Figure 19).

Banking Sector Performance

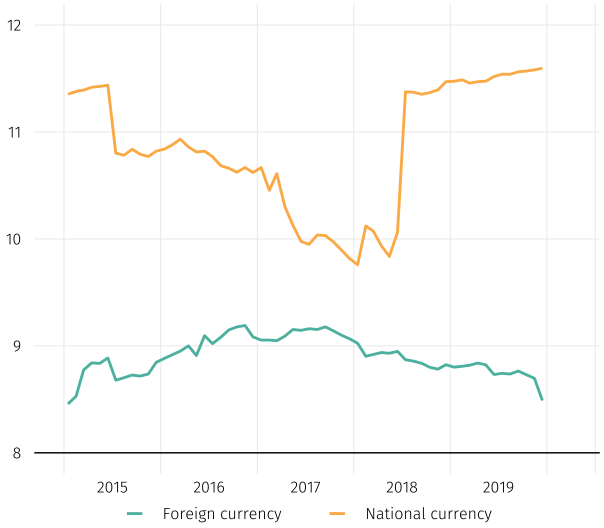
The performance of the banking sector remained strong at the end of quarter, with key prudential indicators being well above the regulatory minimum requirements.

The capital adequacy ratios of the banking sector remained robust, with total capital to risk-weighted assets at 47% against the minimum requirement of 12%, on account of the significant portion of low risk assets in the portfolio. The leverage capital ratio measured by equity (Tier 1 Capital) to assets stood at 21% (against minimum requirement of 5%).

As regards profitability, the pre-tax profit was MVR2.6 billion, a decline of 4% compared to a year ago. This decline is mainly on account of increase in provisions expenses, which increased by MVR354.5 million compared with the same period last year. However, the profitability of the sector remained healthy, with a return on equity of 15%.

At the end of the quarter, the absolute value of Non-Performing Loans (NPLs) showed an increase of 13% (MVR297.6 million) compared to a year ago, mainly due to few large loans becoming non-performing over the period. When compared with the end of the previous quarter, the figure decreased

Figure 19: Interest Rate on Private Sector Loans and Advances, 2015 - 2019
(weighted average)



Source: Maldives Monetary Authority

by 2% (MVR42.6 million). The percentage of NPLs in the total loan portfolio stood at 9%, with loan loss provisions which covering 95% of the NPLs, thus mitigating the credit risk exposure significantly.

Loans continue to dominate the asset portfolio of the banking sector, constituting 48%, and amounting to MVR26.7 billion at the end of the quarter. The gross loans registered an annual growth of 7% (equivalent to MVR1.9 billion) with the majority of the new loans having been granted to the tourism sector.

At the end of the review period, investments in debt securities amounted to MVR12.2 billion and accounted for 22% of the banks' gross assets. On quarterly terms, the investment in debt securities grew by 9% and on annual terms it recorded a growth of 24%.

Liquidity of the sector remained satisfactory, with a high proportion of banking sector's assets being in liquid form. The ratio of liquid assets to total deposits and borrowings was 62%. Total deposits

recorded an annual growth of 8% or MVR2.6 billion to reach MVR35.7 billion; 87% of the growth was from foreign currency deposits. The growth in deposits was driven mainly by an increase in demand deposits, which grew by MVR1.5 billion, while time deposits grew by MVR0.9 billion compared to year ago.

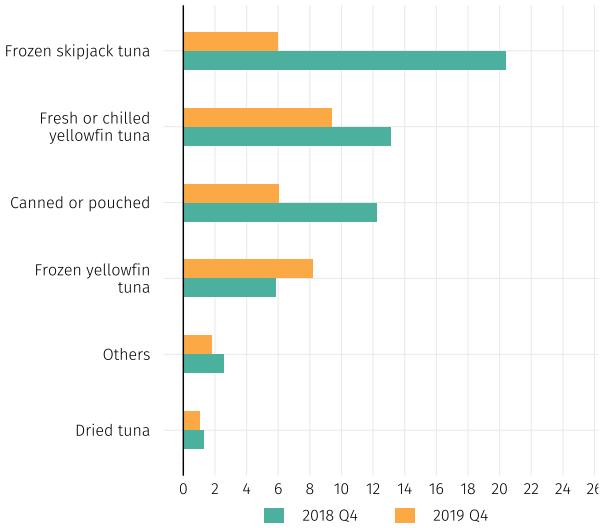
External Trade

The total merchandise exports—comprising domestic exports and re-exports—decreased by 11% (US$11.8million) in annual terms and totalled US$93.4 million in Q4-2019. Total domestic exports totalled US$34.0 million which was a 41% decline (US$23.5 million) compared with the corresponding quarter of 2018. However, total re-exports totalled US$59.4 million; registering a 24% increase which reflected the rise in re-exports of capital goods and diesel during Q4-2019.

The decline in domestic exports (which mainly comprise exports of fish and fish products) was largely due to a notable drop in earnings from skipjack tuna; as well as canned and pouched tuna exports. The 71% decline (US$14.4 million) in export earnings from skipjack tuna reflected the 65% fall in the volume of frozen skipjack tuna exports (9,458.9 metric tons), coupled with the 31% fall in skipjack prices in the international market (based on Bangkok frozen skipjack tuna market prices) during the period. As for earnings from canned and pouched tuna exports, a 51% decline (US$6.2 million) was recorded, mainly owing to the 56% fall in the volume of such exports (1,556.5 metric tons). However, these decreases were slightly offset by a substantial increase in export earnings from frozen yellowfin tuna (Figure 20).

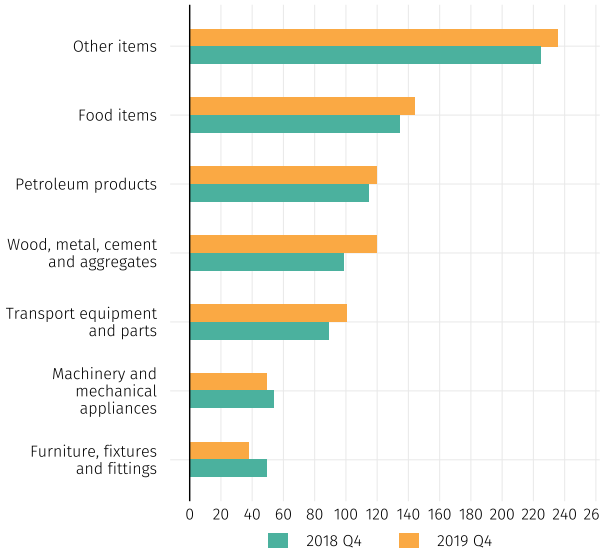
Meanwhile, total merchandise imports (c.i.f) recorded an annual growth of 5% (US$41.9 million) during Q4-2019 (Figure 21). The main

Figure 20: Composition of Fish Export Earnings, 2018 - 2019
(millions of US dollars)



Source: Maldives Customs Service

Figure 21: Composition of Imports, 2018 - 2019
(millions of US dollars)



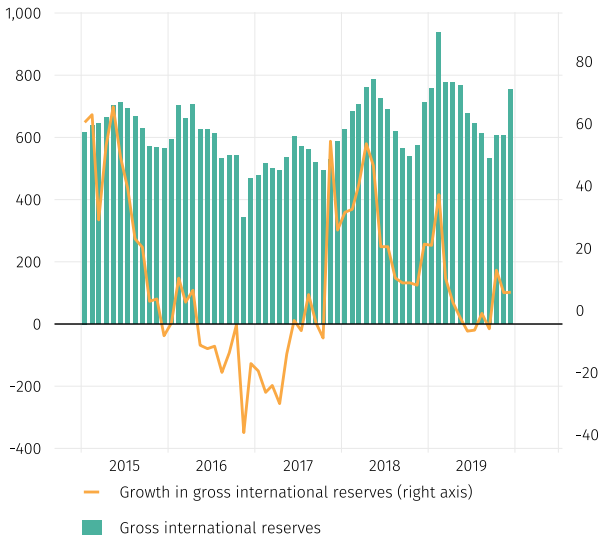
Source: Maldives Customs Service

contributors to the growth in imports were imports of construction-related items (particularly wood, metal, cement and aggregates)—which rose significantly by 21% (US$20.9 million) during the quarter—and transport equipment and parts, which observed a 13% (US$11.3 million) growth. In contrast, import expenditure on furniture, fixtures and fittings declined by 23% (US$11.1 million) offsetting the increase in total imports to a large extent.

Gross International Reserves

Gross International Reserves (GIR)[7] rose to US$753.0 million at the end of Q4-2019 recording a growth of 6% when compared with the corresponding quarter of 2018 (Figure 22). When compared with Q3-2019, GIR registered an increase of 42%. The growth in GIR in both annual and quarterly terms primarily reflected a significant rise in the usable reserves of MMA.

Figure 22: Gross International Reserves, 2015 - 2019
(millions of US dollars, annual percentage change)



Source: Maldives Monetary Authority

[7] GIR comprises of foreign currency deposits of the MMA and the government, commercial banks' US dollar reserve accounts and Maldives' reserve position at the IMF.

ARTICLES

Forecasting Currency in Circulation for the Maldives

*By: Dhaha Shuaib and Ibrahim Nazeeh**

Abstract

Currency in circulation (CIC) is the amount of cash held by the public and the banking sector. The importance of forecasting CIC stems from central banks' remit to manage the operational target in order to achieve price stability through the management of the banking sector's liquidity. Given the autonomous nature of CIC, daily movements can greatly impact the liquidity of the banking system that is beyond the control of the central bank and therefore, requires strenuous effort to produce short-term forecasts. The main aim of this paper is to produce a short-term forecasting model CIC in the Maldives which can be used to assess the short-term impact of Rufiyaa liquidity. Various models have been used in the literature to forecast CIC, ranging from structural models to models based on transactional and portfolio demand for cash. However, autoregressive integrated moving average (ARIMA) models are often used by central banks for its relative accuracy in short-term forecasting.

JEL classification: E41, E42, E58, E47, C22

Keywords: Currency in circulation, ARIMA, Time series forecasting, Maldives

Introduction

Central banks around the world are responsible for the formulation and implementation of monetary policy with the main objective of maintaining price stability within the economy. To pursue this objective, central banks need reliable forecasts of the banking sector's liquidity. This liquidity is partly affected by factors that are directly under the control of the central banks. However, there are autonomous factors, such as net foreign assets, CIC and net government position, which are largely beyond the control of the central bank. For instance, central banks' influence on both government deposits and excess reserves held by commercial banks is limited and large changes in these factors will increase fluctuations in the liquidity of the banking system.

Perhaps, the most challenging autonomous factor to forecast is the CIC, given its high volatility and direct link to the non-bank public sector. CIC as highlighted by Munawar (2014) is one of the main indicators used to measure the amount of cash in the economy, which is the total amount of notes held by the public (consumers

** The authors are from Monetary Policy and Exchange Rate Division of the MMA.* *The authors would like to thank Aminath Shafwath for her comments on the article and Hassan Fahmy and Mohamed Imthinan Saudulla for their invaluable contribution to this research.*

and businesses) and the banking system. He further outlines the importance of understanding the short-term and long-term factors which affect the movements of CIC in order to effectively forecast liquidity when conducting weekly open market operations.[1]

This paper aims to formulate a suitable model that will improve the current CIC forecasting framework used by MMA. In general, forecasting with high-frequency data is susceptible to high volatility. Therefore, this paper will attempt to find the most suitable model that could reduce the forecasting error and provide reliable estimates for CIC. The rest of this paper is organized as follows. Section 2 briefly examines the econometric models used in forecasting CIC in other countries. Section 3 describes the behavior and patterns observed in the CIC of the Maldives. Section 4 lays out the model specifications for different possible variations to model CIC, while section 5 presents and analyses the estimation results. Finally, section 6 presents the conclusion based on the estimation result and forecast evaluation.

Theoretical Background and Literature

Forecasting CIC has been at the core of every central bank's monetary policy framework given its impact on the liquidity position of the banking system. Public's demand for money dictates the deviation in CIC and this underlying theory has been used as a basis for modelling the movements in CIC. While econometric analyses are important in understanding the nature of CIC and its main determinants, central banks often use univariate time series models to carry out CIC forecasts. The forecasting nature of liquidity necessitates producing forecasts for a short-term horizon, and univariate models such as autoregressive integrated moving average (ARIMA) and structural time series (STS) models perform better at high-frequency data, and in general, provide better out-of-sample forecasts compared to available alternative models. The literature on CIC is diverse in terms of the approach and requirement of the study being carried out.

Khatat (2018) identifies two types of CIC models; a first-generation derived from the theory of transaction demand for money and a second-generation aimed at producing daily forecasts of CIC. A vector autoregression (VAR) model was used to capture the dynamic link between interest rates and the demand for cash and an ARIMA model was used to forecast daily CIC for five countries. Similarly, Dheerasinghe (2006), Battacharya and Joshi (2001) classifies the models in the literature into two main categories; models based on demand theory and univariate time series, respectively. The former proposes an alternative approach in modelling high-frequency data by decomposing the trend, seasonal and cyclical components for Sri Lanka; while the latter proposes an alternative approach of modelling the growth of CIC, by incorporating the day-of-the-month effect to existing models in the literature for India.

The first-generation models as mentioned earlier are based on transaction and portfolio demand for money where level of money is determined by the price level, level of real output and the opportunity cost of holding cash. Cassino et al (1997) uses the money demand function $M_t^d = f(P_t, Y_t, R_t)$ to derive their final estimation equation $m_t = \alpha + \beta_1 p_t + \beta_2 y_t + \beta_3 R_t$ by using a log-linear transformation. They use an error correction

[1] Even though the open market operations have been temporarily suspended, MMA continues to assess the supply of liquidity in the banking system

representation to estimate the model and use it for in and out-of-sample forecasting to compare it with its univariate counterpart. The results for in-sample forecasting period show that the error correction model (ECM) outperformed the ARIMA models. This is because for a long-term horizon, structural relationships in ECM are expected to influence the data. However, for the out-of-sample forecasting period, all the ARIMA models used in the analysis outperforms the ECM, suggesting that the estimated parameters in the demand function are strongly influenced by the observations in this period. They argue that the weak performance of ECM can be attributed to the omission of innovations in payments technology that is not captured in the money demand function. This is also supported by Arrau et al. (1995) as they highlight the persistent over prediction, implausible parameter estimates and highly autocorrelated errors of the traditional specifications. The paper argues that some of the above mentioned issues stem from the failure to account for the impact of financial innovation and attempts to estimate the money demand for various developing economies using several proxies for the innovation process.

The second-generation models which aim to provide short-term forecasts for CIC using high-frequency data have been heavily analyzed and the implications thoroughly discussed in the literature. Dheerasinghe (2006) provides a detailed account of the difficulty in using high-frequency data for forecasting purposes. Firstly, the intra-month and intra-week variations in CIC may change from week-to-week and month-to-month. The author gives the example of Sinhala/Tamil New Year which falls in the first two weeks of April and therefore, CIC will be vastly different within this period compared to the corresponding weeks of any other month. Furthermore, modelling the effects of a particular day is difficult because of holidays and variations in lag effects. This issue is most prominent in analysis of daily or weekly data series. For instance, a central bank uses weekly data to analyse the variations in CIC and for an Islamic country it is understood that CIC will increase during and week prior to Eid holidays. Univariate time series models fail to capture the effects of one or two days if a weekly model is used (Dheerasinghe, 2006). The author also discusses the presence of seasonality with weekly, monthly and annual patterns which can be cumbersome to model. Given these constraints, the paper attempts to identify the short-term variation in CIC for Sri Lanka using a sample that covers the period 1 January 2000 to 31 August 2005. The results indicate a clear seasonality around April and December due to Sinhala/Tamil New Year and Christmas respectively. In addition, the number of special holidays in a given month affects CIC significantly and having a general election also affects CIC in Sri Lanka.

While the use of Gregorian calendar is universal, most Islamic countries arrange their economic, social and religious celebrations according to Islamic calendar and Gregorian calendar combined. This makes modelling CIC variation difficult for Islamic countries, especially around Islamic holidays, as it falls on different days in the Gregorian calendar. However, Balli and Elsamadisy (2012) develops a CIC model for the state of Qatar by incorporating intra-weekly cycles, monthly cycles, intra-monthly effects, holidays and major outliers in the model. Some of the holidays accounted for in the model includes, Ramadan, Eid al-Adha, Eid al-Fitr and Thanksgiving Day. By adopting the Box-Jenkins methodology and the seasonal ARIMA approach, they find that, in comparison to linear methods, seasonal ARIMA provides better estimates for short-term forecasts.

In forecasting daily CIC for Brazil, Kazakhstan, Morocco, New Zealand and Sudan, Khatat (2018) uses the ARIMA model with dummy variables used by Cabrero et al. (2002). The author models the effect of trading day, the intra-monthly behavior of the CIC related to payroll dates, as well as the holiday effects, and several

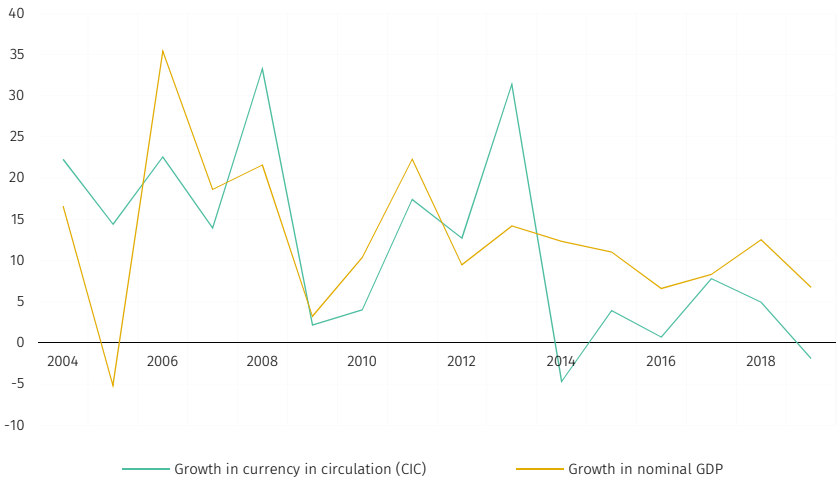
dummy variables for each country. Five variables were created to simulate the intra-weekly behavior of CIC, that is, a dummy for each day in the week. To simulate the increasing pattern of the first two weeks in a month and the decrease in the latter half, a dummy variable was created for each week in a month. In addition, holiday variables were created to account for all the holidays in each country, as CIC usually increases prior to holidays. To take into account the fact that a holiday has a different impact on CIC depending on the day of the week it occurs, several other dummies were created. The results suggest that the daily model for the five countries provided good performances, suggesting that they can be adapted to the change of CIC under different monetary policy frameworks and macro-financial environments.

Currency in Circulation in the Maldives

CIC in the Maldives has seen major developments in the last two decades reflecting significant economic and institutional changes that occurred during this time period. Munawar (2014) analyses some of the relevant economic and institutional factors that determine the long-term trajectory of CIC in Maldives. This includes level of economic activity, monetization of budget deficit, level of vault cash held in the banks, access to banking services and alternative mechanisms for cash payments.

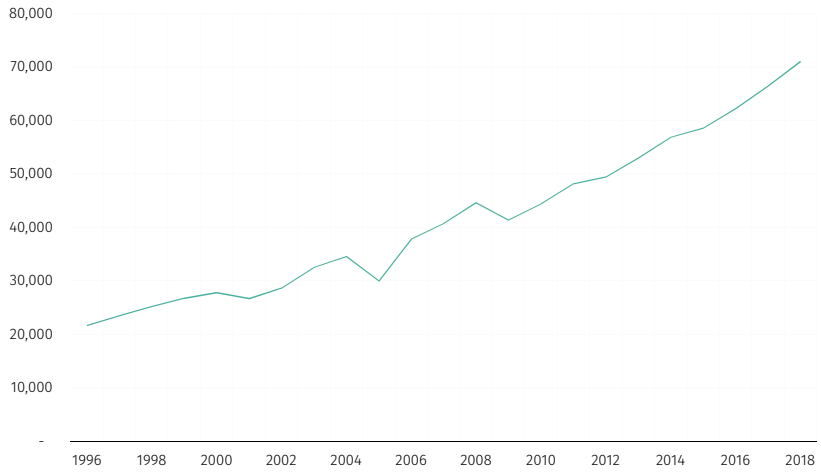
The main purpose of holding cash or demanding cash is to make cash transactions within an economy and therefore, the positive relationship between growth in the economy and CIC must hold theoretically. The broadest measure of economic activity is Gross Domestic Product (GDP) or nominal GDP, which reflects both price developments and changes in real economy (Munawar, 2014). Looking at the development in CIC and nominal GDP over time, it can be seen that the aforementioned positive relationship holds for the Maldives. This can be seen in Figure 1 where growth rates of nominal GDP and CIC move in the same direction.

Figure 1: Growth in Currency in Circulation (CIC) and Nominal GDP, 2004 - 2019
(percent)



Source: Maldives Monetary Authority

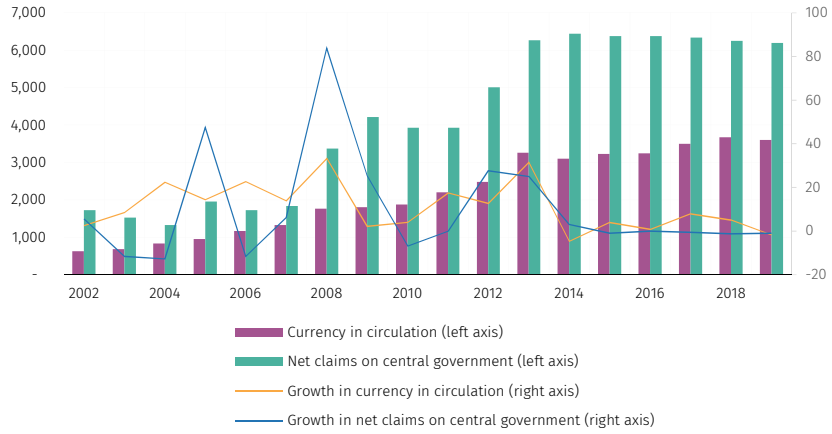
Figure 2: Growth in Real GDP, 1996 - 2018
(millions of rufiyaa)



Source: Maldives Monetary Authority

As seen in Figure 2, after a period of rapid growth in the latter half of the preceding decade, Maldivian economic growth moderated during 2000 and further slowed in 2001 following the September 11 incident[2], which left the tourism industry on a downward spiral for at least three quarters. This slowdown coincided with the contraction of narrow money during 2001, which projected a decline of 6% in annual terms, largely caused by a fall in both rufiyaa demand deposits of commercial banks as well as the CIC (Annual Report, 2001). Despite the slowdown in 2001, economic growth picked up in 2002[3] as a result of strong recovery in the tourism sector, which may have boosted economic activity in the domestic market, accelerating the cash circulation within the economy.

Figure 3: Net Claims on Central Government, Currency in Circulation and their Growth Levels, 2002 - 2019
(millions of rufiyaa, percent)



Source: Maldives Monetary Authority

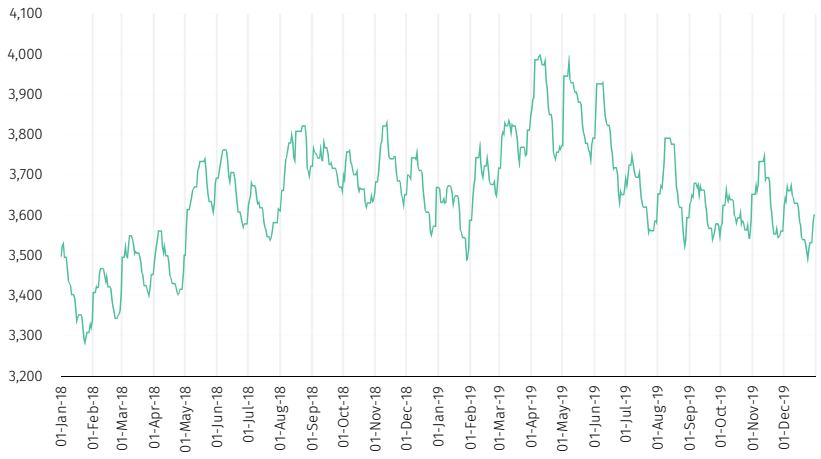
[2] Annual Report of the MMA 2001.

[3] Annual Report of the MMA 2002.

However, 2005 saw a decline in economic growth as devastation caused by the 2004 Tsunami propagated into the tourism industry and other related industries. This resulted in a fall of government revenues that significantly widened the government budget deficit, which was largely financed through borrowings from the MMA, otherwise known as monetization (Annual Report, 2005). Consequently, through monetization, more money was pumped into circulation as recurrent expenditure accounts for a large portion of the government fiscal budget. This can be seen in Figure 3, which shows an average growth of 21% and 23% of CIC and net claims on central government, respectively, over the period 2004 to 2008.

While the CIC presents a distinct long-term trajectory, there are weekly, monthly and other short-term variations that must be analyzed in depth, in order to properly model these patterns in a forecasting model. In Figure 4, we see that the daily CIC series is volatile in the short-term and is associated with recursive seasonal patterns and several one-off events.

Figure 4: Currency in Circulation, 2018 - 2019
(millions of rufiyaa)

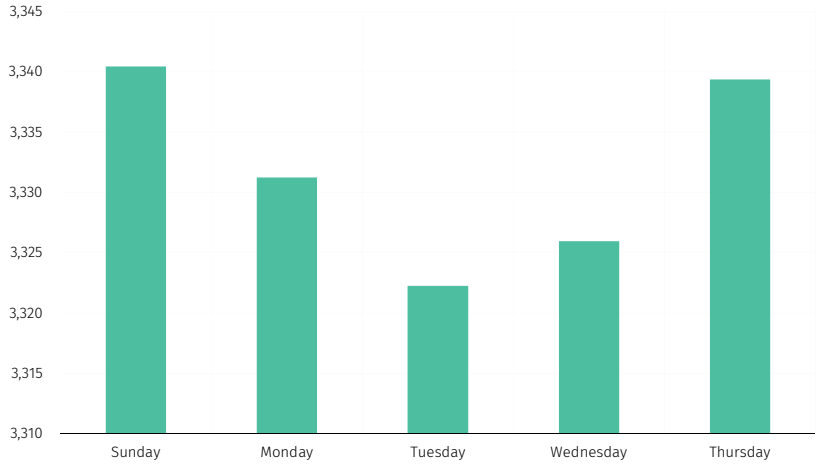


Source: Maldives Monetary Authority

Weekly pattern

In the literature, one of the most prominent patterns that can be seen is the weekly cycle, otherwise known as the trading-day effect. Figure 5 shows that, the demand for cash at the beginning of the week is lower than the latter half of the week. This can be attributed to an increase in demand for cash for the weekend ahead.

Figure 5: Average Weekly Cycle of Currency in Circulation, 2014 - 2018
(millions of rufiyaa)



Source: Maldives Monetary Authority

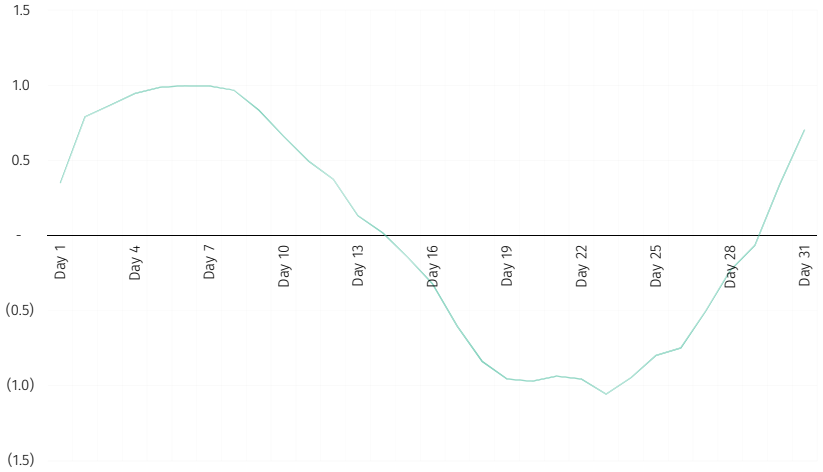
Monthly pattern

The second pattern that can be seen in Figure 6 is a monthly or intra-month cycle which resembles a "saw-tooth" pattern as suggested by Baumol (1952); Tobin (1956) in their inventory theory of money. The CIC increases during the first and the last week of each month linked with the salary period. Salaries are usually paid during the last two days of each month.

According to the current behavior, the public starts withdrawing money from the last week of the month in anticipation of the salary being received during the succeeding days. This process continues until the end of the first week of the following month. However, withdrawals in the first week of the month are more prevalent. This is referred to as cash outside the banking system. It denotes the amount of money outside the MMA and the banking system. CIC starts to increase around the last week of the month as banks withdraw more from their reserve accounts at the MMA in order to cater the demand by the public. Banks start to debit their account at the MMA before the public starts withdrawing their money. This generally happens during the period 19 to 30 of each month. For instance, in 2010, on average almost 60% of the withdrawals from the MMA by Bank of Maldives Plc. (BML) had taken place during this period each month (Munawar, 2014). Therefore, the CIC increases at the beginning of a month.

As the public purchases goods and services, the currency first flows into the corporate sector and from there to the banking sector. A major portion of the money flows back to the banking system during the middle of the month, associated with the due dates of different payments that a household or business has to pay. Hence, CIC decreases during this period as banks credit a portion of it to their accounts at the MMA once they receive it.

Figure 6: Normalized Average CIC, 2005 - 2019



Source: Maldives Monetary Authority

Holidays and festivals

There are several holidays and religious festivals celebrated in the Maldives throughout the year. With holidays, the corporate sector enjoys high sales as people make bulk purchases using cash, which result in significant circulation of cash in the economy during holidays. After the holiday ends, cash enters the banking sector which greatly reduces the circulation of cash as banks deposit the cash in accounts held at the MMA. For instance, CIC often increases a few days prior to Eid al-Adha as people prepare for the festive season by purchasing holiday packages and prepare for bank closures during the holidays. This impact is profound in the Maldives as the entire population observe this religious month, including Bangladeshi workers who make up the majority of foreign workers. During these periods, CIC does not move according to the usual norm of the saw-tooth pattern. Regardless of which point the holiday occurs, CIC usually escalates during that period. For instance, the household consumption increases during the month of Ramadan. The changes in CIC on average may stand at the same level during the month of Ramadan. However, the level of CIC would generally be higher than what it would have been on any other regular month. This effect is magnified if a holiday precedes a weekend or if the length of the holiday increases due to any other reason.

4. Model Specification

The model has been designed to forecast the daily CIC. With the availability of the CIC data in high-frequency, and thus more number of observations, one could argue that it can be used to predict a long-term horizon. However, it is not always advisable to do so as higher frequency data may not be able to predict the long-term trends in the data. Rather, it may be much better in picking up short-term trends like daily and weekly trends. In this sense, the seasonal ARIMA models perform better in forecasting CIC, particularly for short-term horizons (Cabrero et al, 2002). Although univariate time series models could theoretically be applied to any frequency, the main problem at high frequency seems to be an appropriate specification of the seasonality which may change from month-to-month or year-to-year (Bhattacharya & Joshi, 2001).

Prior to the development of any model, CIC was forecasted by the MMA using historical observations without the use of any econometric model. To carry out the liquidity management operations most effectively, the MMA relied on the liquidity forecasts, of which CIC is one of the determinants of the supply of liquidity. As the CIC was used as a determinant of supply of liquidity in the liquidity forecasting exercise of the MMA, the estimate was produced on a weekly-basis, every Monday, and three-day ahead estimates were produced.[4]

As efforts to the continued monitoring of CIC was further enhanced, it led to a development of an ARIMA model which thereon has been used to forecast the CIC. In the analysis of time series, autoregressive moving average (ARMA) models provide a parsimonious portrayal of a weakly stationary stochastic process. This process can be broken down into two parts; the autoregressive (AR) and the moving average (MA) processes. Hence, it is referred as an ARMA (p, q) model where p and q refer to the order of the AR and MA process, respectively. The ARMA process is not only applicable for the weak stationary process; researchers also apply the ARMA process including various trends, seasonal and other deterministic or stochastic components (Balli & Elsamadisy, 2012). An even more accurate method is the use of ARIMA-based approach, to forecast a short-term horizon when working with a non-stationary time series.

The general ARIMA process can be written in the following way:

$$Y_t = D_{t,i} + \eta_t$$

$$\eta_t = \frac{\theta(B)}{\Phi(B)\,\delta(B)}\,\varepsilon_t \qquad \varepsilon_t \sim \text{i.i.d}\ (0, \sigma^2)$$

where Yt is the daily CIC, Dt,i is the linear regression component, B is the backshift operator, θ and Φ are the moving average and autoregressive operators respectively and δ is a difference operator that can include a seasonal difference operator.

The model used previously was an ARIMA model with order (7, 1, and 0). This indicates that the model is integrated once and incorporates autoregressive terms up to AR (7). The current study builds on this model that was used for forecasting CIC which from here onwards would be referred to as the baseline for benchmarking purpose. Overtime, the prediction power of the baseline has diminished due to the changes in many factors within the economy. The improved model accounts for such changes and is compared with 3 other models; the baseline, a naïve model and an ARIMA (1, 1, 1). The naïve forecast equals to the previous period's actual without adjustments or establishment of casual factors.

In an econometric time series, seasonality is mostly inevitable. There are two ways to deal with it. One way is to remove it and then model and forecast the seasonally adjusted series. The other common technique

[4] The liquidity forecasting was conducted weekly on every Monday, where the week starts from Thursday and ends at Wednesday, corresponding to the MRR period which is a two week cycle. Hence the weekly forecast effectively produces estimates for three days (Monday-Wednesday). Currently open market operations have been discontinued since May 2014.

used is to run a regression on seasonal dummies, (Dheerasinghe, 2006) enabling the forecaster to capture the seasonality in the model. In this paper, the second approach has been used to run the models.

In an economy, intra-month or intra-week variations may change from week-to-week or month-to-month. Countries almost universally follow the Gregorian calendar. However, in the Maldives, we expect that economic life will co-move with the Islamic events as well. Determining this effect is even harder because the Islamic calendar is lunar. This makes it difficult to model high frequency time series.

The estimation sample covers the period 1 January 2016 to 31 October 2018. The out-of-sample forecasts have been carried from 1 November 2018 to 31 December 2018. For each year, all 365/366 observations have been included. Holidays carry the same level of CIC as the last working day.

The regression model is expressed in first difference of CIC. The preliminary model of the linear regression is:

$$C = \gamma' D$$

where C refers to the CIC in first difference at time t, γ is an nx1 coefficient vector whose transpose is the row vector γ' and D is a column vector of dummy variables explained as follows.

- Intra-month effect (M): Intra-monthly patterns in the series of CIC are associated with the payments such as salaries and utility bills. The demand for cash is higher around the salary day. For each day; *i*=1 to 31, a dummy variable at time t is defined to take the value 1 if the day at time *t* is *i*, else 0. The dummy variable captures any intra-month effect present in CIC at time *t*.

- Intra-week effect (W): For each day, *j* = Sunday through Thursday, a separate dummy variable is assigned, taking the value 1 for the respective day of the week and the rest 0. This is important to capture the weekly patterns that may change depending on the day of the week.

- Interaction variable: A few interaction variables have also been tested to identify the impact of the interaction between the intra-month and the intra-week effect. In this regard, the following interaction variables have been identified to significantly impact the CIC

    - Day 7 * Thursday
    - Day 10 * Thursday
    - Day 11 * Thursday
    - Day 19 * Thursday
    - Day 31 * Monday

- Election (E): In the span of the sample period used in the analysis, presidential elections took place once, in 2018. A dummy variable is assigned to take a value of 1 on the days of the year that the election was conducted. The underlying assumption behind the selection of this variable is the belief that the demand for currency would increase substantially during the election period. However, it was noticed that the CIC was quite erratic prior to the months leading up to the election and also post-election in 2018.

- Fitr Eid (F) and Hajj_Eid[5] (HE): These are two of the notable holidays marked in the Islamic calendar. A dummy variable has been defined for each of these holidays separately.

- Holiday (H): This is a matrix of dummy variables for all the one-day holidays in the calendar of Maldives such as National Day, First day of Ramadan and Prophet Mohamed's Birthday.

- Consecutive holidays (C): If the number of consecutive holidays exceeds three, a dummy variable is allocated that takes the value 1 against the first day of the holiday.

- First day of Ramadan (FR): It is customary for Maldivians to increase their spending prior to Ramadan. These are usually for renovating the house, buying new utensils and as such in preparation of Ramadan. This type of expenditure mostly starts a few days prior to Ramadan and goes on till the first two or three days of the month.

- Back-to-work (BW): It is assumed that CIC would decrease after any holiday as the banks re-open and people get back to their daily schedule.

- Post the introduction of the Ran Dhihafaheh (RDF) new note series, there were a notable number of days where the change in CIC was very erratic. The paper regards such days as outliers where the change in CIC had gone beyond MVR100 million leaving a huge spike in the observed data. Such days have been identified in the paper, and controlled for in the estimation. In this regard, seven such spikes were identified and controlled apart from the day of introduction of the RDF.

The final regression model is expressed as:

$$\Delta(CIC_t) = \Delta(CIC_{t-1}) + \sum \alpha_i M_{i,t} + \sum \beta_j W_{j,t} + \theta_i(B)\, HE + \theta_i(B)\, C + \theta_i(B)\, FR + \theta_i(B)\, H + \theta_i(B)\, E + \theta_i(B)\, BW + RDF + D_7{*}W_5 + D_{10}{*}W_5 + D_{11}{*}W_5 + D_{19}{*}W_5 + D_{31}{*}W_2 + RDF1 + RDF3 + RDF4 + RDF5 + RDF6 + RDF7 + RDF8$$

where M refers to the intra-month effect, W refers to the intra-week effect, HE refers to Hajj_eid, C is the consecutive holidays, FR is the first day of Ramadan, H is the one-day holiday effect, E refers to Elections, BW refers to back-to-work variable, RDF is the Ran Dhihafaheh issuance date and θi (B) is the polynomial of the dummy variable B, where B is the standard backward shift operator which is also called the 'lag operator'.

[5] Eid al-Adha is preceded by Hajj day which is also a public holiday in the Islamic Calendar.

The backward shift operator captures the changes in the currency level before and after the holiday *i*. For example, B^k means backshift by k times.[6] In this regard, for the back-to-work variable, a polynomial multiplied by the backshift operator, $(\omega_0 I + \omega_1 B)*B^{-2}$ indicates that, starting from the first working day after the holiday, we include up to one working day succeeding the first working day after the holiday.[7] In this manner, the effect on CIC is captured by including the days that are statistically significant. Table 1 contains the backshift operators used in the model.

Table 1: Seasonal Factors and their Backshift Operators

Seasonal Factors	$\omega_i(B)$
Hajj_eid	$(\omega_0 I + \omega_1 B + \omega_2 B^2) * B^2$
Consecutive holidays	$(\omega_0 I + \omega_1 B) * B^1$
First day of Ramadan	$(\omega_0 I + \omega_1 B + \omega_2 B^2 + \omega_3 B^3 + \omega_4 B^4 + \omega_5 B^5 + \omega_6 B^6) * B^1$
Back to work day	$(\omega_0 I + \omega_1 B) * B^{-2}$
Election	$(\omega_0 I + \omega_1 B + \omega_2 B^2 + \omega_3 B^3 + \omega_4 B^4 + \omega_5 B^5 + \omega_6 B^6 + \omega_7 B^7 + \omega_8 B^8 + \omega_9 B^9 + \omega_{10} B^{10} + \omega_{11} B^{11} + \omega_{12} B^{12} + \omega_{13} B^{13} + \omega_{14} B^{14} + \omega_{15} B^{15} + \omega_{16} B^{16} + \omega_{17} B^{17} + \omega_{18} B^{18} + \omega_{19} B^{19} + \omega_{20} B^{20} + \omega_{21} B^{21} + \omega_{22} B^{22} + \omega_{23} B^{23} + \omega_{24} B^{24}) * B^{-10}$

The regression model includes those variables that are statistically significant and whose coefficients are economically justifiable. Nonetheless, there are some exceptions to this statement. For some variables like Ramadan, Hajj and a few other dummy variables, we retain the variables in the equation even though they are statistically insignificant at their individual lags and leads. This is because their joint F-test indicates that the dummy variables jointly have a significant impact on the CIC. As the key goal of the model is to forecast the CIC for the short-term, individual significance is not required.

After a suitable backshift operator is identified by dropping the preceding days and the following days that are not statistically significant or economically sensible, the final regression model is obtained. For example, for Eid al-Adha the backshift operator considered is (ω0 I + ω1B + ω2B2)* B2 and the coefficients are found to be positive. This means that starting from four days prior to the occasion, CIC will increase in preparation for the expected increase in consumer expenditure.[8]

Seasonal patterns in the model can also be identified to a certain extent through visual sources like the correlogram of the regression. The correlogram may be used as an indicator towards inclusion of ARMA terms

[6] Example: B2Eidt = Eidt-2. This means 2 days before Eid. This is usually referred to as lags while vice versa are referred as leads.

[7] It should be noted that when we consider the first working day after a holiday, it means one working day after the last day of the vacation.

[8] Banks may tend to increase the amount of cash in their vaults and ATMs by withdrawing from their accounts at the MMA in anticipation of withdrawals from customers ahead of different occasions.

and can act as a guide to the forecaster in making a preliminary decision regarding the order of the ARMA terms that can be included in the model. As mentioned earlier, the correlogram provides information on the order of the ARMA terms depending on the autocorrelation function (ACF) and the partial autocorrelation function (PACF). Since the CIC is an I(1) variable and has some seasonal patterns, it is integrated with order 1 to eliminate some of the seasonality. In the model, instead of the ARMA terms, we have used the lag of CIC, making the model an autoregressive integrated moving averages model with seasonal dummies.

Output and Results

For any econometric model, the first crucial assessment could be the ability of the model to make economic sense. With respect to the explanatory variables that have been used in the model, the CIC tends to increase prior to long holidays. This shows that a larger volume of currency is required prior to major holidays. As commercial banks remain closed during these days, they may withdraw more from the MMA, in anticipation of the public requirements for the impending holiday period. For example, the model portrays an increase in CIC two days prior to a long holiday and starting from four days ahead of Eid al-Adha holidays. This means that the banks withdraw currency from the MMA two and four days prior to respective holidays that have been aforementioned.

While the model shows that CIC tends to increase prior to such holidays, it also depicts the decline in CIC once businesses resume daily operations post the holiday. It could also support the argument that individuals tend to deposit any significant amount of cash balances that remains with them post the holiday. After a period of time, CIC decreases as banks increase their minimum reserve requirement (MRR) portion with the MMA based on their level of deposits. Further, the model also accounts for changes to CIC pre and post elections. The coefficient was highly significant although the direction of CIC varied throughout. In most cases, the effects of an election are usually very erratic in nature and hence, a judgment regarding the accuracy of the direction of CIC is rather unpredictable.

With respect to the intra-week effect, the base day is selected to be Wednesday.[9] A cyclical pattern can be seen, where the CIC is lowest on Mondays and highest on Thursdays. Except for Sunday, all other days are significant at 1%. The results are also in line with the natural assumption that CIC increases prior to a weekend and starts falling from the beginning of the week, until it reaches the lowest point before reverting back. Similarly, the intra-month effect also highlights the fact that generally the CIC tends to be lower than the first day of the month which is most likely to be pay day.

While most of the explanatory variables are highly significant at 1% level, a few variables are insignificant. For example, the model tests the effect on CIC starting from seven days prior to the first day of Ramadan. Although individually, these variables turned out to be insignificant, the joint F-test showed that the variables are jointly significant and thus affects the pattern of CIC.

[9] The MRR period starts from Thursday and ends on a Wednesday every fortnight. Hence, the last day of MRR period is considered as a base day for comparison of intra-week effect assuming that this day will have an impact on the level of MRR that the banks retain depending on their space for going short on balances. Thus affecting CIC.

With regards to the autocorrelation and partial correlation, the results showed that they lie within the specified confidence bands. Further, the Breusch Godfrey Serial Correlation LM test also reveals that no serial correlation exist between the variables, supporting the fact that the model is appropriate to be used (Table 2).

Table 2: Results of Breusch Godfrey Serial LM test[10]

Model	P-value
New model	0.2426
Baseline	0.0000

Test Statistics are reported
Significance levels: *** p < 0.01 ** p < 0.05 * p < 0.1

Performance evaluation

In choosing an ideal model, it is always better to conduct an out of sample forecast along with the within sample forecast. As mentioned earlier, this model is compared with three other models; the baseline, the naïve and ARIMA (1, 1, 1). For each model, we calculate the root mean squared error (RMSE), mean absolute error (MAE), bias proportion, variance and covariance. While the MAE portrays the size of the error that can be expected from the forecast, the RMSE provides a measure of the size of the error that gives more weight to the large but infrequent errors than the mean. The RMSE will always be larger or equal to the MAE.

The paper focuses on three types of performance evaluations; monthly, weekly and three-day ahead forecast evaluations, the third category being the most relevant to the current forecasting procedure.

Monthly horizon

This out-of-sample forecast was conducted for the period, November to December 2018. With regard to both the within-sample and out-of-sample forecast, the new model was superior in four out of five criterion[11] (Table 3) in the two-month forecast evaluation. In terms of the explanatory power, the new model has an adjusted

Table 3: Forecast Evaluation between Models (Two-month Forecasts)

	Within Sample		Out-of-sample (November-December 2018)		Rsq adjusted	AIC	SIC
	RMSE	MAE	RMSE	MAE			
New	16,854,317	12,697,610	49,456,005	42,251,639	59%	36.3	36.7
Baseline	21,373,305	14,808,704	52,108,087	44,272,064	36%	36.7	37.1
ARIMA	26,754,084	15,553,082	77,272,764	63,534,009	6%	37.0	37.1
Naïve	27,597,459	15,048,225	80,512,474	67,286,119			

[10] H0 states that there exist no autocorrelation.

[11] In choosing the optimal model, the lowest value of the RMSE, MAE, AIC, SIC, variance and bias proportion is considered while the highest adjusted R squared and covariance is selected.

R-square of 59%, while the baseline has an adjusted R-square of 36%. This highlights the fact that the new model has more power in explaining the variations in CIC. The RMSE and MAE for both within and out-of-sample forecasts are also superior in the new model.

Weekly horizon

The weekly horizon was tested for four sample periods of January 2019. Pertaining to this horizon, the four models were run again and the superiority of the models were identified based on the aforementioned criterion. Table 4 indicates that while only the new model is superior for within-sample forecast and also the R-square, AIC and SIC, RMSE for new model is also for out-of-sample forecast. However, the results from the MAE cannot be concluded against the new model as the performance varies in all the models throughout the month.

Table 4: Weekly Evaluation between Models – January 2019

	Within-sample		Out-of-sample		Rsq, AIC,SIC
January	RMSE	MAE	RMSE	MAE	
Week 1	New	New	ARIMA	Naïve	New
Week 2	New	New	ARIMA	ARIMA	New
Week 3	New	New	New	New	New
Week 4	New	New	New	ARIMA	New

Daily forecast evaluation

The current practice to forecast the value of CIC is to make a three-day ahead forecast. Since the forecasts are produced for liquidity forecasting purposes, the estimates are produced every Monday, for the period Monday to Wednesday. Hence, the most efficient method of comparing the results of the new model with the existing forecasts would be to reshape the new model in a way that it becomes comparable to the existing forecasts. Hence, the new model is iterated every time for three days. This process is repeated for all the succeeding days in the sample for each consecutive three days. These are then separated by combining all one-day ahead, two-day ahead and three-day ahead forecasts; each separately. These results have been compared to the forecasts that have been made in the past using the existing model, where in the one-day ahead of the current practice coincides with the one-day ahead estimate using the new model. In this section, RMSE has been chosen to evaluate the performance of the forecasting ability of both the models.[12] It determines the absolute fit of the model to the data and helps in deciding how close the actual data points are in comparison to the models predicted values. Thus, a lower RMSE indicates a better fit. The table below shows the results of the RMSE for each of the models with respect to one, two and three-day ahead forecasts respectively.

[12] The monthly and weekly forecast evaluation proved that the new model is superior to the baseline, Naïve and ARIMA models. But the daily forecast evaluation is compared only with the baseline model in order prove that the new model is still superior when compared with the prior practice of forecasting as well.

Table 5: RMSE for One, Two and Three-day Ahead Forecasts

	One-day ahead	Two-day ahead	Three-day ahead
New	20,822,664	31,561,587	34,501,180
Baseline	24,512,374	35,992,269	37,450,849

It is clear that the RMSE for each of the three days are lower for the new model. As the forecasting horizon expand the RMSE increases due to the increasing forecasting error. However, in comparison to the baseline model, the new approach is still superior. Prior to the usage of the baseline approach, the forecast for CIC was very static.

Conclusion

The results outlined in the paper show that the new model explains the variations in CIC better than the baseline approach which was used. This is evident from the higher adjusted R-square of 59% in comparison to 36% explanatory power of the previous approach. The new model is an improvement to the baseline approach whereby some explanatory variables have been included and omitted depending on the explanatory power of the model. For example, Eid al-Fitr and school holiday variable have not been included because the model performs better without it.

Prior to the development of an econometric model, total CIC for a particular week was taken as a simple average of CIC for the corresponding weeks of the past three years. This total was then equally distributed throughout the forecast week. Both the baseline and the new model are much superior to past techniques with the new model being an enhancement to the currently used baseline forecasting model. The model presented in the paper will boost the accuracy and reduce the variances while forecasting the CIC. As CIC is an important element of forecasting the liquidity of the banking system, this model will improve MMA's position in forecasting the weekly liquidity management. Nevertheless, it is also important to acknowledge the fact that the CIC is quite erratic in nature and may be subject to unforeseen events. Further, the model presented is most suitable for forecasting the very short-term and will not provide accurate results for a long-term forecast. This model should be evaluated and updated to account for the changes in trends.

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STATISTICAL APPENDIX

Table of Selected Economic Indicators, 2016 - 2019

(annual percentage change over the corresponding period, unless stated otherwise)

	2016	2017	2018	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4
Real Sector											
Tourist arrivals	4	8	7	17	3	4	3	15	24	10	12
Bednights of resorts	2	11	9	17	7	8	4	8	21	9	13
Operational capacity of resorts	5	13	6	9	6	4	5	6	14	17	18
Occupancy rate of resorts (%)	74	73	75	87	64	70	77	88	69	66	74
Average stay (days)	6.0	6.2	6.4	6.5	6.5	6.2	6.3	6.3	6.4	6.1	6.3
Fish purchases	19	42	3	2	-3	4	9	18	1	15	-15
Prices [1]											
Total (Republic)	0.5	2.8	-0.1	0.7	-1.5	0.4	-0.2	-1.2	1.3	0	0.9
Total excluding fish	0.7	2.8	-0.3	0.7	-1.5	0.3	-0.7	-1.3	1.7	0.3	1.1
Food and non-alcoholic beverages excluding fish	1.5	6.6	-2.2	0.9	-4.6	-0.5	-4.6	-5.4	2.4	-0.9	3.7
Government Securities (millions of rufiyaa)											
Government securities outstanding	23,230.2	23,414.2	24,262.0	23,536.5	23,571.1	23,495.0	24,262.0	25,405.6	26,218.8	26,445.5	28,591.2
Treasury bonds	8,774.6	9,320.9	9,248.4	9,300.2	9,283.8	9,264.2	9,248.4	9,227.2	9,210.4	9,190.4	9,626.4
Treasury bills	14,455.7	14,093.4	15,013.6	14,236.3	14,287.3	14,230.8	15,013.6	16,178.4	17,008.4	17,255.2	18,964.7
MMA	68.2	82.4	90.3	82.4	79.0	89.0	90.3	91.5	91.4	103.9	103.6
Commercial banks	10,154.9	8,694.4	9,605.5	9,052.4	8,822.9	8,896.8	9,605.5	10,357.4	10,755.0	10,815.1	11,954.4
Others	4,232.6	5,316.5	5,317.8	5,101.4	5,385.5	5,245.0	5,317.8	5,729.6	6,161.9	6,336.2	6,906.8

Source:

Ministry of Tourism; Ministry of Fisheries, Marine resources and Agriculture; Ministry of Finance; National Bureau of Statistics; Maldives Customs Service, Maldives Airports Company Limited; Gan International Airport; Maldives Monetary Authority

[1] The inflation rate for the year refers to the period average values, whereas inflation for the quarter represents the annual percentage change in the three-month-average.

	2016	2017	2018	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4
Money and banking											
Broad money	0	5	3	8	3	6	3	11	7	7	10
Net foreign assets	-36	32	-5	45	2	2	-5	23	10	11	32
Net domestic assets	24	-4	7	-6	4	7	7	3	6	6	0
Net claims on central government	18	-12	10	-12	-2	8	10	7	19	19	2
Claims on other sectors	21	9	6	9	10	10	6	5	3	3	4
o/w Private sector	11	12	11	13	13	13	11	10	8	8	8
Reserve money	-13	19	8	29	13	9	8	10	-4	-4	-4
Monetary operations[1]											
Open market operations[2]	0	0	0	0	0	0	0	0	0	0	0
Overnight Deposit Facility	30	-4	2	-6	45	4	-27	-34	-39	-25	6
External trade											
Merchandise exports (f.o.b.)	7	24	7	4	-18	30	17	41	13	-17	-11
Domestic exports	-3	43	-9	-11	-14	-12	-1	10	-9	-2	-41
o/w Fish exports	-2	43	-10	-12	-15	-14	-2	9	-9	-3	-42
Re-exports	22	2	32	29	-24	101	51	78	52	-27	24
Merchandise imports (c.i.f.)	12	11	25	33	14	32	25	-5	1	-10	5
o/w Food	6	8	7	11	8	2	7	9	13	12	7
o/w Petroleum	-13	27	44	55	18	66	42	4	16	-11	4
o/w Construction-related imports	20	24	34	65	39	39	0	-21	-16	-35	14

Source:
Ministry of Tourism; Ministry of Fisheries, Marine resources and Agriculture; Ministry of Finance; National Bureau of Statistics; Maldives Customs Service, Maldives Airports Company Limited; Gan International Airport; Maldives Monetary Authority

[1] Monetary operations figures repesent the average investment.

[2] Open market operations were suspended May 2014 onwards.

	2016	2017	2018	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4
Direction of Trade of Imports of Goods (as a percentage of total)											
o/w Singapore	14	13	12	12	12	12	14	14	12	12	10
o/w India	13	12	10	11	10	9	8	10	9	10	10
o/w Sri Lanka	6	7	6	5	5	7	6	6	5	6	6
o/w UAE	16	18	18	17	21	18	17	18	21	18	18
o/w Thailand	5	5	4	4	4	3	5	4	5	5	3
Direction of Trade of Exports of Goods (as a percentage of domestic)											
o/w Thailand	34	49	36	41	37	19	42	36	40	32	36
o/w Sri Lanka	10	4	3	2	2	4	5	4	2	3	4
o/w France	9	7	7	7	8	10	6	9	9	11	11
o/w Germany	9	7	13	10	14	19	11	12	16	9	9
External Reserves											
Gross international reserves (millions of US dollars)	467.1	587.3	712.0	704.4	726.4	564.7	712.0	776.2	677.4	530.8	753.0

Source:
Ministry of Tourism; Ministry of Fisheries, Marine resources and Agriculture; Ministry of Finance; National Bureau of Statistics; Maldives Customs Service, Maldives Airports Company Limited; Gan International Airport; Maldives Monetary Authority

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