

# IS AN UNBACKED FISCAL EXPANSION THE ANSWER FOR JAPAN?<sup>1</sup>

*Japan's economy has been in a low inflation environment since the mid-1990s, which has perpetuated a deflationary mindset. A recent proposal to reflate the Japanese economy advocates a government commitment to an unbacked fiscal expansion tied to achieving the inflation target. Using model simulations, this note illustrates how an unbacked fiscal expansion can generate inflation and help an economy exit the zero-lower bound (ZLB) relatively quickly. However, the simulations also show that Japan's highly backward-looking inflation expectations are likely to generate unfavorable dynamics by front-loading real debt accumulation while significantly delaying the reflation process. Such dynamics may lead the government to renege on its commitment and could pose serious risks to public debt sustainability—strongly suggesting that the risks associated with an unbacked fiscal expansion well outweigh potential benefits.*

## A. Introduction

**1. Japan's two-decades long experience with low inflation has generated a persistent deflationary mindset.** Since the mid-1990s, both annual CPI inflation and the GDP deflator have averaged around zero percent. Several factors have contributed to this low inflation environment, including two major financial crises in the 1990s, demographic headwinds, a policy rate constrained by the ZLB, and a series of insufficient policy attempts to reflate the economy.<sup>2</sup> As a result, inflation expectations have become backward-looking and unresponsive to new policy initiatives, leading to the emergence of a deflationary mindset.<sup>3</sup> While the introduction of Abenomics showed some early success and contributed to a temporary lift in headline inflation, inflation expectations have remained near zero and the sizeable expansion of the BoJ's balance sheet has yet to re-anchor inflation expectations at the 2 percent inflation target.

**2. Several unorthodox proposals have been made to reflate the Japanese economy.** These proposals have ranged from a monetized fiscal expansion to a price level path supported by a complementary exchange rate policy.<sup>4</sup> Common characteristics across these proposal are assumptions that the announced policy shift would be credible and that the public will adjust its inflation expectations accordingly. However, if expectations are slow to adjust, a self-fulfilling cycle may occur where persistently low inflation expectations impede the reflation process to such a degree that the government eventually reneges on its commitment, and thus reconfirming the initial low inflation expectations.

<sup>1</sup> Prepared by Xin Li, Kazuaki Miyachi and Niklas Westelius. A forthcoming IMF Working Paper will elaborate further on the details of staff's assessment of the Fiscal Theory of Price Level (FTPL) and the simulations.

<sup>2</sup> For a description of Japan's experience with deflation see Box 3.2 in Chapter 3, World Economic Outlook, October 2016. Liu and Westelius (2016) and Anderson et al (2014) provide some evidence on the link between demographics and inflation.

<sup>3</sup> See IMF (2015).

<sup>4</sup> See IMF (2016).

**3. This note evaluates a recent proposal to explicitly tie an unbacked fiscal expansion to achieve the inflation target.** The proposal was put forth by Professor Christopher Sims at the Jackson Hole Economic Policy Symposium in 2016, and has its foundation in the literature on the fiscal theory of the price level (FTPL).<sup>5</sup> The proposal advocates that the government should commit to a fiscal expansion until the inflation target is reached. However, central to the proposal is that the government must make clear to the public that the expansion will not be backed by higher future primary surpluses. Instead, higher inflation will “pay” for part of the resulting debt obligations.<sup>6</sup> The following analysis takes a closer look at the ability of such a “non-Ricardian” expansion to reflate the Japanese economy and, importantly, assesses how Japan’s highly backward-looking and unresponsive inflation expectations would affect the potential for success.

## B. Implications of FTPL for Monetary and Fiscal Coordination

**4. The FTPL argues that the government can influence the price level by adjusting current and future primary surpluses.**<sup>7</sup> The theory postulates that government bonds can be used for both transactions of goods and services and as interest bearing financial assets. This opens the possibility for the government to influence prices by adjusting the attractiveness of holding bonds. For instance, a credible commitment by the government to lower future primary surpluses results in less real resources to back existing real debt. Consequently, the public finds it less attractive to hold government debt and tries to reduce its bonds holdings. The proceeds from selling the bonds are then spent on goods and services, leading to a rise in the price level and a fall in real debt. Hence inflation would de-facto pay for the lower future primary surpluses. However, the impact on the price level would not occur in a situation where the government is committed to finance current deficits by future surpluses (so-called Ricardian fiscal policy).<sup>8</sup>

**5. The FTPL also introduces a non-traditional channel for monetary policy to affect the price level.** By adjusting the nominal interest rate, the central bank can influence the government’s debt service payments. Under a non-Ricardian fiscal policy (also commonly labeled “active” fiscal policy) – where the future stream of primary surpluses is unresponsive to inflation or debt – a rise in the interest rate would lead to an increase in bond issuance to cover the higher interest payments. This would increase the amount of outstanding government debt and hence lead to a rise in the price level as the public tries to sell excess bonds. In contrast, under a Ricardian fiscal policy (also commonly labeled “passive” fiscal policy) this would not happen as the rise in the debt service burden would be paid by higher future primary surpluses and not through additional debt.

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<sup>5</sup> Sims (2016, 2017)

<sup>6</sup> Sims argues that, in Japan, this could be done by committing to a schedule of consumption tax increases conditional on meeting the inflation target (Sims, 2017).

<sup>7</sup> It is also helpful to clarify some common misunderstandings about the FTPL. First, the FTPL is not a revival of traditional Keynesian theory, as it abstracts away from the fiscal multiplier effect. Second, the FTPL *per se* has nothing to do with debt monetization.

<sup>8</sup> Leeper and Leith (2016)

**6. Two stable regimes of fiscal and monetary coordination emerge from the FTPL.**<sup>9</sup> If the central bank aggressively fights weak inflation by lowering the nominal interest rate by *more* than the decline in inflation (labeled as “active” monetary policy), then fiscal policy must be passive (i.e., Ricardian). Otherwise, the lower interest rate would simply trigger even lower inflation (through reduced issuances of bonds)<sup>10</sup>, leading to even greater deflationary pressure. Conversely, if fiscal policy is “active” (i.e., non-Ricardian), then monetary policy must be “passive.” That is, the central bank can only reduce the interest rate by *less* than the fall in inflation. This implies that when the nominal interest rate is at its zero lower bound, conventional monetary policy is de-facto passive, and that active fiscal policy could have a powerful impact on reflating the economy.

**7. The transmission channel to generate a strong inflation response under FTPL hinges on some key assumptions.**

- *The government cannot default on its debt.* Hence, in order for the intertemporal budget constraint of the government holds, any unbacked fiscal impulse must generate a strong and positive inflation response.<sup>11</sup>
- *The government can effectively communicate its intentions.* For inflation to react quickly, the government must be able to credibly convince the public that the fiscal expansion will be financed through higher future inflation and not through higher future primary surpluses. In that sense, a public that is relatively forward-looking is needed.

### C. Methodology and Assumptions

**8. The analysis presented in this note is based on a model consisting of four equilibrium conditions.**<sup>12</sup> Real GDP is determined by a consumption Euler equation with habit formation. Inflation is modeled by a Phillips curve with both forward-looking and backward-looking price setting behaviors. Monetary policy is represented by a Taylor rule with the nominal interest rate constrained by the zero lower bound (ZLB). Finally, to capture the price determination channel in the FTPL, the government’s intertemporal budget constraint— which sets the current real debt equal to the discounted future stream of real primary surpluses— is incorporated into the model as a new equilibrium condition. Note that the existence of both the Euler equation and the governments intertemporal budget constraint means that monetary policy affects inflation both through the traditional substitution effect (i.e., by encouraging or discouraging current consumption by adjusting the interest rate) as well as through its influence on debt service payments as highlighted by the FTPL.

<sup>9</sup> Davig and Leeper (2011)

<sup>10</sup> Sims (2008)

<sup>11</sup> While a positive probability of default does not necessarily eliminate the transmission channel, it is not clear how inflation would respond in such a case due to the endogenous nature of the interest rate risk premium.

<sup>12</sup> The OccBin toolkit for occasionally binding constraints is used to solve our model with the ZLB on nominal interest rate. See Luca Guerrieri and Matteo Iacoviello (2015).

**9. Two alternative policy regimes are specified.** The first regime corresponds to an active monetary policy and a passive fiscal policy (henceforth referred to *the Ricardian regime*). In this regime, the central bank implements a standard Taylor rule until the nominal interest rate hits the ZLB, while the fiscal authority adjusts the primary surplus proportional to the deviation of real value of government bonds from its steady state. The second regime corresponds to a passive monetary policy and an active fiscal policy (henceforth referred to as *the non-Ricardian regime*). In this regime, the central bank implements a Taylor rule that is less responsive to inflation deviations, while the fiscal authority sets the primary surplus process exogenously regardless of the level of outstanding government bonds.

**10. The merit of an unbacked fiscal expansion is evaluated by comparing impulse responses to a negative and persistent output shock under the two regimes.** The assumed parameter values closely follow the IMF's Global Projection Model (GPM).<sup>13</sup> The initial negative output shock is set to a 1 percent deviation from its steady state and decays at an annual rate of 0.6. In the non-Ricardian regime, the size of the fiscal impulse is assumed to be a 5 percent of GDP deviation from its steady state in the first period and subsequently decays at an annual rate of 0.6. Unless otherwise specified, the impulse response functions (IRFs) are expressed as the percent deviations of each variable from the steady-state.

#### D. An Illustrative Example of an Unbacked Fiscal Expansion

**11. To better understand the implications of an unbacked fiscal expansion the model is first simulated with and without the ZLB as a constraint.** The model is parametrized as an "advanced economy" by averaging the GPM's parameter values of the US, Euro Area, and Japan. Figure 1 compares the impulse response functions under the Ricardian and the non-Ricardian policy regimes when the ZLB is non-binding. Figure 2, shows the case when the ZLB is binding.<sup>14</sup>

**12. When the ZLB on the nominal interest rate is not binding, a Ricardian policy regime implies less volatile inflation dynamics and a more benign accumulation of real government debts** (see Figure 1).

- In the Ricardian policy regime, accommodative monetary policy can more effectively counter the negative output shock and deflation pressure by aggressively lowering the nominal interest rate without hitting the ZLB. The resulting low interest rate environment helps reduce the funding cost of the government in initial periods when inflation is negative, leading to only a moderate and temporary increase in the real level of government debt.
- In the non-Ricardian policy regime, the government convinces the public that the fiscal stimulus today will be financed by future inflation (rather than taxes or spending cuts). Hence, the supply of nominal bonds increases while the expected stream of primary surpluses decreases – creating excessive real supply of government bonds –and inflation adjusts to make the intertemporal

<sup>13</sup> IMF Working Paper, WP/13/87, GPM6 - The Global Projection Model with 6 Regions.

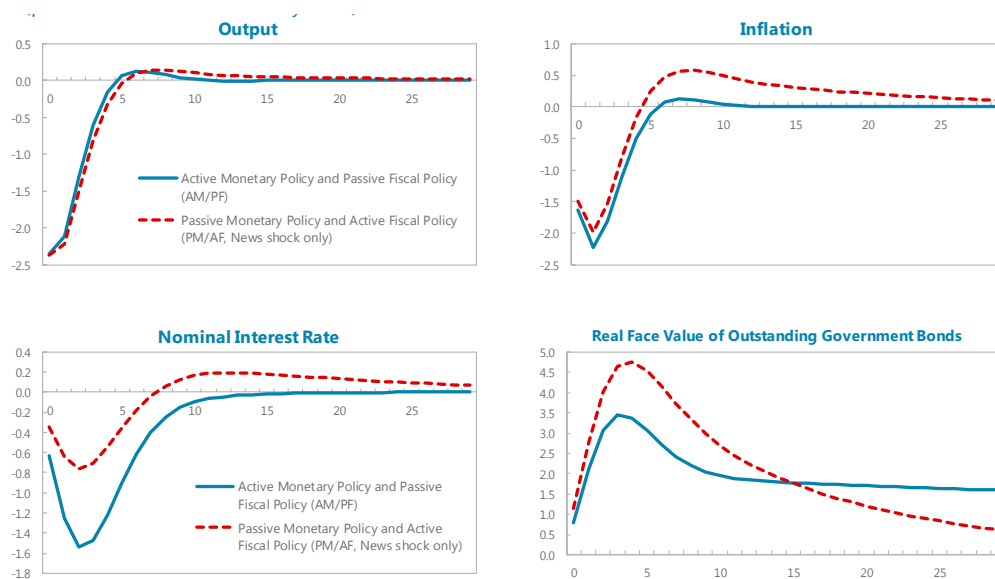
<sup>14</sup> Negative realizations of a larger shock or higher autocorrelation imply a longer duration at the zero bound.

constraint of the government hold. Simulations show that the non-Ricardian regime will yield an inflation overshooting of about 1 percent. Moreover, in the absence of aggressive accommodative monetary policy, real government debt will grow at a faster pace compared to the Ricardian policy regime.

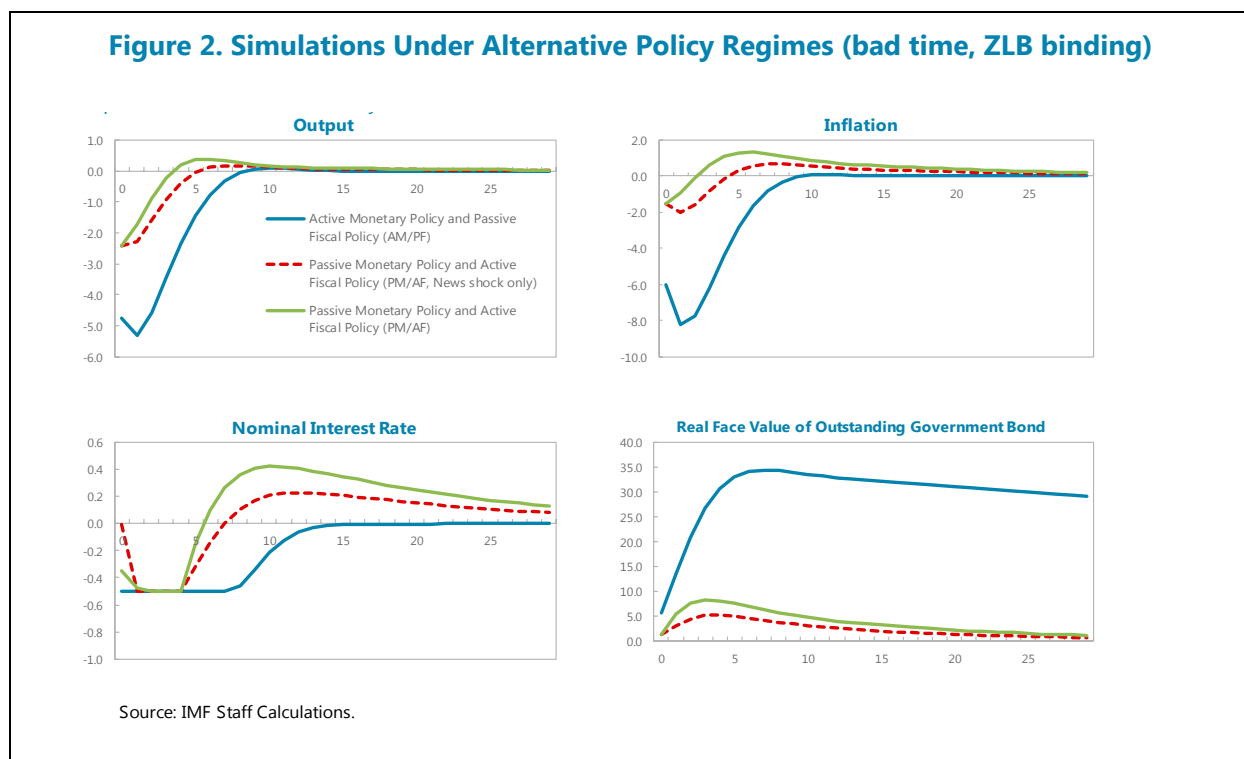
**13. When the nominal interest rate is constrained by the ZLB, the non-Ricardian regime may help the economy recover at a faster pace.** Figure 2 shows that the economy will escape the ZLB after 5 years under the non-Ricardian policy regime, whereas it will be constrained at the ZLB for about a decade under the Ricardian policy regime.

- Notably, active monetary policy alone risks a deeper recession. This is primarily because the prevailing low interest rate will limit the policy space of the central bank to counter negative output shocks and disinflation. Real debt dynamics are also worse under the Ricardian policy regime, due in part to the greater fall in the price level.
- By contrast, credible announcement of a non-Ricardian policy regime may trigger a virtuous cycle of reducing attractiveness of government bonds, increasing aggregate demand, and raising inflation. In addition, the realization of committed lower primary surpluses will provide additional momentum to boost output and inflation. The active response of inflation will in turn partially offset the effect of unbacked fiscal expansion on the accumulation of government bonds, leading to only a moderate increase in the real value of outstanding government bonds.

**Figure 1. Simulations Under Alternative Policy Regimes (normal time, ZLB not binding)**



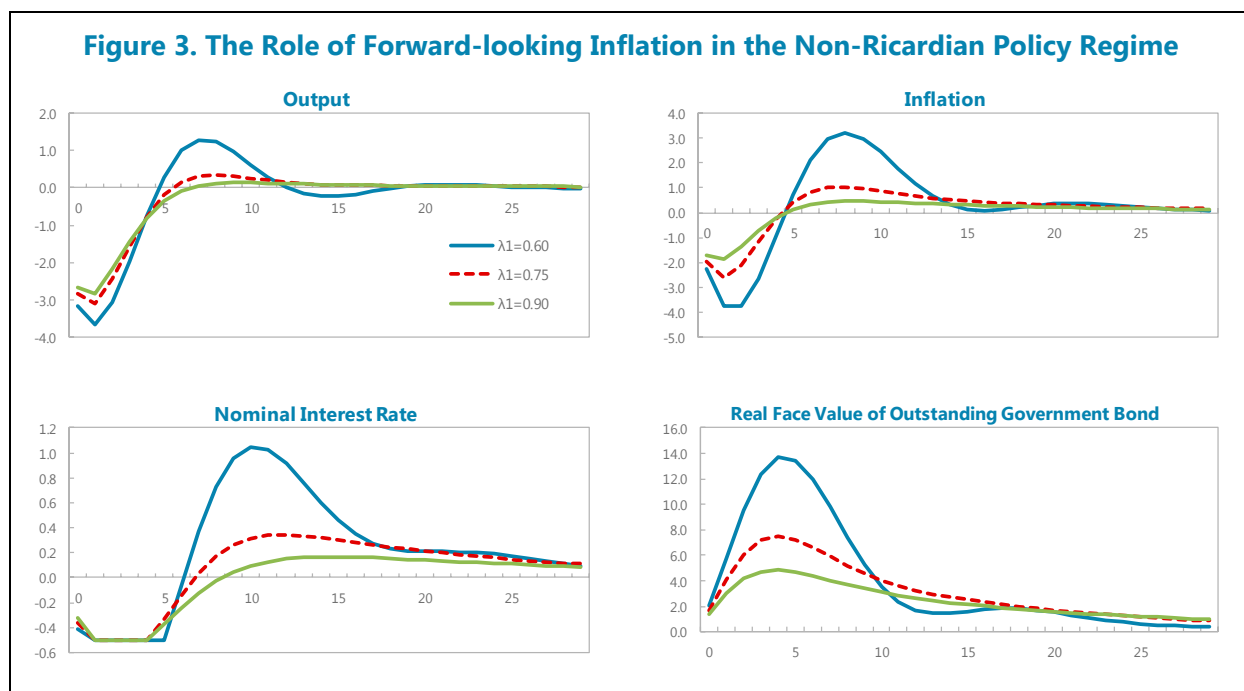
Source: IMF Staff Calculations.



## E. Could an Unbacked Fiscal Expansion Work in Japan?

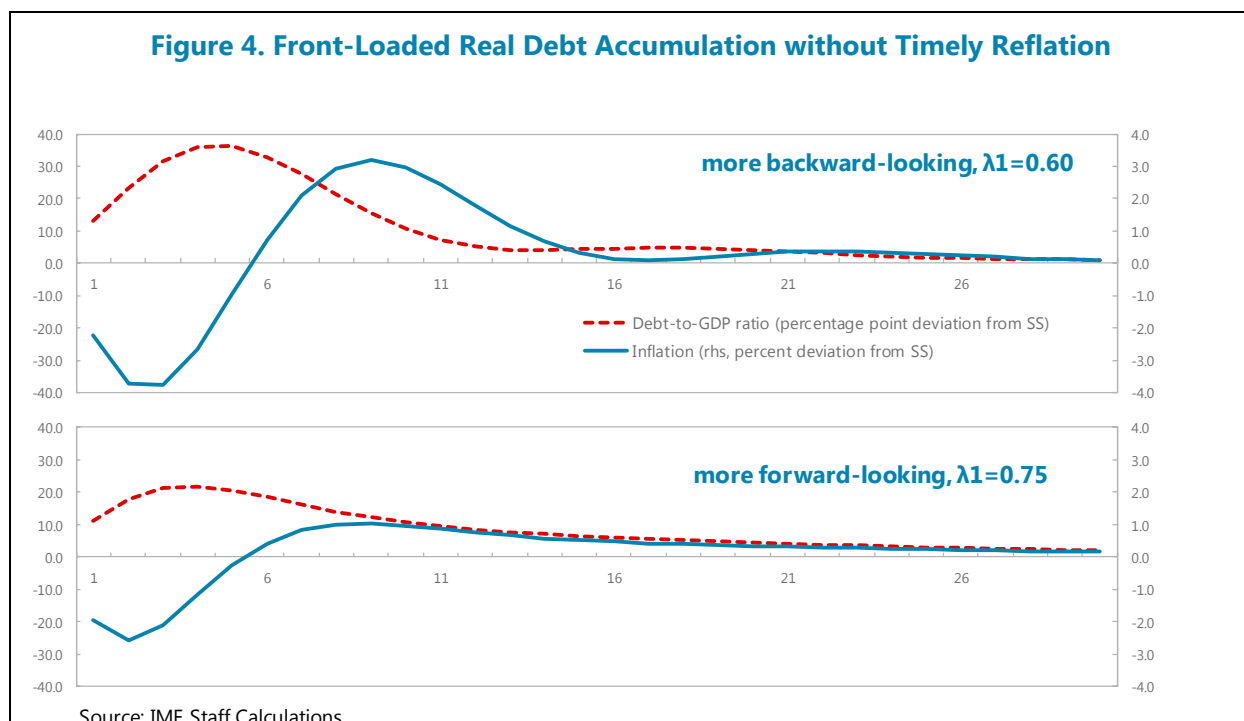
**14. To understand whether an unbacked fiscal expansion could work in Japan, it is crucial to analyze the role of inflation expectations.** Accordingly, the model was re-parameterized based on the GPM calibration for Japan and simulated using a range of parameter values that govern the forward-looking component in the Phillips Curve. The results are shown in Figure 3.

**15. The more backward-looking are inflation expectations, the longer the economy stays at the ZLB and the more volatile are inflation dynamics.** In the model, the relative importance of the forward-looking component of inflation expectations is denoted by  $\lambda_1$  (a smaller value indicates more backward-looking inflation expectations). Figure 3 shows that, holding other things equal, more backward-looking inflation expectations lead to a longer duration at the ZLB. Moreover, the simulations show that highly backward-looking inflation expectations lead to a more volatile inflation response—inflation would initially be unresponsive to the negative shock (resulting in deeper deflation in the beginning) and then become more responsive in subsequent periods (greater overshooting) to make the solvency condition of government bonds hold. This raises a series of concerns about the robustness of an unbacked fiscal expansion when applied to Japan.



**16. Backward-looking inflation expectations would also front-load the real debt accumulation without a timely reflation.** Figure 4 shows the percentage point deviation of the government debt-to-GDP ratio from the steady state for  $\lambda_1 = 0.6$  and  $\lambda_1 = 0.75$ , respectively. When the inflation expectation is less forward-looking ( $\lambda_1 = 0.6$ ), the unbacked fiscal expansion will raise the debt-to-GDP ratio by 20 percent of GDP within one year and by 35 percent of GDP within 4 years. Meanwhile, the reflation process takes an extended time to materialize and requires an eventual inflation overshooting by 3 percentage points (i.e., a rise to 5 percent assuming an inflation target of 2 percent) to keep the government solvent.

**17. The initial limited reflation progress and strong rise in the debt-to GDP ratio may test the government's resolve or trigger a fiscal confidence crisis.** The simulations show that under more backward-looking inflation expectations, the negative output gap is almost closed after 5 years and the nominal interest is already above its ZLB. At that juncture, it is questionable whether it is still optimal or practical for the central bank and the fiscal authority to continue to coordinate under the non-Ricardian policy regime. On the one hand, weak inflation and debt overhang will pose questions regarding the effectiveness of the unbacked fiscal expansion, possibly resulting in the fiscal authority reneging on its commitment of no future tax hikes and spending cuts. This could further prolong the recovery while the accumulated debt could threaten medium-term debt sustainability and trigger a potential fiscal crisis. Alternatively, the perceived ineffectiveness of the unbacked fiscal expansion could generate calls for a more active monetary policy, encouraging the central bank to deviate from its passive monetary stance. This could, in turn, lead to an explosive combination of active monetary and fiscal policy and hyperinflation.



**18. Simulations suggest that if inflation expectations are too backward-looking, an unbacked fiscal expansion will destabilize the economy.** The simulations for Japan imply that there exists a lower bound for  $\lambda_1$  (at approximately 0.55), below which there is no stable solution. In this case, an unbacked fiscal expansion would lead to an unsustainable debt path accompanied by uncontrolled inflation. Empirical evidence tends to agree that the relative weight of the forward-looking price setting behaviors in Japan is less than 0.55 or insignificant.<sup>15</sup> This highlights the significant tail risks of applying the FTPL to Japan.

## F. Other Concerns about an Unbacked Fiscal Expansion

**19. Apart from problems arising from Japan’s backward-looking inflation expectations, there are additional concerns about an unbacked fiscal expansion.**

- First, Japan’s public debt has already reached to an unprecedented high level, and it is not clear whether the public still believes that fiscal policy is Ricardian. Since inflation remains low this raises questions about the applicability of the FTPL.
- Second, given past unsuccessful attempts to reflate the economy, the commitment to an unbacked fiscal expansion may not be credible. In this case the outcome would be similar to that of backward-looking inflation expectations. Further, such an expansion requires that the government can credibly commit to return to Ricardian fiscal policy once inflation has reached its target. Ugai (2017) highlights the difficulty of this “two-stage commitment,” as the public

<sup>15</sup> IMF (2015)



would tend to expect that the government will be either irresponsible or responsible throughout the whole period.

- Finally, in Japan, most of the public liabilities are held by financial institutions either as JGBs or interest bearing excess reserves at the BoJ. It is therefore highly uncertain whether, and to what extent, the unbacked fiscal expansion would stimulate households' spending as suggested by the FTPL. Instead, decline in nominal bond prices associated with the fiscal expansion could negatively affect the balance sheets of financial institutions with adverse effects on financial stability. In this context, Gasper, Obstfeld and Rhee (2017) cautioned that risks associated with such a proposal could undermine the safe asset status of JGBs and lead to bond market scare.

## G. Conclusions

**20. Model simulations suggest that an unbacked fiscal expansion could generate inflation and help an economy exit the zero-lower bound relatively quickly.** In normal times, the separation of responsibility, where monetary policy is responsible for achieving the inflation target while fiscal policy respects its budget constraint, works well. However, coordinating monetary and fiscal policies may be necessary when inflation is low and conventional monetary policy is constrained by the ZLB. This note analyzes a recent proposal that advocates that the government should commit to an unbacked fiscal expansion until the inflation target is reached. This could generate inflation more quickly and help the economy exit the ZLB earlier.

**21. However, Japan's highly backward-looking inflation expectations will likely cause an unbacked fiscal expansion to generate unfavorable dynamics with associated risks well outweighing benefits.** Backward-looking inflation expectations would lead to a front-loading of higher public debt and a delayed reflation process. Such dynamics may test the government's resolve or trigger a fiscal confidence crisis. At a worst, while still a plausible scenario, the unbacked fiscal expansion could immediately set public debt on an unsustainable path and generate an uncontrolled inflation spiral. Given these results, a comprehensive policy packages that takes advantage of the current economic environment by exploiting complementarities between macro-critical structural reforms and coordinated income and demand policies is likely to help reflate the economy at a much more favorable risk-benefit trade-off.

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