



# Recommendation for Inflation Target FY2021/22 – FY2023/24

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## *Overview*

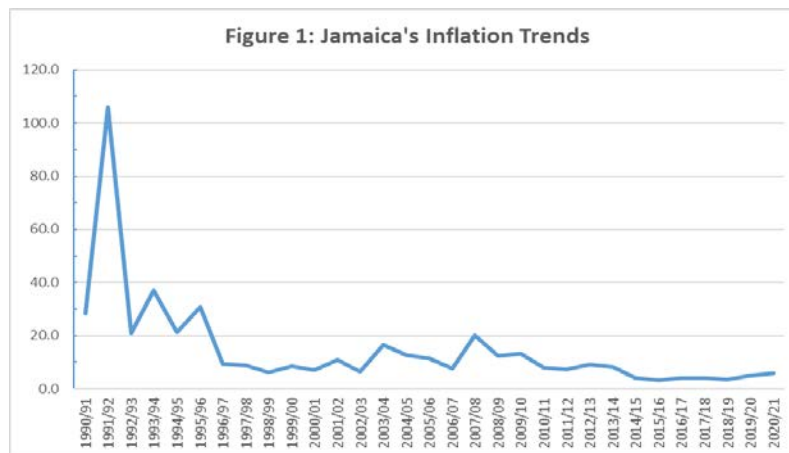
- 1. Bank of Jamaica was first tasked by the Minister of Finance and the Public Service in FY2017/18 to achieve a target range of 4.0% to 6.0% for the twelve-month point-to-point inflation over the medium term.** This inflation target was deemed optimal to support Jamaica's long run growth and was also consistent with the programmed reduction in public debt. Bank of Jamaica was broadly successful in maintaining inflation in the target range during the period January 2018 to January 2021. In particular, annual inflation over the period fell within the target range 59.5 per cent of the time and below 6.0 per cent (the upper bound of the target) 95 per cent of the time.<sup>1</sup> Inflation is projected to close FY2020/21 at 6.3 per cent and to remain close to the centre of the target over the medium term.
- 2. Bank of Jamaica recommends that the inflation target range remains at 5.0% ±1.0 pps (or 4.0% to 6.0%).** An assessment of the costs associated with targeting lower inflation (i.e. 3.0%), relative to the current trajectory, indicates that such a reduction will necessitate an upfront and strong adjustment of close to 200 bps in interest rates. Along with the ensuing reduction in inflation, this adjustment in interest rates will lead to reductions in both real and nominal GDP, which in turn results in a worsening of the medium-term trajectory for the debt of the public sector.
- 3. Bank of Jamaica also recommends that the current width of the target range of ±1.0 pp be maintained.** In order to establish the width of the inflation target range, this paper reviews the historical volatility of inflation, given the economy's susceptibility to weather-related, exchange rate, terms of trade and others shocks. This assessment suggests an inflation volatility of ±1.2 percentage points, which is broadly consistent with the recommended range. We expect future volatility to nonetheless fall further as Jamaica's efforts to mitigate the effects of climate change on agricultural food prices and initiatives to diversify Jamaica's fuel mix contribute to lower inflation volatility.
4. The remainder of this paper (1) describes the most recent inflation performance for Jamaica, (2) establishes an unconditional forecast for inflation (3) discusses the theory and antecedents in setting inflation targets and finally (4) provides an assessment of inflation volatility in Jamaica to propose a width for the inflation target range.

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<sup>1</sup> Inflation went above target on two occasions due to temporary increases in agricultural prices arising from either droughts or floods. On the flip side, inflation fell below the lower end of the target on 13 occasions over the period, again mainly due to volatility in agricultural prices as well as declines in international oil prices.

## *Inflation Performance to Date*

- Bank of Jamaica successfully reduced inflation to single digits in FY1996/97 from an average of 28.0% over the previous four years.** Inflation has largely remained below 10% since then, except for the impact of, *inter-alia*, adverse weather, increases in crude oil prices and revenue measures implemented by the central government (see Figure 1).



- In FY2017/18, Bank of Jamaica was tasked by the Minister of Finance and the Public Service to achieve a target range of 4.0% to 6.0% for twelve-month point-to-point inflation over the medium term.** This inflation target was deemed optimal to support Jamaica's long run growth and was also consistent with the programmed reduction in public debt. In the context of this inflation targeting *lite* regime, favourable developments in oil prices and fiscal consolidation, Bank of Jamaica successfully maintained inflation in the target range. In particular, between January 2018 to January 2021, annual inflation fell within the target range 59.5 per cent of the time and below 6.0 per cent (the upper bound of the target) 95 per cent of the time.
- During FY2020/21, the Jamaican economy was affected by significant uncertainties emanating from the impact of the COVID-19 pandemic. Real GDP for FY2020/21 is estimated to have contracted in the range of 10%-12% due to a temporary shut-down of the tourism industry, the spill-over effects of this to other sectors of the economy and the general impact on the economy of Covid-19 containment measures. **In the context of higher energy and transport related costs, inflation is projected to close FY2020/21 at 6.3 per cent but there are downside risks to this projection.**

## *The Current Projection*

- In the context of the projected recovery in GDP growth following the adverse impact of the COVID-19 pandemic and a recovery in global commodity prices, inflation is projected to remain generally stable around 5.0% over the medium term** (See Table 1 below). The Bank projects that a partial rebound of at least 4% in economic activity will

commence in FY2021/22, and could possibly be as high as 8% if there is a strong recovery in tourism.

**TABLE 1: MEDIUM TERM INFLATION FORECAST & MAIN ASSUMPTIONS**

	<i>Actual</i>			<i>Projection</i>				
	<i>2018/19</i>	<i>2019/20</i>	<i>2020/21</i>	<i>2021/22</i>	<i>2022/23</i>	<i>2023/24</i>	<i>2024/25</i>	<i>2025/26</i>
	<i>percentage change</i>							
<b>INFLATION</b>	3.4	4.8	6.3	5.1	5.0	5.0	5.0	5.0
<i>Private Sector Inflation Expectations*</i>	4.5	6.1	7.2**					
<b>Imported Inflation</b>								
US INFLATION	1.9	1.5	2.2	2.5	2.4	2.4	2.4	2.4
CRUDE OIL (WTI) (% Change)	16.9	-12.6	-31.0	20.5	16.8	5.7	0.7	0.7
GRAINS INDEX	4.9	-3.5	2.7	4.2	0.1	0.1	0.1	0.1
o.w. CORN	6.5	2.9	-6.6	5.5	0.1	0.1	0.1	0.1
o.w. WHEAT	16.3	-0.9	-0.7	0.8	0.1	0.1	0.1	0.1
<b>Real GDP Growth</b>	1.9	-0.1	-11.6	5.2	6.2	3.1	2.0	2.0
Global Growth**	3.6	2.9	-3.8	4.2	3.6	3.2	3.2	3.2

\* 12 month ahead inflation expectations based on BOJ Survey of Businesses' Inflation Expectations.

\*\* As at December 2020

9. **For FY2021/22 in particular, the main drivers of inflation are improved domestic demand, inflation expectations and imported inflation.** Weak domestic demand is expected to be less of a drag on inflation for the fiscal year given the projection for domestic GDP growth. A survey-based measure reflected average inflation expectations of approximately 6.7% in 2020, largely due to the uncertainty surrounding the COVID-19 pandemic. However, influenced by BOJ's efforts at educating the public, inflation expectations are expected to fall back over time, closer to the mid-point of the inflation target range. Imported inflation is projected to accelerate in FY2021/22 as global demand picks up. In this context, oil prices are projected to increase to an average of US\$52.87 per barrel for FY2021/22 from an average of US\$40.60 in FY2020/21 and fluctuate between \$55.00 - \$65.00 per barrel over the medium- term.<sup>2</sup>

10. **The risks to the inflation forecast are skewed to the downside.** On the upside, higher inflation could result from greater than anticipated exchange rate depreciation and pass-through, worse than anticipated weather conditions, stronger than anticipated demand conditions in a context of a successful local Covid-19 vaccination campaign and higher than anticipated international grain and oil prices. The main downside risks relate to lower than projected international commodity prices, stronger than anticipated impact of the recent investments in irrigation and large-scale farms on domestic agriculture supply, sharper

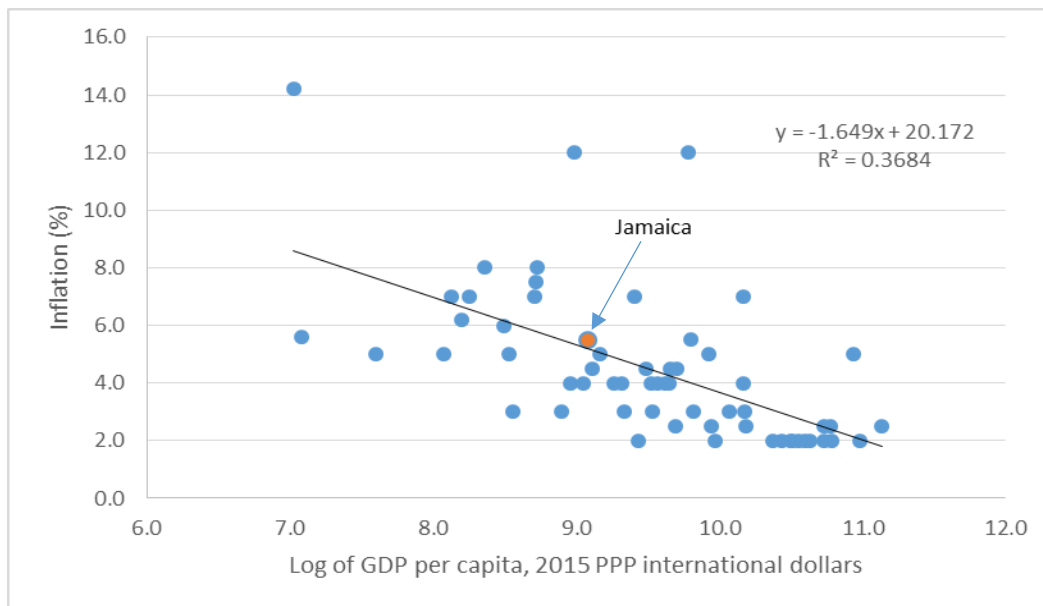
<sup>2</sup> The outlook for oil prices is underpinned by lower projected global inventory levels as OPEC and allied nations maintain voluntary supply reductions. This is expected to be further supported by higher global consumption amid positive reports surrounding the development and deployment of a Covid-19 vaccine.

reversals in agricultural food prices over the near term, the non-occurrence of administered price adjustments as well as weaker than anticipated demand conditions.

### *Optimal Inflation Rate*

11. **The optimal level of inflation for a country depends on its economic structure and stage of economic development.** Optimal inflation for emerging market economies is usually higher in the context of real wage convergence (Balassa-Samuelson effect). In this context, emerging market economies usually set higher inflation targets than developed economies as the former set of countries usually lacks diversity and reflect low economies of scale and low flexibility in product and factor markets. Figure 2 shows the inverse relationship between per capita GDP and inflation targets for 61 economies that pursue explicit or implicit inflation targeting.<sup>3</sup> Figure 3 on the other hand shows inflation targets for selected inflation targeting economies. Advanced economies usually target inflation at 2%, while central banks in emerging economies set higher targets.

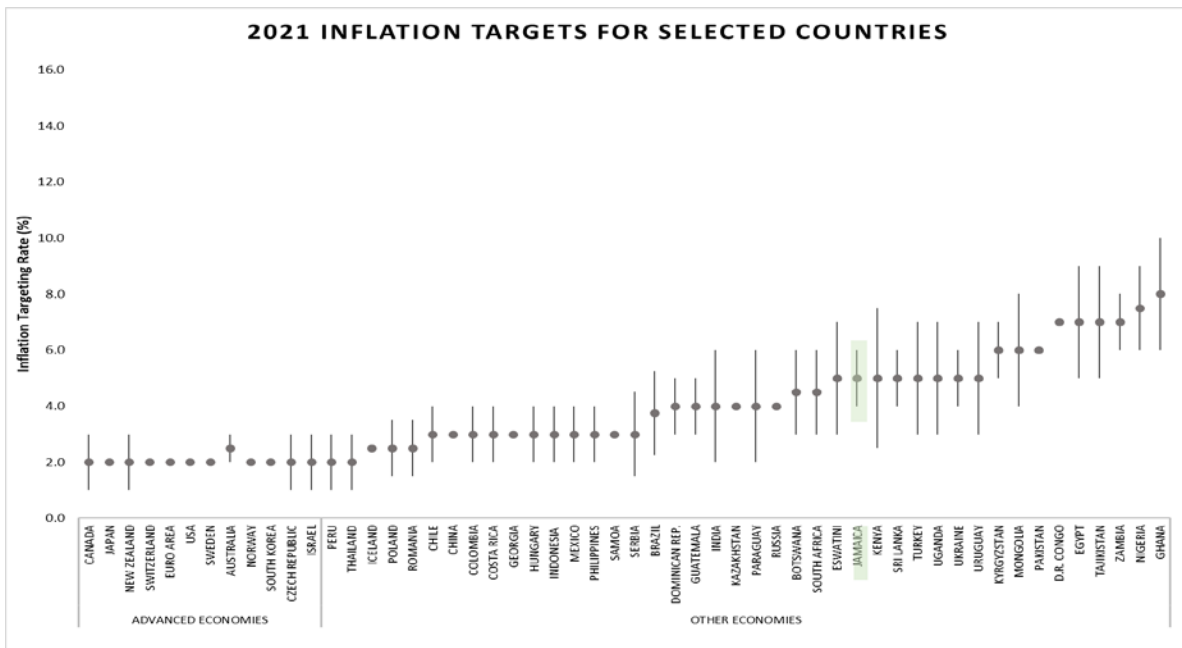
*Figure 2: GDP per capita and Inflation Targets in Selected Economies*



Source: IMF and <http://www.centralbanknews.info/p/inflation-targets.html>

<sup>3</sup> The graph suggests that the optimal inflation rate for Jamaica lies between 4% and 6%.

Figure 3:



Source: <http://www.centralbanknews.info/p/inflation-targets.html>

12. **The authorities in high inflation countries also may not want to immediately try to attain a long-term inflation target as disinflation has output costs.** Tight monetary policy in pursuit of lower inflation has an impact on the real economy through two channels. First, increases in interest rates reduce domestic demand and, second, increases in interest rates cause real exchange rate appreciation, which leads to decreased net exports. Policy credibility and central bank independence plays important roles in this disinflationary process, both of which are most times weak in emerging market economies. If the central bank is able to influence the usually high inflation expectations, then the associated cost can be substantially decreased.
13. **The appropriate strategy therefore seems to be for emerging market economies to reduce their inflation target gradually towards the long-term target.** The Central Bank of Chile had its target reduced from 20.0% to 3.5% over a decade while the Czech National Bank had its target reduced from 6% to 2% over 12 years. The recent discussion by - and experiences of - advanced economies, however, show that an inflation target of 2.0% may be too low because of the zero lower bound problem.<sup>4</sup> Nevertheless, it is debated that, if fiscal policy has room to manoeuvre, this problem can be circumvented.<sup>5</sup>

<sup>4</sup> In monetary policy, reference to a zero-lower bound (ZLB) on interest rates means that the central bank can no longer reduce the interest rate to encourage economic growth. Therefore the ZLB acts as a constraint on central bankers trying to stimulate the economy. In essence, with an inflation target of 2.0%, real interest rates are not sufficiently low to stabilize the output gap, resulting in longer recessionary forces.

<sup>5</sup> With interest rates at zero, and with the main risk being that inflation is too low, fiscal policy must be active and contribute to cyclical stabilisation. In this case, fiscal policy must lead with an expansionary stance and monetary

14. **In the context of the foregoing, it is reasonable for Jamaica to commit to a long-term inflation target in the range of 2.0% to 4.0% and gradually approach this longer-term objective.** In the short-term, as the policy makers prioritize accommodating a nascent acceleration of GDP growth and a reduction in public sector indebtedness to sustainable levels, it is appropriate to maintain a target of 5.0%.

### *Impact of Targeting a Lower Inflation Rate*

15. This section evaluates the impact on selected macroeconomic variables (including the fiscal accounts) of Bank of Jamaica targeting a lower annual inflation rate of 3.0% for FY2021/22 and beyond, relative to the proposed target of 5.0%.

16. **The Bank assesses that, relative to the baseline forecast, the targeting of 3.0% inflation will require an upward adjustment of 166 bps in interest rates over two years, driven by a tightening of monetary policy.**<sup>6</sup> This tightening will cause real GDP growth rate to deviate from the baseline by 0.3 pp on average over the next four years (reflecting reductions of 0.5 pp and 0.6 pp for the first two years) and the nominal exchange rate to depreciate at a slower annual rate over the same period. The tables with the baseline macroeconomic projections and the lower inflation scenarios are shown in Appendix 1.

17. **With regard to the fiscal accounts, the monetary policy adjustment results in a deterioration of 0.06 pp, on average, in the annual fiscal balance over the forecast horizon** (see Figure 4). This translates to a cumulative fiscal cost of 0.5% of GDP over the period. In the context of the deteriorated fiscal position and the lower nominal GDP, the debt-to-GDP ratio deteriorates, relative to the baseline path, by 3.4 pps at end FY2027/28. This means that, to achieve the lower inflation path, the size of compensatory adjustments in fiscal measures over the period would have to be equivalent to 3.4% of GDP (or approximately J\$116.5 billion) (see Figure 5).

18. **It may be possible to achieve lower inflation without any significant change in the Bank's monetary policy stance** if inflation expectations were lowered by other factors such as improvements in the credibility of monetary policy. Lower inflation is also possible in the context of the removal of structural constraints to growth, which would expand the productive capacity of the economy.

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policy must explicitly cooperate by guaranteeing low interest rates for as long as needed. Ubide (2019) 'Fiscal Policy at the Zero Lower Bound'

<sup>6</sup> See Appendix 2 for a detailed review of the monetary transmission mechanism for Jamaica which forms the basis of the assessment of the cost of targeting lower inflation.

Figure 4

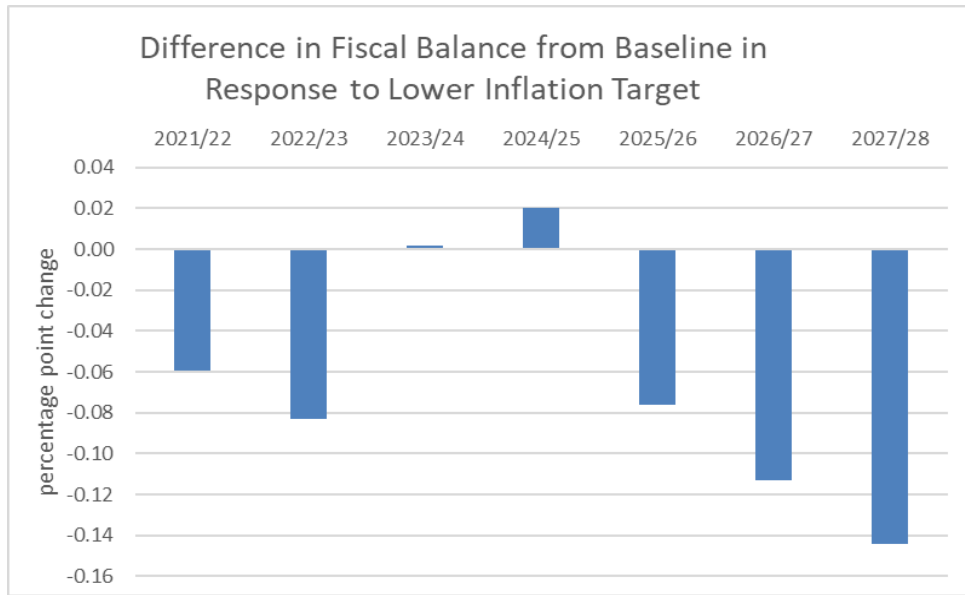
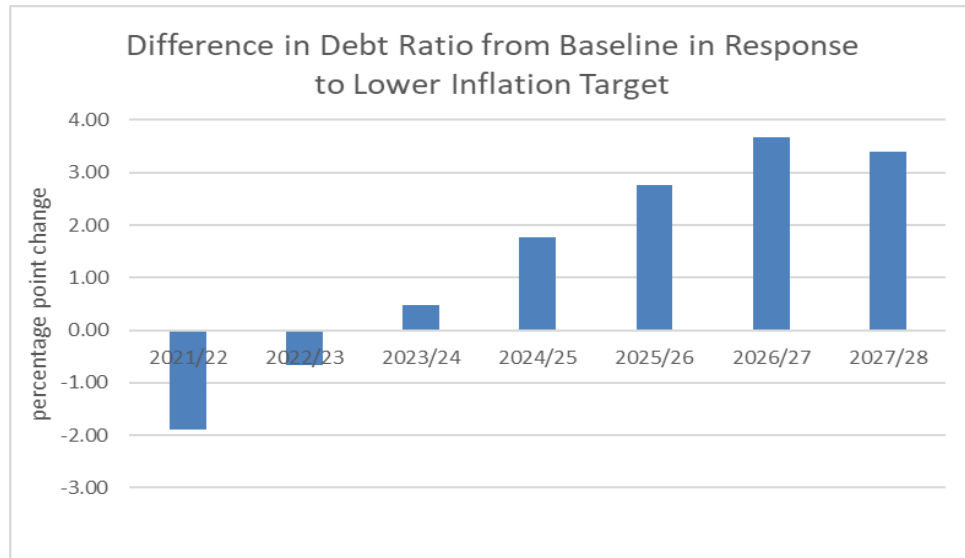


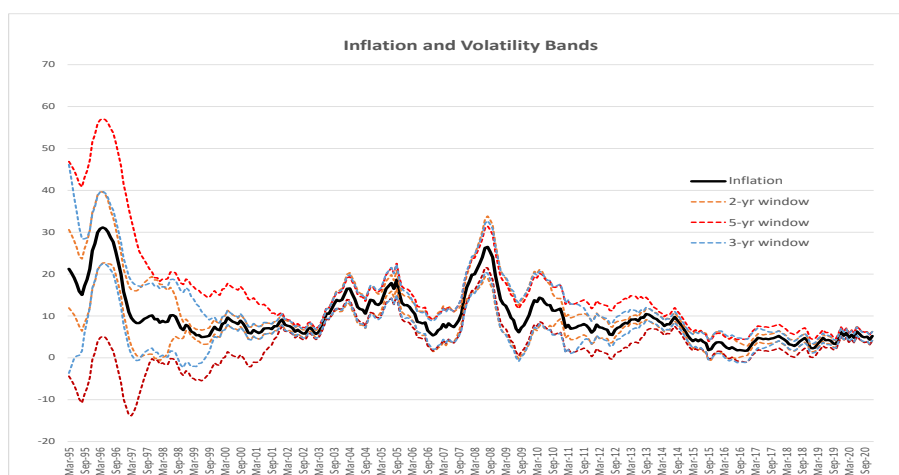
Figure 5:



## Width of Jamaica's Inflation Target Range

19. **Bank of Jamaica recommends that the existing  $\pm 1.0$  pp permissible range for the deviation of inflation around its target is maintained.** In addition to falling inflation volatility, the recommendation is premised on the Bank's aim of reducing inflation expectations over time, complemented by reductions in the speed of exchange rate pass-through and efforts to mitigate the impact of climate change and terms of trade shocks.
20. **An inflation target range defines the extent to which inflation can vary without triggering a change to monetary policy.** Countries announce specific inflation targets to help anchor inflation expectations and to raise the level of monetary policy credibility. Targets provide a yardstick against which the central bank's success can be measured, allowing the monetary authority to establish a reputation as an inflation fighter. Bank of Jamaica has traditionally operated with a  $\pm 1.0$  pp target range.<sup>7</sup>
21. **To inform the determination of the target range, an assessment of inflation volatility over time was conducted.** The rolling standard deviation for annual inflation over various intervals or "windows" covering the period December 1994 to September 2020 supports the view that inflation volatility falls with lower inflation (see Figure 6).<sup>8</sup> The 5-year rolling window estimate of volatility suggests that, over the last year, inflation volatility has been relatively low, ranging between  $\pm 1.1\%$  and  $\pm 1.2\%$ . Similarly, with narrower windows of three and two years, inflation volatility has declined to between  $\pm 0.9\%$  and  $\pm 1.1\%$  and between  $\pm 0.9\%$  and  $\pm 1.2\%$ , respectively.

Figure 6



<sup>7</sup> The target range over the past eight years has been set at 8.5%-10.5% for FY2013/14, 7.0%-9.0% for FY2014/15, 5.5%-7.5% for FY2015/16, 4.5%-6.5% for FY2016/17 and 4.0% - 6.0% since FY2017/18.

<sup>8</sup> This assessment was done by calculating the standard deviation as at each month for the past 'x' years where x represents the time period or the window over which the assessment is done. This is done for the following months for the same time period which would have shifted (and hence rolling). The standard deviation is then used to create bands around the inflation (inflation  $\pm$  standard deviation) which is graphed as shown in Figure 6.



22. **An assessment of various shocks was also done which shows that, outside of the impact of adverse weather, these shocks have resulted in inflation volatility in the range  $\pm 1.0\%$ .** The immediate impact of the selected shocks on inflation was determined by comparing the outturns for inflation (which included the shocks) with the baseline inflation forecast.<sup>9</sup> For example, the deviation of inflation caused by adverse weather (which produces above seasonal increases in the agricultural prices) is estimated by comparing the baseline forecast for the Food and Drink Division of the CPI with the actual data. From table 2 below, weather-related shocks resulted in inflation deviations of up to 1.4 pp.

**Table 2: Shock Assessment**

<i>Nature of Shock</i>	<i>Period and % change</i>	<i>Immediate Impact on CPI</i>
<i>Energy rates</i>	<i>Electricity rates increased year over year by 11.3% in February 2020</i>	<i>0.9 pp higher</i>
<i>Water rates</i>	<i>Water rates declined by 21% in September 2020</i>	<i>0.3 pp lower</i>
<i>School fees due to Covid-19</i>	<i>Declined by 22% in May 2020</i>	<i>0.4 pp lower</i>
<i>Drought impact</i>	<i>Raw food prices increased year over year by as much 34% in June 2020</i>	<i>1.4 pp higher</i>
<i>Flood impact</i>	<i>Raw food prices increased year over year by as much as 20% in December 2020.</i>	<i>1.3 pp higher</i>

23. **Inflation volatility is likely to fall further as macroeconomic stability becomes entrenched and the resilience of the economy improves in the context of structural reform programmes.** Among these programmes are efforts to reduce the agricultural sector's susceptibility to weather-related shocks. The recent move by the private sector to create large scale farms will also potentially increase the capacity of the sector to cope with weather-related shocks. Additionally, the country has made significant investments in LNG and renewable energy sources which should, over time, reduce its susceptibility to energy-price related shocks.

Bank of Jamaica  
04 March 2021

<sup>9</sup> The baseline forecast was generated by incorporating the standard seasonal patterns for selected divisions in the CPI.

## Appendix 1: Lower Inflation Scenario

### MACROECONOMIC PROJECTIONS: BASELINE

	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Real GDP	-0.1	-11.6	5.2	6.2	3.1	2.0	2.0	2.0	2.0
Nominal GDP	3.4	-8.2	10.6	11.6	8.3	7.1	7.1	7.1	7.1
CPI (end of period)	4.8	6.3	5.1	5.0	5.0	5.0	5.0	5.0	5.0
CPI (average)	4.6	5.6	5.1	5.0	5.0	5.0	5.0	5.0	5.0
Treasury Bill rate (end of period, %)	1.8	2.0	1.9	3.4	5.1	5.1	5.1	5.0	5.1
Treasury Bill rate (average, %)	1.8	1.3	1.3	2.7	4.3	5.1	5.1	5.0	5.1
Real Treasury Bill rate	-3.6	-4.0	-3.0	-1.6	0.1	0.1	0.1	0.1	0.1
Public Debt (% of GDP)	94.8	110.1	99.0	88.3	81.5	75.1	69.7	64.4	58.4
Nominal GDP (J\$ billions)	2121.2	1948.0	2154.0	2403.6	2603.2	2788.8	2987.3	3199.3	3425.3

### MACROECONOMIC PROJECTIONS: 3.0% SCENARIO

	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Real GDP	-0.1	-11.6	4.7	5.6	3.0	2.0	2.0	2.0	2.0
Nominal GDP	3.4	-8.2	10.4	10.0	6.3	4.8	5.0	5.0	5.0
CPI (end of period)	4.8	6.3	4.4	3.7	3.0	3.0	3.0	3.0	3.0
CPI (average)	4.6	5.6	5.4	4.1	3.3	2.8	2.9	3.0	3.0
Treasury Bill rate (end of period, %)	1.8	2.0	3.2	5.0	5.1	3.2	3.1	3.1	3.2
Treasury Bill rate (average, %)	1.8	1.3	1.6	4.5	5.1	4.0	3.1	3.1	3.2
Real Treasury Bill rate	-3.6	-4.0	-2.0	0.9	1.7	0.4	0.3	0.2	0.2
Public Debt (% of GDP)	94.8	110.1	97.2	87.6	82.0	76.9	72.5	68.1	61.8
Nominal GDP (J\$ billions)	2121.2	1948.0	2151.0	2366.4	2516.4	2637.8	2769.4	2908.9	3055.7

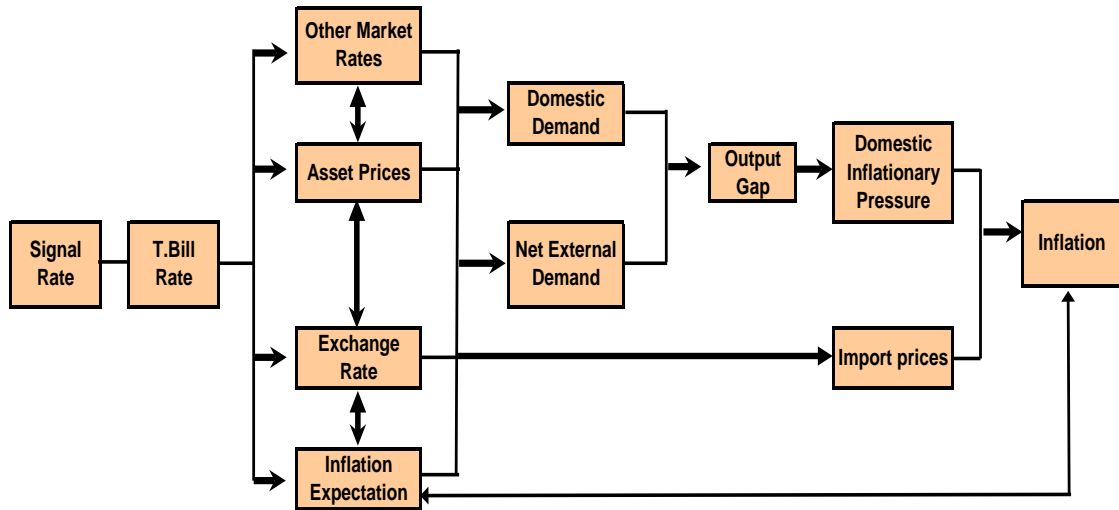
### MACROECONOMIC PROJECTIONS: DIFFERENCE FROM BASELINE

	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Real GDP	0.00	0.00	-0.50	-0.60	-0.17	-0.03	0.05	0.02	0.00
Nominal GDP	0.00	0.00	-0.19	-1.58	-1.96	-2.31	-2.13	-2.06	-2.02
CPI (end of period)	0.00	0.00	-0.71	-1.31	-2.04	-1.96	-1.99	-2.00	-2.02
CPI (average)	0.00	0.00	0.32	-0.89	-1.74	-2.23	-2.14	-2.04	-1.98
Treasury Bill rate (end of period, %)	0.00	0.00	1.34	1.66	-0.03	-1.89	-1.93	-1.91	-1.84
Treasury Bill rate (average, %)	0.00	0.00	0.32	1.80	0.77	-1.16	-1.96	-1.93	-1.87
Real Treasury Bill rate	0.00	0.00	0.98	2.43	1.62	0.33	0.21	0.12	0.14
Public Debt (% of GDP)	0.00	0.00	-1.89	-0.67	0.47	1.77	2.77	3.67	3.39
Nominal GDP (J\$ billions)	0.00	0.00	-2.98	-37.21	-86.74	-150.96	-217.92	-290.46	-369.61

## Appendix 2: The Transmission of Monetary Policy in Jamaica: An Overview

- i.* The monetary transmission mechanism is the process through which monetary policy decisions affect the economy in general and the price level in particular. It describes how changes in policy are transmitted through the financial system via financial prices and quantities to the real economy, affecting aggregate spending decisions of households and firms, and thence to aggregate demand and inflation. There are divergent views about the monetary transmission process among industrialized nations despite decades of theoretical and empirical research. The process in developing countries is even less settled.
- ii.* Since the mid-1990s, the Bank of Jamaica has intensified its efforts at tracing the effect of its actions on the economy with the use of greater empirical studies. These efforts have been aimed at developing an informed and systematic approach to achieving price stability while causing the least amount of dislocation to output in the real economy. To this end, research work has been undertaken to measure, analyse and explain the transmission process. The methodologies employed have ranged from the use of simple models, which explain certain or specific aspects of the transmission, to more complex models which attempt to provide a comprehensive guide to the effect of policy on the different areas of the economy.
- iii.* The diagram below provides a schematic illustration of the main transmission channels of monetary policy decisions in Jamaica based on the results of these studies. In particular, the diagram illustrates the effect of a change in the Central Bank's official signal rate to inflation. This signal rate has varied among the 30-day, 180-day and 360-day open market rates. However, effective 01 July 2017, the BOJ transitioned to using the interest rate paid on overnight balances in the current accounts of deposit-taking institutions held at the central bank. This was a part of a series of steps, which began in 2014, aimed at improving policy signals. However, irrespective of the interest rate communicated to the market as the signal rate, the benchmark 180-day Treasury Bill rate has historically reacted strongly and positively to the monetary policy signal.

*Figure 1: Diagram of the Monetary Transmission Mechanism*



- iv. A change in the official interest rate affects money-market interest rates directly and indirectly influences lending and deposit rates which are set by banks. Agents in the market for funds may also become uncertain about the Central Bank's motive, which could influence heightened expectations about future official interest rate changes, thereby affecting medium and long-term interest rates. Research on the transmission of changes in money market rates to the retail interest rates set by banks found that the impact of an adjustment in the Bank's signal rate is quicker and more complete on lending rates than deposit rates.
- v. The impact on financial conditions in the economy and on market expectations triggered by monetary policy actions may lead to adjustments in asset prices (e.g. stock market prices) and the exchange rate. Changes in the exchange rate affect inflation directly, as imported goods are a significant component of production and consumption. The effect of policy which operates through the exchange rate is known as the exchange rate channel.
- vi. Changes in interest rates will also affect saving and investment decisions of households and firms. In addition, consumption and investment are affected by movements in asset prices via wealth effects. Asset prices can have an impact on aggregate demand via the value of collateral that allows borrowers to access more loans and/or to reduce the risk premia in loan rates. Changes in consumption and investment decisions brought about by movement in interest rates will change the level of domestic demand for goods and services relative to domestic supply, thereby affecting prices and hence inflation. Broadly, this channel is referred to as the credit channel of monetary policy. In addition, changes in aggregate demand may translate into tighter or looser conditions in labour and intermediate product markets, which in turn can affect price and wage-setting in these markets.

- vii.* **Based on the empirical evidence, the main transmission channel of monetary policy in Jamaica is mainly through the exchange rate<sup>10</sup>, with a smaller role for the credit channel.** Most of the effect of a monetary policy action on inflation occurs within four to eight quarters of the policy change and can last for two to three years. The impact on output is historically quite negligible and can persist for almost three years.
- viii.* An important issue is the matter of exchange rate pass through (ERPT) which measures the change in the price level in percentage points given a one percent change in the exchange rate. Estimates of the ERPT during the 1990's indicated that the pass through was 100% (completed) within a year. However, with increased credibility of the central bank through the application of judicious monetary policy, ERPT has fallen over time. Current estimates imply that the ERPT has fallen to between 30% and 60% over one year, with complete pass through achieved within 3-5 years.
- ix.* With respect to the impact of monetary policy via the credit channel, research using sectoral GDP data found that the manufacturing sector experiences the largest (0.04%) and quickest (two quarters) decline in response to a positive 1.0% interest rate shock, while the financial sector also appears sensitive to such increases in the short term. Analysis using data on firms' balance sheets across different sectors suggest that the influence of the credit channel could be larger than suggested by studies based on aggregate data.
- x.* The Bank's research has also found that the effect of policy, that is the length of the response lag and the total impact, may also vary depending on the type of action taken and the current state of the economy. Positive (increase in interest rate) and negative (reduction in interest rate) monetary policy shocks have different effects, which are amplified depending on the state of the economy. Negative interest rate shocks have been found to have stronger output and price effects when the economy is in a low inflation environment than when it is in a high inflation environment. Positive monetary shocks, on the other hand, have a stronger impact on output, prices and exchange rates in an inflationary period when compared to the responses in a low inflation environment. Overall, the effect of a negative monetary shock on output is greater than a positive shock.
- xi.* The Bank's main macro model, Quarterly Projections Model (QPM), captures the transmission channels identified in the literature. Forecasts from this model form the basis of the projections and targets for the financial programming undertaken by the Bank. The model is also used to simulate the effects of different policy options under various scenarios. In addition, the model has provided reliable projections of the key economic variables and important insights into various policy questions.

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<sup>10</sup> For example, in one study, a fall in inflation amounting to 0.1% in one quarter after an interest rate shock can be split into 0.078% reflecting the exchange rate channel and 0.022% reflecting the influence of the credit channel.

- xii. Due to the changing nature of economic relationships, there is a need for continual update of the knowledge on the monetary transmission mechanism in Jamaica. For example, the global financial crisis and more recently the Covid-19 related crisis as well as the GOJ's policy responses to these events will require a re-examination of these relationships. The unprecedented nature of these developments will alter, either temporarily or permanently, the behaviour of investors and consumers. Recent papers have reflected that, in the context of a lower interest rate environment, the transmission of policy rate adjustment to inflation and other variables has evolved and that the effect may be longer lasting. For this reason, the relationships between policy actions and the response of market participants, firms and households are being continually monitored to provide an even better guide to policy decisions.

### *References*

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