Two Benefits of Capital Controls for Macroeconomic Stability in The Bahamas

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Abstract

This paper discusses two benefits of capital controls in the context of The Bahamas, which has pegged its currency one-for-one to the US dollar since 1973. The benefits are that: (1) controls on capital outflows have kept government debt costs lower than they would otherwise have been; and (2) controls have made it more feasible to maintain the exchange rate peg. I estimate that controls have put 1–2 ppts of downward pressure on the interest rates paid on domestic government debt in recent years, and up to 5 ppts since the onset of COVID-19. As the debt-to-GDP ratio of The Bahamas has risen to around 100 per cent, this represents substantial relief for the fiscal balance. Turning to the external balance, it has been estimated that extra controls imposed in response to COVID-19 prevented or delayed the depletion of $400m of The Bahamas' foreign exchange reserves (which totalled $1.8b prior to the pandemic). Cross-country evidence suggests that existing controls may have saved an additional $500m of reserve outflows, though this estimate is rough at best. Although there can be sizeable costs associated with capital controls, my estimates of these two benefits are useful for informing the extent and timing of any further capital account liberalisation in The Bahamas.

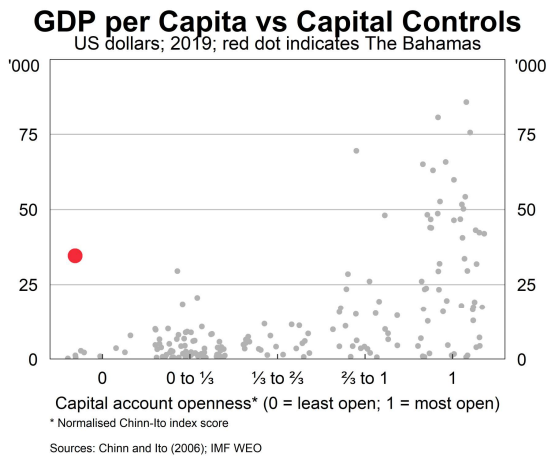
[1] I thank staff at the Central Bank of The Bahamas for their comments and suggestions, and for their generous assistance with data. In particular, I am grateful to: Allan Wright, Sharon Branch and Latera Carey-McPhee for hosting me in the research department; Kareem Cox for educating me about Bahamian financial markets; and Charles Littrell for thoughtful feedback that made my paper clearer. My research was supported by a grant from Harvard's Center for International Development. The views expressed in this paper are my own and are not intended to reflect the views of the Reserve Bank of Australia, from which I am currently on leave.

1. Introduction

According to Mundell's trilemma, economies face trade-offs between three goals generally seen to support macroeconomic stability: (1) monetary autonomy; (2) exchange rate stability; and (3) openness to capital flows (Mundell 1963). The theory is that an economy can achieve at most two of these goals in full. This theory is largely in line with the empirical evidence, though in practice many economies choose to implement intermediate regimes, refusing to give up on any one of the goals entirely.[2] Regimes vary widely between economies (and within economies over time), which is consistent with models suggesting that what is optimal for one economy may not be optimal for other economies.[3] Nevertheless, the IMF and other international financial institutions have historically argued against policy settings that prioritise the first two goals in the trilemma over the third goal, e.g. by imposing capital controls.

In this paper, I consider the context of The Bahamas, where capital controls have underwritten the achievement of the first two goals in the trilemma. I focus on two benefits of capital controls that have helped The Bahamas to weather the large economic shock caused by the COVID-19 pandemic. First, the controls have put downward pressure on the government's cost of borrowing domestically, supporting the fiscal policy response to the pandemic. Second, the controls have reduced the strain of COVID-19 on The Bahamas' foreign exchange reserves, supporting its pegged exchange rate. These two benefits reflect the first two goals in Mundell's trilemma. Capital controls can be costly – not least because they are restrictions on, or frictions for, the efficient allocation of investors' capital – so it is up to policymakers to assess whether the costs are outweighed by the benefits. For the highly idiosyncratic economy of The Bahamas, further liberalisation of its capital controls could risk the loss of sizeable benefits.

Graph 1



The Bahamas provides a unique context to consider the potential benefits of capital controls. First, notwithstanding some liberalisation of its capital account in recent years, the controls imposed by The Bahamas are relatively *strict*. As of 2019, The Bahamas was one of only eleven countries to score 0 on the normalised Chinn-Ito index, which is a common measure of capital account openness (Graph 1; Chinn and Ito 2006). The other ten countries were far poorer than The Bahamas, which has a GDP per capita of roughly US$30,000, compared to less than US$10,000 for each of the others. Second, the capital controls imposed by The Bahamas appear to have been relatively *effective*, in that there is thought to be little evasion of the controls (at least of the size or speed that would be noticeable; Rolle 2018). This contrasts with the experience of other developing countries that have implemented capital controls, where weaker institutions have meant that the controls are more easily evaded.[4] Third, the controls imposed by The Bahamas seem to have been relatively *successful*. The Bahamas has managed to maintain a one-for-one peg between the Bahamian dollar and the US dollar for the past half-century (and, prior to then, a peg

[2] See e.g. Obstfeld et al (2005) and Ilzetzki et al (2017).
[3] For the variability of exchange rate regimes, see Frankel and Wei (2008). For a model where the optimal exchange rate regime depends on the type of shocks that the economy faces, see Aizenman (1994).
[4] See e.g. Edwards (1999) and the citations therein.

to the British pound), while keeping inflation relatively stable. So, if the benefits of capital controls are evident anywhere, then they should be evident in The Bahamas.

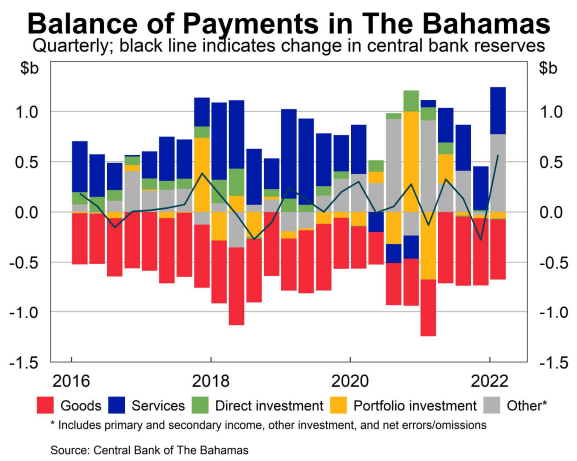
In section 2, I give some background for the rest of the paper, including on how The Bahamas implements its capital controls and how these controls have evolved recently. In section 3, I estimate the effect of the controls on government borrowing costs. In section 4, I look at the period around the onset of COVID-19 to assess the potential effects of the capital controls on The Bahamas' foreign exchange reserves and the stability of its exchange rate. Section 5 concludes.

2. Background and recent changes in capital controls in The Bahamas

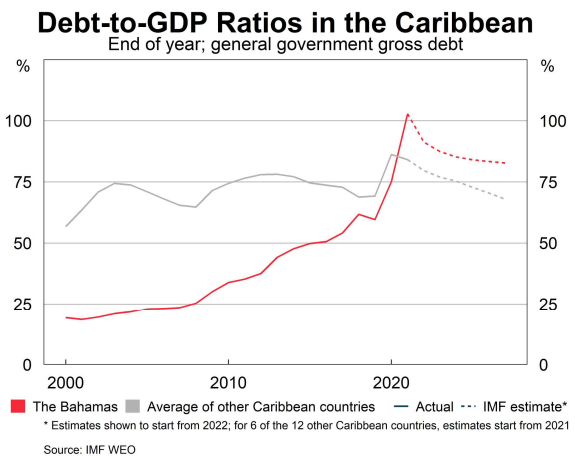
The economy of The Bahamas is centred around tourism and is open to international trade. This is reflected in the structure of its balance of payments, where large net outflows for goods are typically counterbalanced by tourism-driven net inflows for services (Graph 2). By contrast, capital flows have tended to be relatively small. The spikes in portfolio investment inflows in late 2017 and late 2020 were associated with issuance of foreign-currency debt by the Bahamian government. The halt in tourism as a result of COVID-19 undermined the key source of inflows for The Bahamas, resulting in net outflows for services in 2020. The economy shrank by around one-quarter over 2020.

Increases in government spending in the wake of COVID-19, combined with the decrease in GDP, have pushed the debt-to-GDP ratio of The Bahamas close to 100 per cent (Graph 3). The recent rise in debt built on earlier rises that were related to reconstruction spending following damage suffered in major storms, such as from Hurricane Dorian in 2019. Credit rating agencies have downgraded Bahamas government debt in recent years, including after the 2021 Bahamian general election, to below investment grade.

Graph 2



Graph 3



The Bahamian dollar is pegged one-for-one to the US dollar, and the US dollar co-circulates with the domestic currency within the economy. The peg is implemented by the Central Bank of The Bahamas (CBOB) via a commitment to buy US dollars from its counterparties at B$1 (and to sell US dollars at B$1.0025), and the commitment is backed by the CBOB's foreign exchange reserves. The US dollar is a natural candidate for a nominal anchor for monetary policy in The Bahamas, because roughly four-fifths of The Bahamas' international trade takes place with the US. Both theory and practice suggest that a pegged exchange rate can be conducive to macroeconomic stability in the context of a small undiversified open economy, like that of The Bahamas (Rolle 1994). The peg has held firm for the past half-century, and inflation in The Bahamas has mirrored inflation in the US over that period (Rolle 2018).

The Bahamas uses exchange controls on outflows to peg the Bahamian dollar to the US dollar

Both domestic policymakers and international financial institutions have attributed the longevity of The Bahamas' pegged exchange rate regime to its strict capital controls (see Rolle 2018 and IMF 2021). Two key features of The Bahamas' capital controls are that they are:

- **largely exchange controls.** The controls focus on conversions between Bahamian dollars and foreign currencies, rather than on transactions between residents and non-residents. This is reflective of the main purpose of the controls, which is to support the exchange rate peg. The CBOB administers the exchange controls that are imposed by The Bahamas.
- **largely controls on outflows.** The controls focus in particular on conversions out of the domestic currency (i.e. they prevent or disincentivise sales of Bahamian dollars). By contrast, conversions into the domestic currency are relatively unrestricted, at least by the CBOB.[5] This differs from controls in other countries, which tend to restrict inflows to prevent destabilising surges of capital. Strict controls on capital outflows, like those in The Bahamas, are relatively rare outside of crisis situations.

Extra controls were introduced at the onset of COVID-19, but these have since been unwound

In the years prior to COVID-19, The Bahamas had taken some steps to loosen its capital controls (Table 1). The aim of the steps was to increase the openness of the Bahamian capital account, without compromising the exchange rate peg or threatening The Bahamas' financial stability. These steps were modest, and the capital controls that remained in place at the onset of COVID-19 were still among the strictest in the world, according to the Chinn-Ito index, among other measures.

Table 1: Chronology of Key Recent Changes in Capital Controls Imposed by The Bahamas

Red text indicates changes in controls that support reserve accumulation; from start 2016 to present

Date		Description	Effect*
2016	1 Apr	Higher limits on purchases of foreign currency, including for BDRs^	↑outflows
2017	24 Apr	Easier access to foreign currency financing for residents	↑inflows
2018	1 Feb	Reduction of the ICM premium charged on purchases of foreign currency&	↑outflows
		Easier access to and repatriation of foreign currency deposits for residents	↑both
		Purchases of foreign residential property up to $0.5m excluded from ICM	↑outflows
	24 Aug	Easier access to Bahamian dollar deposits for non-residents	↑inflows
2019	1 Jan	Easier access to the ICM (via commercial banks rather than the CBOB)	↑both
	1 Feb	Reduction of the ICM premium paid on sales of foreign currency	↓inflows
	1 Oct	Easier for non-residents to purchase or sell domestic residential property	↑both
2020	1 May	Suspension of dividend payments by commercial banks to non-residents	↓outflows
		Looser rules on commercial banks' sales of foreign currency to residents	↑inflows
	4 May	Suspension of purchases of foreign currency via the ICM and for BDRs	↓outflows
2021	1 Mar	Resumption of dividend payments by commercial banks to non-residents	↑outflows
	1 Jul	Re-tightening of rules on commercial banks' sales of foreign currency	↓inflows
	1 Oct	Resumption of purchases of foreign currency via the ICM and for BDRs	↑outflows

* Expected effect assuming that the capital controls changed had been binding prior to the change

^ BDRs are Bahamian depository receipts, used to purchase publicly traded foreign-currency securities (up to $35m/year)

& ICM is the investment currency market, used to purchase other foreign-currency assets (around $50m/year)

Source: Central Bank of The Bahamas

The CBOB responded to the severe economic impact of COVID-19 by tightening controls on outflows (and slightly loosening controls on inflows) to counteract the depletion of foreign exchange reserves

[5] The Bahamian government places some restrictions on inflows of capital into certain sectors of the economy. Additionally, controls on outflows can be an indirect constraint on inflows. See e.g. Labán and Larraín (1997).

arising from the negative shock to The Bahamas' balance of payments (see the red text in Table 1).[6] CBOB staff have estimated that the extra controls saved the depletion of around $400m of reserves (CBOB 2021; see section 4 for more detail). The extra controls were subsequently unwound in 2021, as it became clearer that The Bahamas' reserves were sufficient to maintain the exchange rate peg.

The International Monetary Fund has become more accepting of capital controls over time

Since the end of the Bretton Woods system, the IMF and other international financial institutions have tended to argue against the imposition of capital controls, other than in special circumstances such as amid a financial crisis. Their arguments have been underpinned by the theoretical benefits of free-flowing capital, including greater efficiency in resource allocation and the diversification of risk.[7] However, over recent decades, the IMF has broadened the set of circumstances where it views capital controls as being acceptable, following the negative experiences of some countries with uncontrolled flows (and the positive experiences of other countries where controls were imposed).[8] In 2012, the IMF adopted an institutional view that accepted that free-flowing capital could have substantial costs in practice, stating that 'there is no presumption that full liberalization is an appropriate goal for all countries at all times' (IMF 2012, p 13). This year, the IMF revised its institutional view to broaden further the set of circumstances in which controls were acceptable (IMF 2022a). Notwithstanding the IMF's shift toward a more flexible position on capital controls, it still sees controls on outflows as undesirable outside of 'crises or imminent crisis situations', though it has indicated that it will weigh up the literature on this issue in a future review (ibid, p 32). Although my paper focuses on the benefits of The Bahamas' controls on outflows during the period of crisis caused by COVID-19, it also provides evidence that these controls have helped The Bahamas maintain its fiscal balance outside of this period, by reducing the government's cost of servicing its large (but not itself crisis-inducing) debt burden.

The IMF has made several public comments about the capital controls imposed by The Bahamas, including that the country's controls have supported the accumulation of foreign exchange reserves (IMF 2017) but that it ought to 'eventually resume advancing exchange control liberalization' following COVID-19 (IMF 2021, p 15). Most recently, the IMF assessed that The Bahamas could consider tightening its capital controls temporarily 'if the market environment were to deteriorate markedly' (IMF 2022b, p 21).

3. Controls can put downward pressure on government borrowing costs

Capital controls, in particular on outflows, can be used as a form of so-called financial repression, to keep domestic interest rates lower than they would otherwise have been. The key idea is that when capital outflows are restricted, borrowers can rely on a captive market of domestic investors for cheap financing. This should be reflected in lower-than-otherwise borrowing costs, including for the government. Although the distortions that arise from imposing what is effectively a tax on domestic investors can be costly, the benefit of cushioning the government's borrowing costs in the context of a large debt burden and rising global interest rates may outweigh these costs for a time.[9]

[6] Additionally, the CBOB requested the National Insurance Board to sell most of its foreign-currency assets.
[7] See e.g. Obstfeld and Rogoff (1996) for a textbook exposition.
[8] The 1994 Mexican peso crisis is one example of a negative experience, while Malaysia's response to the 1997 Asian financial crisis is a widely acknowledged example of a positive experience.
[9] This paper does not seek to weigh up the costs and benefits of capital controls, nor of financial repression more generally. See e.g. Fry (1980) for an estimate of the detrimental effect of financial repression on economic growth. On the other hand, see e.g. Chari et al (2020) for a model where financial repression can be optimal when fiscal needs are sufficiently high. For background, see Reinhart and Sbrancia (2015).

In this section, I use two different but related approaches to estimate the effect of capital controls imposed by The Bahamas on government borrowing costs. My best estimate is that the controls were putting 1–2 ppts of downward pressure on the cost of domestic government debt in the years prior to COVID-19, and up to 5 ppts since COVID-19. This suggests that the government's debt costs could increase meaningfully alongside any further capital account liberalisation, if the liberalisation occurred while the debt burden was still large (and controls on outflows were still binding).

Controls on capital outflows restrict the options of domestic (but not foreign) investors

Both estimation approaches infer the effect of capital controls by comparing the rate of return demanded by domestic investors to the rate of return demanded by foreign investors for similar financial assets, namely Bahamas government debt. The underlying assumption is that, in the absence of capital controls, these rates of return should be roughly equal. At heart, this assumption is an interest rate parity condition. One way of justifying the assumption is by appealing to arbitrage:

- consider two Bahamas government bonds, one foreign (or, rather, US-dollar-denominated) and the other domestic (or Bahamian-dollar-denominated), which are otherwise identical
- suppose that the exchange rate peg between the two currencies is perfectly credible
- suppose further that the yield on the foreign bond is higher than on the domestic bond
- if there were no capital controls (nor other market frictions, such as transaction costs), an investor could short the domestic bond and use the proceeds to balance the position by going long the foreign bond, with some cash remaining due to the spread in yields
- however, this would amount to arbitrage, which would be exploited until the yields on the two bonds were equalised

In practice, the presence of frictions in markets means that interest rate parity conditions tend not to hold perfectly, even when there are no capital controls.[10] However, deviations from parity in cases where there are few capital controls tend to be small relative to the spread between the yields on foreign and domestic Bahamas government bonds described below.[11] Moreover, the experience of countries that have removed their capital controls shows that the removal was associated with a notable narrowing of the spread between foreign and domestic interest rates.[12] The upshot is that, after accounting for other key sources of difference between foreign and domestic rates of return, it is reasonable to interpret the remaining difference as measuring the effect of capital controls (or, more conservatively, giving us an upper bound on their effect).

The rates paid to domestic (vs foreign) investors have been 1–2 ppts lower in normal times

The first estimation approach simply compares the ex post costs of foreign vs domestic debt for the Bahamian public sector. These costs are calculated by dividing the government's interest payments by the average amount of debt outstanding in each period, to determine the effective interest rate. This approach is a straightforward application of the approach of Giovannini and de Melo (1993), who found that the difference between ex post foreign and domestic debt costs was on average around 2 per cent of GDP for 24 developing countries in the 1970/80s.[13] Giovannini and de Melo attributed the difference to financial repression broadly, including not only capital controls but also

[10] See e.g. Borio et al (2016).

[11] This is the case even in emerging markets, where deviations tend to be on the order of tens of basis points. See e.g. Gadanecz et al (2014) and Hartley (2020).

[12] See e.g. Mussa and Goldstein (1993). One example is the experience of France, where the spread spiked to as wide as 10 ppts prior to the removal of capital controls in the late 1980s, then narrowed to zero thereafter.

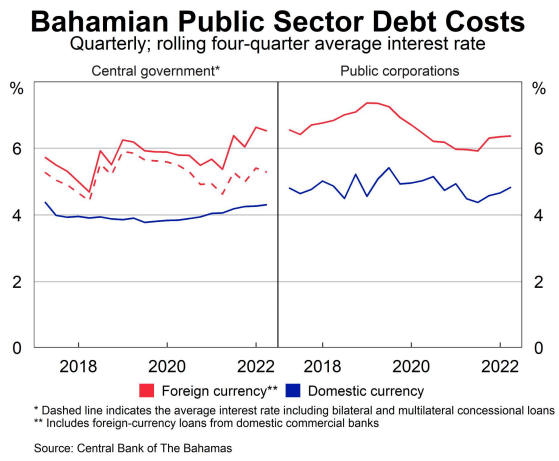
[13] More recent work by Aizenman and Pasricha (2013) that used a similar approach found that the difference became small and negative in the 2000s (i.e. domestic debt costs slightly *exceeded* ex post foreign debt costs).

other repressive measures such as caps on domestic interest rates. It is straightforward to apply Giovannini and de Melo's approach to The Bahamas because it is unnecessary to adjust the cost of foreign debt for movements in exchange rates, given that the overwhelming majority of the Bahamian government's foreign debt is denominated in US dollars and that the exchange rate between Bahamian dollars and US dollars has been pegged.

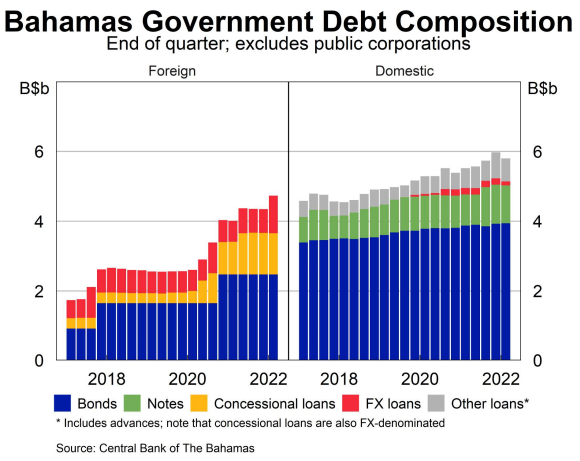
Foreign debt costs have been higher than domestic debt costs in The Bahamas in recent years, in line with the theoretical effect of capital controls described above, by around 1–2 ppts (Graph 4). However, one drawback of this estimation approach is that we cannot account for all of the differences in the composition of foreign vs domestic debt, which could be contributing to the difference in their costs. To illustrate this, one compositional difference for which we *can* account is that of concessional loans. A sizeable share of the Bahamian government's foreign debt is composed of loans at concessional interest rates, such as loans from the Inter-American Development Bank (Graph 5). If we were to include these concessional loans in our calculation of foreign debt costs, then this would understate the like-for-like difference in foreign vs domestic debt costs by 1 ppt (see the dashed red line in the left panel of Graph 4; the solid red line excludes concessional loans). One example of a compositional difference for which we *cannot* easily account in this approach is that of maturity structure. The average term to maturity is around 1½ years shorter for foreign vs domestic Bahamas government bonds, suggesting that even once we account for concessional loans our estimate is still slightly understating the like-for-like difference in foreign vs domestic debt costs (CBOB 2022).

Another drawback of this estimation approach is that, because it uses exclusively *ex post* debt costs, it can only provide a backward-looking estimate of the effect of capital controls. There are reasons to think that the effect of capital controls may have increased since the onset of COVID-19. For one, the implementation of extra controls, as mentioned in section 2, may have added to the effect of existing controls. For another, existing controls may have become more binding on capital outflows, as the severity of the impact of COVID-19 on The Bahamas should have increased the incentives for domestic investors to invest abroad, which they may have acted upon but for the capital controls.

Graph 4



Graph 5



Before moving on to the second approach, it is worth noting why The Bahamas (and other countries) would ever decide to raise foreign debt in cases where the cost is higher than for domestic debt. First, there may be insufficient depth in the domestic market to raise debt in large amounts in a timely manner. Second, at the extreme, domestic investors may be bound by risk thresholds that prevent them for absorbing additional government debt. Third, raising foreign debt can be used to

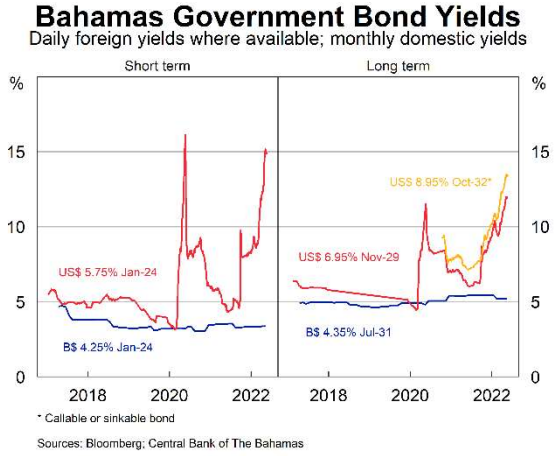
raise foreign exchange reserves, for which the government may be prepared to pay a premium to insure against the threat of speculative attacks against the domestic currency (or to ensure that the country has sufficient foreign currency to finance economically important imports).

The effect of capital controls appears to have been larger in times of recent fiscal strain

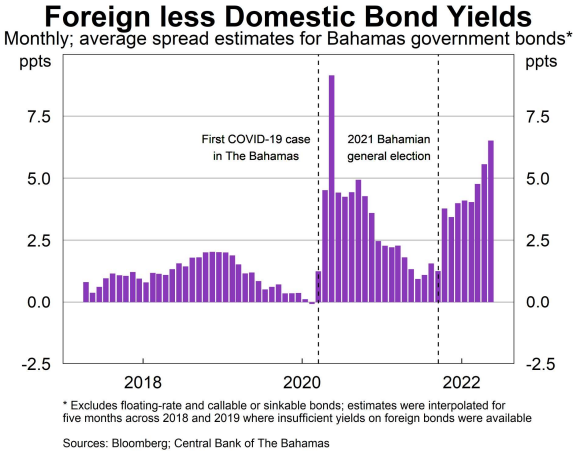
The second estimation approach addresses some of the drawbacks of the first approach by focusing only on bonds issued by the Bahamian government, which make up half of its foreign debt and two-thirds of its domestic debt (Graph 5).[14] Some of the benefits of focusing on bonds are that: bonds are easier to compare like-for-like; market pricing for bonds provides a timelier indicator of the spread between foreign and domestic rates of return; and bond pricing theory can guide a discussion about other factors, aside from capital controls, that could be contributing to the spread. For the period prior to COVID-19, focusing on bonds gives similar results to the first approach. However, following COVID-19, bond yields suggest that the spread between foreign and domestic rates of return has increased to around 5 ppts, which is much wider than seen in the first approach. The main reason for this difference is that the first approach measured the cost of *outstanding* debt (i.e. it is backward-looking) whereas bond yields measure the *marginal* cost of debt.

To implement the second approach, I collected daily historical yields on the Bahamian government's US dollar bonds from Bloomberg and compiled historical yields on its Bahamian dollar bonds from the secondary market prices published by the CBOB monthly (Graph 6).[15] Yields on domestic bonds have remained relatively steady in the past few years, while yields on foreign bonds spiked following the onset of COVID-19 (and have increased more recently following the 2021 general election).

Graph 6



Graph 7



To measure the spread between foreign and domestic yields more accurately, I compared yields on a like-for-like basis by: excluding any bonds with floating-rate coupons or other special characteristics; and matching the maturities of foreign bonds using domestic bonds, by linearly interpolating yields on domestic bonds of nearby maturities.[16] In the years prior to COVID-19, yields on foreign bonds

[14] Although their approach differs substantially from mine, Andreasen et al (2019) provide another example of how bond-level data can be used to estimate the effect of changes in capital controls.

[15] The prices published by the CBOB are calculated based on yields on new issuance (i.e. in the primary market) rather than based on trades between market participants (CBOB 2019). These prices are then used by the central bank for trading its own holdings of Bahamas government bonds in the secondary market.

[16] This excluded domestic floating-rate bonds, which make up a little under half of domestic bonds on issue, and foreign bonds that were callable or sinkable. Ideally, I would have estimated zero-coupon yield curves for foreign and domestic bonds instead of using linear interpolation, but low data quality made this impractical.

were on average 1–2 ppts higher than yields on comparable domestic bonds, though the spread had been trending toward zero (Graph 7). Following COVID-19, the spread has widened notably, to around 5 ppts.

Although the spread between yields on similar foreign and domestic Bahamas government bonds does not measure the effect of capital controls directly, it is suggestive that the spread's movements are largely in line with what would be expected in response to the changes in controls that occurred in the period (see section 2). Specifically, the spread had trended toward zero alongside the introduction of measures to liberalise capital controls, then widened as extra controls were implemented at the onset of COVID-19 and/or existing controls became more binding on outflows. To assess how much of the spread should be attributed to the effect of capital controls, I consider the potential effects of three other factors that could have contributed to the spread:

- **Liquidity risk.** The market for domestic bonds is more liquid than for foreign bonds. This is because the CBOB trades in the domestic (but not foreign) market to give a reliable source of liquidity to other market participants, by buying and selling at fixed prices in quantities that are limited only by the CBOB's own holdings of government bonds, which are extensive. As a result, foreign investors could demand a premium to compensate them for taking on greater liquidity risk. Bid-offer spreads, which are a common measure of market liquidity, increased substantially for foreign bonds in the initial phase of COVID-19, indicating that the deterioration in liquidity in the foreign market (vs stable liquidity in the domestic market) contributed to the widening of the spread between foreign and domestic yields at the time (Graph A1). Evidence suggests that, for US dollar bonds issued by the Bahamian government, an increase of 1 bp in bid-offer spreads has been associated with an increase of 5 bps in their yields (Table A1). Using this rough rule-of-thumb, changes in liquidity risk may account for most of the initial increase in the spread for foreign vs domestic yields around COVID-19, but only a small share of the subsequent increase after the 2021 Bahamian general election.
- **Credit risk.** If investors perceived that there was a threat of the Bahamian government defaulting on its foreign bonds but not its domestic bonds, then they could demand a premium to compensate them for bearing greater credit risk. Although Moody's and Standard & Poor's have always applied the same credit rating to the Bahamian government's foreign and domestic debt, including in downgrades issued since the onset of COVID-19, historical evidence suggests that sovereign defaults tend to be selective and that only one-fourth of defaults on foreign debt have occurred alongside a default on domestic debt (Erce and Mallucci 2018).[17] In the absence of an observable market for credit default swaps on Bahamas government debt, it is difficult to gauge the extent to which credit risk has affected the spread for foreign vs domestic yields. The closeness of the timing between spikes in the spread and downgrades by credit rating agencies suggests that either increases in the perceived risk of selective default have had some effect, or controls on outflows have become more binding alongside increases in the Bahamian government's overall credit risk, or a bit of both.[18]
- **Currency risk.** One key difference between the foreign and domestic bonds issued by the Bahamian government is that the former are denominated in US dollars and the latter in

[17] See also Reinhart and Rogoff (2009), who note that de jure defaults on domestic debt, while non-negligible, are somewhat rarer than de jure defaults on foreign debt.

[18] The intuition behind controls on outflows becoming more binding is that, for captive domestic investors (unlike foreign investors), there are effectively no options for a flight-to-safety when the overall credit risk of Bahamas government debt increases.

Bahamian dollars. In theory, foreign investors could demand a premium to compensate them for the risk that the US dollar depreciates against the Bahamian dollar. However, The Bahamas has shown a strong commitment to the peg between the two currencies and has sufficient foreign exchange reserves to make its commitment credible (IMF 2022b). Moreover, to the extent that there has been any pressure on the peg recently, the pressure has been in the opposite direction (i.e. toward a depreciation of the Bahamian dollar; see section 4). So, if anything, compensation for currency risk may be masking part of the effect of capital controls, as identified through the spread for foreign vs domestic yields.

My assessment is that greater liquidity and credit risk for foreign Bahamas government bonds over domestic bonds may have accounted for some of the spread for foreign vs domestic yields at times, particularly around the onset of COVID-19. However, there is still sufficient reason to think that, were capital controls to be loosened, yields on foreign and domestic bonds would come close to equalising over time, with domestic yields rising as domestic investors sell some of their holdings to take advantage of opportunities to invest abroad.[19] Based on this counterfactual, I estimate that up to 5 ppts of the spread in recent months can be attributed to the effect of controls on outflows.

Loosening controls while the debt burden is large could constrain fiscal policy eventually

As government debt is high in The Bahamas, an increase in the cost of servicing the debt could mean a noticeable deterioration in the fiscal balance, and a large enough deterioration could cast doubt on The Bahamas' fiscal sustainability. To get from my estimate of the effect of capital controls on the government's borrowing costs to the potential impact of looser capital controls on the fiscal balance, we need to make two additional assumptions about:

- **the size of the ensuing increase in domestic debt costs.** While we may expect the spread for foreign vs domestic debt costs to close as controls are removed, it is not self-evident that *all* of the closure would come from domestic debt costs rising. After all, a bit of it could come from foreign debt costs falling, e.g. in the case that liberated domestic investors shift into the government's foreign debt rather than out of Bahamas government debt altogether.[20] For simplicity's sake, let us suppose that foreign costs do not fall (instead, we can think of the assumed increase in domestic costs as capturing the net effect of both any rise and fall).
- **the share of domestic debt which would suffer the increase.** My preferred estimate of the spread between foreign and domestic debt costs is based on government bond yields. However, this estimate may be less applicable to other types of debt, so we may choose to apply the assumed increase in domestic costs to somewhat less than all of domestic debt, to be conservative. This conservatism could also capture the possibility that the government may be able to respond to a rise in domestic costs by changing the composition of its debt, e.g. by seeking concessional loans to replace maturing debt.

By applying some reasonable ranges for these two assumptions to the Bahamian government's current domestic debt of roughly $6b, we arrive at a potential impact of between $20m and $300m in extra interest costs annually (or between around 0.2 and 2½ per cent as a share of GDP; Table A2). An impact at the upper end of this sensitivity analysis would be a significant factor for fiscal policy

[19] There are even some reasons to think that yields on foreign bonds might settle at a level below those on domestic bonds. For one, investors may price-in the possibility of the Bahamian dollar depreciating against the US dollar. For another, investors may face frictions, regulatory or otherwise, that restrict their holdings of assets that are denominated in Bahamian dollars (while US-dollar-denominated holdings are less restricted).
[20] An alternative scenario could involve increases in not only domestic but also foreign debt costs. This could occur if the removal of capital controls undermines investors' confidence in The Bahamas' creditworthiness.

(for context, the Bahamian government's total spending on social benefits is roughly $200m/year). That said, the impact would be gradual rather than immediate, flowing through to the fiscal balance as existing debt matured and was replaced at higher rates of interest.

4. Controls can support exchange rate stability and/or reserve accumulation

In the context of an exchange rate peg, capital controls can restrict or dampen flows that would otherwise put pressure on the peg. Where the controls are binding on outflows (i.e. the pressure is toward devaluation of the domestic currency), there is less depletion of foreign exchange reserves than would have been required to implement the peg in the absence of capital controls. Put plainly, capital controls can make it easier to maintain an exchange rate peg. Although there are costs associated with exchange rate overvaluation and foreign exchange reserve overaccumulation, policymakers may see these costs as acceptable if the benefits of the peg are assessed to be large.[21]

In this section, I document the experience of The Bahamas in dealing with the large shock posed to its external stability by COVID-19. Despite some small signs of strain, the Bahamian dollar remained pegged to the US dollar throughout the episode, and reserve accumulation was supported by the extra controls imposed at the onset of the pandemic (see section 2). Then, I compare The Bahamas' experience to the experiences of other countries, with different degrees of capital account openness as well as different exchange rate regimes. Relative to its Caribbean neighbours that have looser capital controls, The Bahamas seems to have weathered the shock well. Looking across all countries over the COVID-19 period, there is some evidence that, for countries with pegged exchange rates, looser capital controls were associated with greater depletion of foreign exchange reserves.

The Bahamas did not deplete its reserves to maintain its peg throughout COVID-19

Early in the pandemic, the CBOB estimated that its reserves could need to decline by more than $1b (from a pre-pandemic level of around $1.8b) to counteract the pressure on the peg arising from the halt in tourism inflows (Rolle 2020). Based on this estimate, the CBOB imposed extra capital controls to ensure that its reserves remained sufficient. CBOB staff subsequently estimated that the extra capital controls saved the depletion of around $400m of reserves:

- $220m from suspending dividend payments by commercial banks to non-residents
- $80m from looser rules on commercial banks' sales of foreign currency to residents
- the remainder from suspending purchases of foreign currency via the ICM and for BDRs

Additionally, sales of foreign-currency assets by the National Insurance Board, which were requested by the CBOB alongside the extra controls, added around $60m to the CBOB's reserves (IMF 2021).

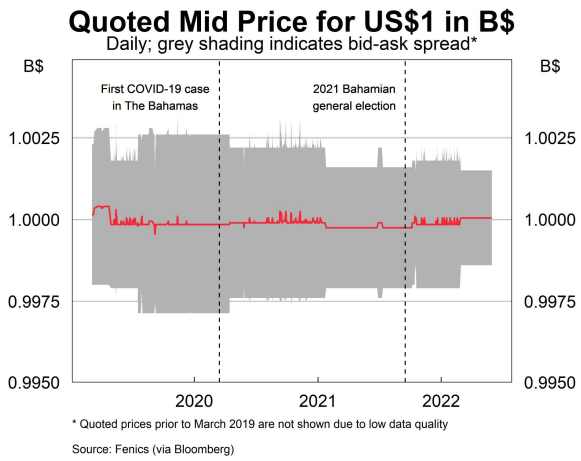
In the event, the exchange rate between the Bahamian dollar and the US dollar remained pegged at one-for-one, though some slight pressure on the peg was observable in the second half of 2020, when broker quotes ticked away from parity from time to time (Graph 8).[22] The peg was achieved alongside an *increase* in foreign exchange reserves, though there were some sharp but short-lived rundowns in reserves at around the same time as the observed pressure on the peg (Graph 9). Various factors other than capital controls have supported the accumulation of reserves, including: the issuance of foreign-currency debt by the government; the allocation of special drawing rights by the IMF in August 2021; and mechanical increases in the valuation of the CBOB's securities holdings

[21] Some may wonder how the overaccumulation of foreign exchange reserves can be costly. See e.g. Rodrik (2006) for an estimate of the cost of overaccumulation.

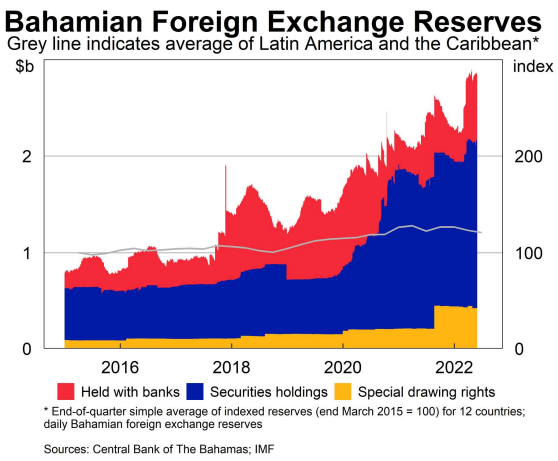
[22] Although there appears to be some noise in broker quotes, the increases during COVID-19 and after the 2021 general election were statistically significant (albeit meaninglessly small in practical terms; Table A3).

associated with decreases in US interest rates (which have recently been reversed for the most part). However, it is reasonable to attribute at least some of the increase in foreign exchange reserves to the effect of capital controls, not only due to the direct effect of extra controls imposed by the CBOB but also due to the indirect effect of existing controls, which is trickier to estimate.

Graph 8



Graph 9



Other countries saw depreciations and/or intervened using their foreign exchange reserves

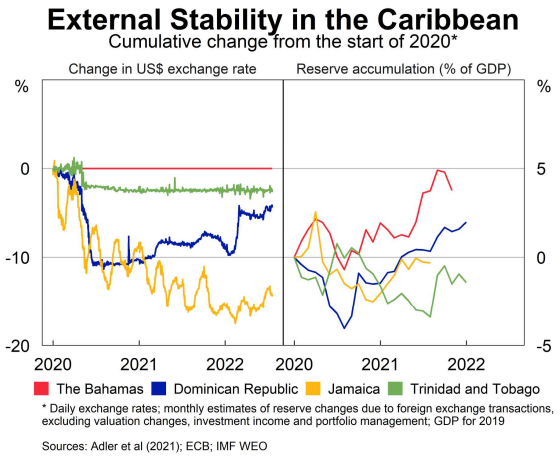
Cross-country evidence can give us a sense of the overall effect of capital controls over COVID-19, including the indirect effect of existing controls. To explore this evidence, I use an IMF dataset of foreign exchange interventions as a measure of the accumulation of reserves rather than simply calculating changes in reserves (Adler et al 2021). These data attempt to abstract from the effects of non-transaction factors on reserves, e.g. valuation changes, as well as the effects of transactions with the IMF and those on behalf of the government. This means that the data are a purer measure of changes that could have been affected by capital controls. Two drawbacks of the data, however, are that they are: based on several strong assumptions; and not available for all countries.

Using these data, the experience of The Bahamas can be compared with the experiences of Caribbean countries that suffered similar shocks to their external stability as a result of COVID-19, given their similarly large exposure to tourism. Relative to the three other Caribbean countries for which the IMF data are available, The Bahamas saw the least depreciation in its currency while achieving the greatest accumulation of reserves relative to GDP (Graph 10). Although many factors could have contributed to the difference in performance across Caribbean countries, including e.g. their relative exposure to commodity prices (many of which fell markedly at the onset of COVID-19), one relevant factor was the relative strictness of their capital controls. The Bahamas' controls were by far the strictest, with Jamaica's capital account a bit more open (at 0.4 on the Chinn-Ito index) and the capital accounts of the Dominican Republic and Trinidad & Tobago much more open (at 0.8). Albeit flawed, the comparison to Trinidad & Tobago is instructive because its exchange rate regime, which in practice ties its currency tightly to the US dollar, bears the closest resemblance to that of The Bahamas. On the extremely strong assumption that capital controls were responsible for the difference in performance between the pair, the overall effect of The Bahamas' stricter controls can be inferred as being roughly 5 per cent of GDP (or $600m) in extra reserve accumulation.

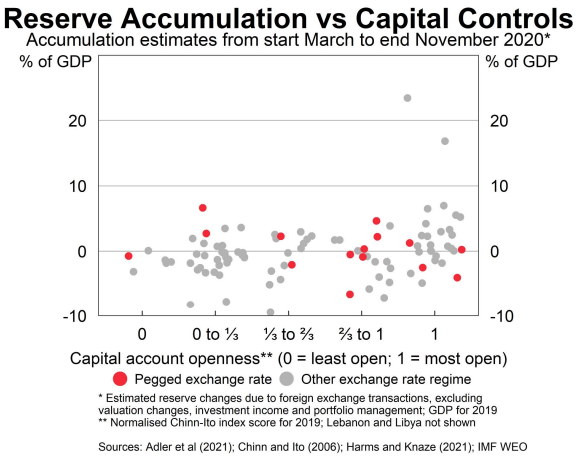
By broadening the scope to all countries for which the IMF data available, we can calculate an alternative estimate of the effect of capital controls that is likely to be less influenced by the idiosyncrasies of individual countries (which is certainly a factor in the case of Trinidad & Tobago). This comes at the expense of including countries where the shock due to COVID-19 differed greatly

from that faced by The Bahamas. One immediate observation in the cross-country evidence is that, over the early stages of COVID-19, countries with looser capital controls saw greater variation in reserve accumulation, both on the upside and the downside (Graph 11).

Graph 10



Graph 11



Digging deeper into this, I estimate a number of specifications via OLS to assess the relationship between reserve accumulation and capital account openness when controlling for relevant factors, in particular whether the exchange rate is pegged (Table 2). The most comprehensive specification that I estimate is shown below, where *gdp_revision*$_i$ and *gdp_per_capita_log*$_i$ are used to control for differences in the size of the COVID-19 shock suffered by each country and each country's prosperity prior to COVID-19, respectively:

$$reserve\_accumulation_i = \alpha + \beta_1\, chinn\_ito_i + \beta_2\, pegged_i + \beta_3\, (chinn\_ito_i * pegged_i) + \beta_4\, gdp\_revision_i + \beta_5\, gdp\_per\_capita\_log_i + \epsilon_i$$

Table 2: Effect on Reserve Accumulation of Capital Account Openness

Estimated reserve changes as a share of 2019 GDP from start March to end November 2020^

	Model 1	Model 2	Model 3	Model 4	Model 5
Normalised Chinn-Ito score[&]	3.7***	3.7***	4.7***	4.7***	3.9**
	(1.4)	(1.4)	(1.4)	(1.4)	(1.7)
Pegged exchange rate[$]		0.3	5.6*	6.3**	5.9**
		(1.4)	(2.9)	(2.8)	(2.9)
Normalised Chinn-Ito score * Pegged exchange rate			-8.6**	-8.9**	-8.3**
			(4.2)	(4.0)	(4.1)
Revision in GDP growth as a result of COVID-19 (ppts)[#]				0.2***	0.2***
				(0.1)	(0.1)
Log of GDP per capita[@]					0.4
					(0.5)
Number of observations	101	101	101	101	101
Adjusted R^2	0.06	0.05	0.08	0.16	0.16

* p < 0.1; ** p < 0.05; *** p < 0.01; standard errors in brackets

^ As estimated by Adler et al; excludes valuation changes, investment income and portfolio management

& Scores are for 2019 and range between 0 (= least open) and 1 (= most open)

$ De facto regime as assessed by Harms and Knaze where available (otherwise, de facto regime as assessed by the IMF)

Difference in estimated GDP growth for 2020 between the October 2019 and April 2022 IMF WEOs

@ US dollars; 2019

Sources: Adler et al (2021); Chinn and Ito (2006); Harms and Knaze (2021); IMF WEO

The results suggest that, for a country *i* with a pegged exchange rate ($pegged_i$ = 1), a shift from a fully closed capital account ($chinn\_ito_i$ = 0) to a fully open one ($chinn\_ito_i$ = 1) was associated with a statistically significant depletion of its foreign exchange reserves over the initial phase of COVID-19, of around 4 per cent as a share of GDP.[23] For The Bahamas, these results can be interpreted as suggesting that the indirect effect of its existing controls may have been to save around $500m in foreign exchange reserves from depletion. The reason that the results reflect just the effect of *existing* controls is that the measure of capital account openness used in my estimates is from 2019, well before the CBOB's imposition of extra controls in response to COVID-19. However, this estimate ought to be treated with scepticism, including because:

- the data on reserve accumulation rely on strong assumptions, some of which may be wrong
- the Chinn-Ito index has some limitations as a measure of capital account openness[24]
- some of my specifications show signs of multicollinearity[25]

Nonetheless, taking my estimate at face value and adding it to the estimated effect of extra controls, I assess that The Bahamas' capital controls saved around $900m of reserve depletion over COVID-19, though this overall estimate should be seen as only rough at best.

5. Conclusion

The strict capital controls imposed by The Bahamas appear to have had first-order benefits for its macroeconomic stability, in particular in the post-pandemic period. I estimate that two benefits have been sizeable in the context of COVID-19:

- for the Bahamian fiscal balance, the controls have cushioned the effect of the debt burden on the government's budget by up to 2½ per cent as a share of GDP
- for its external balance, the controls prevented or delayed the depletion of around half of The Bahamas' pre-pandemic level of foreign exchange reserves

One potential policy implication of my estimates is that, were the capital controls to be removed, these benefits could be lost. This may make The Bahamas more vulnerable in future crisis situations and put some strain on fiscal policy over time if the controls were removed while debt is still high. Although many of the costs of capital controls (aside from administrative costs) are second-order, this does not mean that they are necessarily outweighed by the benefits in the case of The Bahamas. For example, both theory and evidence suggest that the liberalisation of controls on outflows can even have the effect of increasing inflows on net, which would itself support reserve accumulation.[26] Future research could try to estimate the costs of The Bahamas' capital controls, to put policymakers in a better position to weigh up the prospects of any further capital account liberalisation.

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[23] This is inferred from the addition of the estimates for β_1 and β_3 in models 3–5 in Table 2.

[24] One key limitation of the Chinn-Ito index is that it is an *aggregate* measure of capital account openness. See Fernandez et al (2016) for a dataset of disaggregated measures; this dataset does not cover The Bahamas. Although it is beyond the scope of this paper, future research could use the dataset to determine whether some types of capital controls contribute more to reserve accumulation than others.

[25] The variance inflation factors for the coefficients estimated in model 5 in Table 2 are as follows: for β_1, 1.8; for β_2, 4.9; for β_3, 5.1; for β_4, 1.0; and for β_5, 1.6. Some extra evidence that multicollinearity could be a concern is that the estimates for β_2 and β_3 can differ a lot from the original estimates if only a slightly different measure of capital account openness is used. For example, using a key aggregate measure from Fernandez et al (2016), the estimates for β_2 and β_3 in model 5 are -5.1 and 3.7. Aside from misspecification, an alternative explanation for the difference could be the smaller coverage of this measure (71 countries vs 101 for the Chinn-Ito index).

[26] See e.g. Bartolini and Drazen (1997) and Labán and Larraín (1997).

Appendix

Table A1: Effect on Bahamas Government US$ Bond Yields of Bid-offer Spreads

Monthly averages of available yields and spreads (in basis points); includes callable or sinkable bonds

	Model 1	Model 2	Model 3
Bid-offer spread	3.8***	4.5***	6.4***
	(0.5)	(0.5)	(0.4)
Fixed effects	None	Bond type^	Bond line&
Number of observations	400	400	400
Adjusted R^2	0.14	0.22	0.59

* p < 0.1; ** p < 0.05; *** p < 0.01; standard errors in brackets

^ Introduces a dummy for bonds that are callable or sinkable

& Introduces dummies for each bond line, including separate dummies for Reg S and Rule 144A bonds where applicable

Source: Bloomberg

Table A2: Potential Impact on the Bahamian Government's Budget of Looser Capital Controls

Estimated deterioration in the fiscal balance in $m (as a share of GDP in brackets)*

Share of domestic debt to be repriced^	Size of the repricing to be applied to domestic debt		
	1 ppt	3 ppts	5 ppts
One-third of domestic debt	20	60	100
	(0.17)	(0.50)	(0.83)
Two-thirds of domestic debt	40	120	200
	(0.33)	(1.00)	(1.67)
All of domestic debt	60	180	300
	(0.50)	(1.50)	(2.50)

* The Bahamas' GDP was assumed to be $12b

^ The Bahamian government's domestic debt was assumed to be $6b in total

Source: Author's calculations

Graph A1

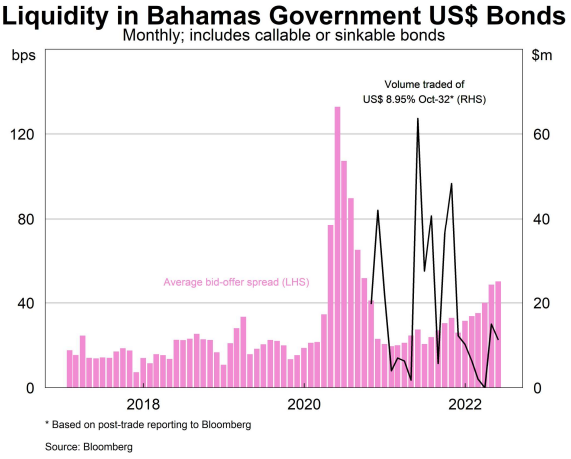

Table A3: Effect on Quoted Mids for US$1 in B$

Daily; from start March 2019 to end May 2022

	Percentage change
Dummy for COVID-19^	0.005***
	(0.001)
Dummy for the 2021 general election&	0.007***
	(0.001)
Number of observations	790
Adjusted R^2	0.05

* p < 0.1; ** p < 0.05; *** p < 0.01; standard errors in brackets

^ Dummy for the period from 15 March to 9 November 2020

& Dummy for the period since 16 September 2021

Source: Fenics (via Bloomberg)

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