Inflation Targeting under Fiscal Fragility

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Abstract

An indebted policymaker with a narrow budget, occasionally, must decide between (i) a higher interest rate to have inflation on the announced target or (ii) to accept higher inflation. To address this dilemma we model inter-temporal trade-offs between fiscal and monetary policy when forward-looking, rational, and fully informed agents finance public deficits. We show that a high public-debt level opens the door to adverse expectations, pressuring nominal interest rates and leading to target failures. Hence, it might be optimal to reduce the public debt down to a level where the inflation target can be assured. The 2002-2003 target failures in Brazil seem not to be explained by either changes in economic fundamentals or real economic shocks. They have been driven precisely by adverse expectations. Our parsimonious model formalizes this episode and suggests that both the gradual reduction of debt-to-GDP in the subsequent years (2004-2014) and the gradual increase (2015-2018) are not, necessarily, disconnected from an optimal discretionary fiscal-policy behaviour. **Keywords:** Monetary Policy, Fiscal Policy, Debt Policy **JEL - Classification:** E52, E62, E63

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1 Introduction

The inflation targeting regime has been supporting central banks in their task of coordinating market expectations towards inflation stability. However, occasionally, fiscal fragility marked by high public-debt cost and limited tax space poses challenges to the inflation target coordination.

As an example, in 2002 and in 2003, Brazilian policymakers faced inflation pressures since it was clear that Lula would win the presidential election. Lula's victory increased the risk of the introduction of a complete new policy-framework, making sovereign bonds denominated in local currency not attractive.

In 2002, at the end of an electoral mandate, defeated in elections and restricted by fiscal-fragility, Brazilian policymakers decided to accept the fact that the 2002 inflation rate would be far over the target. They decided to limit the increase of the basic interest rate on 7 p.p., from 18% to 25% p.y, while the twelve month two digit inflation was accelerating.

In 2003, Lula sustained a responsible macroeconomic policy by reducing public debt and by nominating Mr. Henrique Meirelles to lead a hawkish central bank. But the still high public debt level contaminated inflation expectations during that year and actual inflation extrapolates the target again. A similar episode marked by a confidence crisis occurred in 2015, when a series of protests in Brazil denounced corruption in the government of the President Dilma Rousseff.

In Figure 1, we plot the real interest rate and the CPI inflation observed in each calendar year, from 2002 to 2017, including therefore the three episodes where the Brazilian actual inflation were higher than the respective superior limit of the year-target of 5.5% (2002) and of 6.5% (2003 and 2015).

Here, we propose a model to link the over-the-target inflation observed in those years and the adverse expectations fueled by fiscal limits of monetary policy. We built a simple framework to capture the inter-temporal trade-offs of fiscal and monetary policy, addressing (i) the short-term incentive to raise money through issuing sovereign debt versus the resulting higher nominal interest rates determined by rational expectations and debt issuance (ii) the long-term benefit of respecting targets and then having a credible target versus the short-term temptation of inflating away the public debt.

Our results highlight the fiscal limits on possible monetary policy achievements and the interdependence between fiscal discipline and price stability, the same general message contained on Sargent & Wallace (1981), Leeper (1991), Sims (1994), Woodford (1995), Leeper & Leith (2016), and Cochrane (2017). In terms of model-framework, we closely follows Cole & Kehoe (1996, 2000), Araujo & Leon (2002), and Araujo *et al.* (2012, 2013, 2016), where the fiscal discipline – and, consequently, an expected public debt level reduction – is crucial to provide strength to fiscal and monetary policy.

We therefore reinforce the established claim that responsible fiscal policy improves the price stability. As a novelty, our model considers that both the monetary and the fiscal policy costs may escalate, suddenly and jointly, posing challenges to policymakers that should set an adequate mix of fiscal and monetary tightness. We conclude ambitious-low inflation target is welcome, but only after achieving fiscal soundness[1].

In terms of monetary policy, we model a policymaker deciding the target and the actual inflation according to the three-stage game described in Araujo *et al.* (2016). In the first stage, the policymaker announces the target; in the second, the private-agents form their expectations; and in the third, the policymaker decides to delivery (or not) the target. When making its choices, policymaker considers that too low inflation target may require high real interest rates. Being the policymaker fiscally constrained, the private-agents doubt the former capability of delivering the announced target. As a result, the policymaker should either announce an aggressive target to pursue very low inflation or announce a moderate one to pursue better expectation coordination. This trade-off is generally present in monetary models, even under imperfect information[2].

In terms of fiscal policy, as the three-stage game described in the previous

[1]Most models neglect the possibility of a strategic policymaker facing crisis and deciding on the adequate mix for the monetary and the fiscal policy response. A deep fiscal adjustment joint with a monetary tightening seems to be inappropriate during crisis-time. Clarida *et al.* (1999), Woodford (2003), Christiano *et al.* (2005), and Galí (2015) are useful and popular among central bankers, but their hypothesis that governments voluntarily respect inter-temporal budget constraints does not match the data evidence showing that, after some crisis, delayed and gradual fiscal adjustment-response takes place, and after others, unsustainable debt paths are observed.

[2]See Araujo *et al.* (2016) for technical details.

paragraph lasts only one period but repeats indefinitely, besides inflation, the policymaker must decide its debt policy from one period to another. A reduced loss function that penalizes both inflation and taxation drives this inter-temporal decision. Repetition allows us to eliminate the *ad-hoc* and exogenous commitment cost of not delivering target used in Araujo *et al.* (2016). Instead, the incentive to deliver the target comes from the fact that the target is going to be announced again in subsequent periods. We consider once the policymaker deviates from the announced target, private-agents will only expect the announced target again in a particular case where the unique possible equilibrium is actual inflation being equal to the inflation-target. On the other hand, by delivering the target, policymaker avoids this penalty and retains some ability to coordinate expectations under multiple equilibria.

Private agents' role is to restrict prices to rational expectations equilibrium. Before they lend to the government, they consider public debt level to foreknow the next inflation and the fair nominal interest rate. The monetary policy channel is summarized in the nominal public debt interest rate charged by the private sector to lend to the government. We consider perfect information, rational expectations and fully flexible prices. There is no exogenous shock and actual inflation always matches the expected inflation in equilibrium. Our simplifying assumptions reduce the inflation temptation. If they were relaxed by including inflationary shocks our results would be reinforced. Equilibrium selection accounts for a possible over the target inflation and for rising pressures in nominal interest rate.

We provide numerical results with dynamic solutions to our model and find that, when the public debt (d) is higher than an endogenous threshold (d^{sup}), the private agents know for sure that the policymaker never delivers the inflation target because it always prefers to inflate away its public debt. Target announcements and monetary policy have no role. We name this debt region as the fiscal dominance region. However, we do not discuss it in details as our focus is on the region in which both fiscal and monetary policies have active roles.

In another extreme case, if the public debt is lower than the endogenous threshold (d^{inf}) the private-agents know that the policymaker will always deliver the announced inflation target. Under this special case, the nominal interest rate does not depend on expectations and achieves its minimum level, i.e. the free risk level

plus the announced target, and fiscal policy has no role.

We name the debt interval delimited by d^{inf} and d^{sup} as the fiscal fragility region and the period when fiscal adjustment takes place to exit the fiscal fragility region as the transition period. Note that during the transition period - i.e. when the public debt is within the endogenous region delimited by d^{sup} and d^{inf} - more than one equilibrium is possible, making nominal rates dependent on expectations. Since self-confirmed crises may arise, there are incentives to reduce the debt level to exit the multiple equilibria region.

Our results show fiscal fragility opens the door to confidence crises, i.e. expected inflation higher than inflation target and nominal rates higher than risk-free rates plus inflation target. Second, our results show it may be optimal for the policymaker to fight fiscal fragility by gradually reducing its public debt. This fiscal prescription fits Brazilian fiscal achievements between 2004 and 2014, when the fiscal net debt to GDP decreased from 45% to almost 30% (see Figure 2). Third and surprisingly, for low inflation target and moderate debt levels, depending on the policymaker preference-parameters, it may be optimal to remain in the fiscal fragility region and to avoid the costly fiscal adjustment. In this case, it is better to simply increase the public debt-level, which makes inflation-targeting regime unsustainable. This fiscal prescription fits Brazilian data between 2014 and 2018, when fiscal net debt to GDP increased from 30% to almost 60% (see Figure 2).

In the next section, we formal declare the model. In the third section, we present numerical results based on calibrated parameters and interpret the Brazilian experience with the inflation-targeting regime. Remarks are made in the last section.

2 Model

Our model encompasses two types of agents and infinite periods. Next we start describing agents and timing actions within periods.

Policymaker agent

We model the policymaker agent as a hybrid of monetary and fiscal authorities, who dislikes inflation and taxation. His preference is assumed to be a reduced-form loss function that increases with inflation and taxation. The policymaker has some control over the monetary and fiscal policies, but all his actions are constrained by the private-agents' inflation expectations and by each period budget constraint.

The policymaker agent decides the actual inflation rate, π_t, the tax to GDP ratio, τ_t, and the next period debt to GDP ratio, D_{t+1}, as a way of minimizing the inter-temporal loss function

$$\min_{D_{t+1},\pi_t,\tau_t} \mathbb{E} \sum_{t=0}^{\infty} \beta^t \left\{ \frac{\pi_t^{\eta}}{\eta} + \lambda \exp(\tau_t) \right\} \tag{1}$$

subject to the budget constraint,

$$(1 + r_t)D_t \leq \tau_t + D_{t+1} \tag{2}$$

and to the real interest rate equation,

$$1 + r_t = \frac{(1 + \mathbb{E}_{t-1}\pi_t^e(\pi^a))}{(1 + \pi_t)} \frac{1}{\beta} \tag{3}$$

Therefore, policymaker wants to have a zero-target to be perfectly committed to the first best zero-inflation and zero-tax solution, which is obviously feasible if the debt is equal to zero. This solution may be not feasible for positive debt level as, in this case, the policymaker is tempted to increase the actual inflation, $0 \leq \pi_t$[3]. $\mathbb{E}_{t-1}\pi_t^e$ is the inflation expected by private-agents formed in the end of period $t-1$, and dependent on the inflation target π^a, τ_t is the distortionary tax-to-GDP revenue available for debt payment[4], D_t is the actual debt-to-GDP level, D_{t+1} is the next period debt-to-GDP level, and r_t is the real interest rate. The

[3]In this paper we restrict the model to indebted policymakers and positive inflation temptation, but the same model also applies to the case of deflation temptation when debt is negative and η is pair.

[4]For simplicity, we are omitting the public expenditure and the GDP as we are considering them constant. If those variables were time dependent and subject to economic shocks our results would be easier achieved.

first parameter, $\beta \in (0,1)$, is the inter-temporal discount rate, the second, $\eta > 1$, adjusts the cost of inflation, and the third, $\lambda > 0$, adjusts the cost of taxation. We are assuming that the inflation target, π^a, is also a parameter.

In each period, the policymaker has two ways of satisfying the budget constraint: i) issuing new debt, increasing D_{t+1}; ii) or lowering the interest rate payment with inflationary surprise ($\pi_t > \mathbb{E}_{t-1}\pi_t^e$), opening the door to both strategic interaction between policymaker and private agents and to multiple equilibria. If multiple-equilibria are possible, we consider an exogenous sunspot variable $E_t \in E$ selecting in which equilibrium the economy is. E is a vector whose elements represent each possible equilibrium and its probability of occurrence.

We also consider that private agents are able to correctly anticipate the policymaker trying to carry out an inflationary surprise and, therefore, they are able to charge the fair nominal interest rate[5].

Our policymaker agent specification can be thought of as a way of capturing the cost of inflation and taxation in a society. Implicitly, we are assuming a benevolent policymaker whose preference reflects society's preferences regarding inflation and taxation. However, in an alternate interpretation, it can be thought of as a monetary authority not independent and subjected to political pressures when λ is higher than zero.

Private-agents

We assume that the private-agents are a continuum with measure one of identical and infinitely lived individuals. They are risk neutral and their utility function is

$$\mathbb{E}\sum_{t=0}^{\infty}\beta^t\left\{x_t\right\} \tag{4}$$

in which x_t is the private-agents' consumption. In each period, each private-agent is endowed with $\bar{x}$ after tax units of the consumption good. They use their after tax endowment and the return of the amount saved in the previous period

[5]This assumption aligns with the fact that emerging market bonds denominated in local currency are typically indexed to local inflation rate in order to reduce the cost of inflation risk-premium.

to purchase new bonds and to consume. Each private-agent faces the following budget constraint

$$x_t + d_{t+1} \leq \bar{x} + (1 + r_t)d_t \tag{5}$$

in which d_t is the amount of debt bought in the previous period, d_{t+1} is the amount of next-period debt, bought in t, and $(1 + r_t)$ is the real interest rate.

We assume that the private-agents behave competitively in making their choice of d_{t+1} and that they do not think that their individual actions affect the aggregate state in the next period. Thus, we distinguish between the individual decision d_{t+1} and the aggregate value D_{t+1}. In equilibrium, because all consumers are identical and start with $d_0 = D_0$, d_{t+1} matches D_{t+1} for any t.

Timing

In all periods, we suppose there is an imperfect commitment of the policymaker with a given inflation rate denoted by the parameter π^a, i.e. the policymaker announces but may ignore the target and may inflate away its debt. Private agents understand this fact when form their expectations $\mathbb{E}_{t-1}\pi_t^e$. Therefore, $\mathbb{E}_{t-1}\pi_t^e$ is going to be equal to either the target or the uncommitted solution for the problem described by equations 1, 2, and 3. When multiple equilibria are possible, we assume the equilibrium selection is driven by an exogenous probability vector E. If selection is the one where the target is not delivered, from the not delivering period t on, we assume the inflation target will not be delivered again under multiple equilibria and the finance restriction $D_T \leq D_t$ will hold for T>t, ruling out Ponzi schemes in favor of policymaker.

We name the discretionary level of inflation π_t^D, i.e. the level of inflation in which the policymaker minimizes its loss function without considering the announced target. Therefore, π_t^D solves the equation 1, restricted to 2, to 3, and to rational expectations assumption:

$$\frac{\partial L^*(.)}{\partial \pi_t} = 0 \tag{6}$$

$$\pi_t^D(\pi_t^e) = \pi_t^e \tag{7}$$

Within each period, the timing of actions is:

1^{st}: Policymaker chooses actual inflation, π_t;

2^{nd}: Policymaker chooses next debt-level, D_{t+1};

3^{rd}: The sunspot variable, E_{t+1}, is realized;

4^{th}: Private-agents form their next-period inflation expectation, $\mathbb{E}_t \pi^e_{t+1}$, and choose the amount of next-period debt to hold d_{t+1}.

At the beginning of each period, the policymaker chooses and implements the actual inflation rate. Knowing its monetary policy decision, policymaker decides how much debt to sell and the next-period debt level. At the end of each period, the next period uncertainty is solved and one may interpret it as an election result. Then, private agents form their next-period inflation expectation and chooses the amount of next-period debt to hold. Note the expected inflation of the period $t+1$ is formed in the end of the period t, consistent with the fair nominal interest rate of the issued debt, to be re-paid in the next-period according to the follow nominal interest rate: $i_{t+1} = \frac{1}{\beta}(1 + \mathbb{E}_t \pi^e_{t+1}) - 1$.

3 Recursive Equilibrium

The policymaker agent cannot commit itself either to honouring the pre announced inflation target or to following a fixed borrowing and spending path. We therefore define a recursive equilibrium in which there is no commitment and both the policymaker agent and private agents choose their actions sequentially. Within any period, the aggregate state $s = (D, \pi^e)$ is public since it has been determined in the previous period. The policy choices (π, D'), the nominal interest rate i' and the expected inflation $(\pi^{e\prime})$ for the next period, joint with s, determine the equilibrium. We denote by $\pi(s)$ and $D'(s)$ the policy functions, by $i'(s, E)$ the interest rate function, and by $\pi^{e\prime}(s, E)$ the expectation-function, all yet to be defined.

To define a recursive equilibrium, we work backward given the timing of actions in each period. The state of an individual agent consists of the aggregate state, any individual state variables, and any relevant variables that have already been chosen within the period. The solution to an agent's problem is given by a value

function that provides either the maximum attainable value of the agent's utility function or the minimum attainable value of the agent's loss function, given his state and the optimal policy functions. In an equilibrium, agents solve their own problems by correctly predicting what the policies of the other agents will be. We start the definition of a recursive equilibrium with private agents because they move last.

When an individual private agent form its expectation $\pi^{e\prime}$ in the end of any period, he knows all the parameters of the economy, his individual public debt holding d, the aggregate state $s = (D, \pi^e)$, the policymaker's offering of new debt D', the actual inflation of the current period π, and the next period equilibrium selection, E. This last information being relevant if more than one equilibrium is feasible.

Since private agent's expectation only depends on the next actual inflation decision, $\pi'(s')$, we define the state of the individual private agent as $(d, s, D'(s))$. The representative private agent's value function is defined by the following functional equation.

$$V^{pa}(d, s, D'(s)) = \max_{d'} \bar{x} + \frac{1}{\beta}\frac{(1+\pi^e)}{(1+\pi)}d - d' + \beta \mathbb{E} V^{pa}(d', s', D'(s')) \tag{8}$$

subject to

$$-A \leq d' \leq \bar{x} \quad \text{and} \quad s' = (D', \pi^{e\prime})$$

in which $A > 0$, that rules out Ponzi schemes in favor of private agents but does not bind in equilibrium for a positive initial debt condition.

The private agent's policy function is denoted by $d'(d, s, D')$ and it is actually a set-valued correspondence determined by $\pi^{e\prime}(s, E)$[6]. Because private agents are assumed to be risk neutral and to behave competitively, they are relatively passive. They are indifferent to purchasing or not any amount of debt offered by the policymaker as long as the nominal interest rate of the issued debt i' satisfies

$$1 + i'(s, E) = \frac{(1 + \pi^{e\prime}(s, E))}{\beta} = (1 + r')(1 + \pi') \tag{9}$$

[6]Individual debt demand d' is equal to zero when the nominal interest rate is lower than $((1+\pi^{e\prime})/\beta - 1)$, it is equal to infinity when offered nominal rate is higher, and it is any otherwise.

In other words, when forming their expectations $\pi^{e\prime}(s, E)$, private agents determine the nominal interest rate for the next period, and as they have complete information, the real return is always $1/\beta$ and π is perfectly anticipated. Remembering, because there are no shocks in our model, in equilibrium, $\pi^e = \pi$. To determine a rational expectation function $\pi^{e\prime}(s, E)$ we must solve the equilibrium $\pi^{e\prime}(s, E) = \pi(s')$. Since $s' = (D', \pi^{e\prime})$ and D' is already known when $\pi^{e\prime}(s, E)$ is formed, we may replace $\pi(s')$ by $\pi(\pi^{e\prime}|D')$, and $\pi^{e\prime}(s, E)$ is defined as:

$$\pi^{e\prime}(s, E) = \pi(\pi^{e\prime}|D') \tag{10}$$

It is worth to emphasize that, whenever there are more than one value for $\pi^{e\prime}$ solving 10, the variable E selects equilibrium.

The policymaker agent makes decisions at two points in time. At the beginning of the period, when the government chooses π, its state is simply the initial state s. Later in the period, the government makes its debt issuance choice, D'. The policymaker knows its debt level affects inflation expectations. The policymaker's objective is to minimize the loss function. Its value function is defined by the functional equation

$$V^p(s) = \min_{D', \pi} \frac{\pi^\eta}{\eta} + \lambda \exp((1 + r)D - D') + \beta \mathbb{E} V^p(s') \tag{11}$$

subject to

$$s' = (D', \pi^{e\prime})$$

in which we denote by $\pi(s)$ and $D'(s)$ the inflation policy and the debt policy, respectively.

Having developed these concepts, we can now define a recursive equilibrium for our model economy. An equilibrium is a list of value functions V, for the representative private agent, V^{pa}, and for the representative policymaker, V^p; policy functions π and D' for the policymaker, $\pi^{e\prime}$ for the private agent; a nominal interest rate function i; and an equation of motion for the aggregate debt D' such that:

- Given D', i, and π, V^{pa} is the value function for the solution to the representative private agent's problem, $\pi^{e\prime}$ is the maximizing choice and the value of

D' chosen by the policymaker solves the problem when $d = D$;

- Given $\pi^{e\prime}$ and i, V^p is the value function for the solution to the policymaker's problem, and both D' and π are the maximizing choices.

- $D'(s)$ pertains to $d'(D, s, D')$;

Our definition of an equilibrium is similar to Cole & Kehoe (2000) and it is restricted to Markov equilibrium. Hence, the agents' future conditional plans can be derived from their policy functions.

4 Numerical Exercise with Brazilian Numbers

In Table 1, we present the set of parameters assumed in our numerical simulations. Accordingly, the cost of inflation, η, is equal to 2.75 and the cost of taxation, λ, to 5. These policymaker-preference parameters are quite arbitrary, so, we set them to achieve a reasonable range for the fiscal fragility region, with d^{sup} close to one GDP and d^{inf} close to zero. More specifically, and according to our simulations results presented in Figure 3, (i) it is not possible to sustain a zero target level when the public debt is higher than 90% of the GDP and (ii) the zero target is achieved for sure when the public debt is lower than 3% of the GDP. Otherwise, the target sustainability depends not only on the policymaker effort but also on the selection of the private agents expectations.

The policymaker's inter-temporal discount factor, β, is equal to 0.85 to match the nominal interest rate of 25% observed in the beginning of 2003, the 2003 inflation target superior limit of 6.5%, and the equation 3. The exogenous probability of crisis selection is set equal to 20% and the inflation target, π^a, is set equal to 0%. The zero target delivers the best solution for the policymaker under perfect commitment. With these parameters, the steady-state tax revenue available for interest payment, τ, is equal to either 0.5% or 16% of the total GDP, depending on the debt policy function and on the initial debt-to-GDP level. To appraise the effect of a higher target on optimal fiscal policy, we also run simulations for a target equal to 8.5%, which was the 2003 re-target announced by the central bank of Brazil in the beginning of the year of 2003.

Simulations

Looking to the policy function – the left plot in Figure 3 –, one can clearly see three equilibrium zones. First, if the initial debt is smaller than 3%, the policymaker always delivery the announced target and agents always believe in it. The optimal reaction is to pay the interests and issue the same amount of maturing debt. Second, if the initial debt is between 3% and 90%, the policymaker is in the crisis zone. Policymaker may prefer to pay the debt to escape from the multiple equilibria zone. The reason is it is costly to keep the debt level within a region where a crisis may surge. However, if the debt is high enough – more than 35% –, escaping from the crisis zone is too costly and policymaker prefers to in-debt. Third, for debt levels equal or above 0.9, agents doubt the target and target announcement is innocuous. Also, above the 0.9 level, if there were incentive to the policymaker to increase further its debt-level, this incentive would be related to a Ponzy scheme.

In the right plot of the Figure 3, we show how the value function increases with current debt, meaning that more debt increases the loss expected by the policymaker. Note also that, if current debt is below to 3% (d^{inf}), the policymaker always delivers the target and the value function is flatter. In the fiscal fragility region (3%-90%), value function is more sensible to debt level when the debt level lays between 3% and 35%, the region where the "exit-cost" is present, and then becomes flatter again when the debt level lays between 35% and 90% .

A natural question is what would happen if we change the announced target? Redoing the numerical exercise with a higher than 0% inflation target – 8.5% –, while keeping all other parameters constant, we obtain the Figure 4. In both plots, the red line represents results under the previous target of 0%, and the black one represents results under the target of 8.5%. We can see how the crisis limits depend on the target level. The lowest debt level in the crisis zone increases from 3% to 12% when the target is increased. A higher inflation target allows for an easier deleveraging process to exit the crisis zone as it increases the zone in which monetary policy is fully believable. Or, in other words, the lower the target, the more restricted is the fiscal policy. Higher target also may play an important role by increasing d^{sup}, i.e. sustaining higher indebtedness.

The higher target also decreases the value function at low debt levels (between

3% and 12%). This happens because the higher target increases the value of d^{inf} and then decreases the expected loss, reflecting the end of the possibility of a confidence crisis for debt levels laying between 3% and 12%, highlighting the importance of selecting the inflation target dependent on the fiscal soundness measured by the public debt level.

5 Remarks

We develop a parsimonious model to capture the trade-offs between fiscal and monetary policies during a transition period when an economy under fiscal-fragility is evolving into the direction of better fiscal fundamentals that would be able to sustain, not constrain, the monetary policy.

In spite of assuming a high policymaker-ability of raising money, i.e. of assuming an inextinguishable source of funding available to policymaker, and of assuming that risk-neutral lenders can perfectly forecast inflation, ruling out inflation surprise in equilibrium, we show that during this critical period, deleveraging should come with higher inflation targets.

Moreover, we show that in case of extreme fiscal fragility, i.e. very high public debt level, the policymaker may prefer to avoid the costly fiscal adjustment into the direction of better fiscal fundamentals, making the inflation-targeting regime unsustainable.

One can use this last result to justify dollarization as the monetary solution for too indebted economies, the same policy prescription of Araujo *et al.* (2013), but here, based on a complete different set of hypothesis. Alternatively, one can use this last result to justify fiscal-policy rules rather than discretion.

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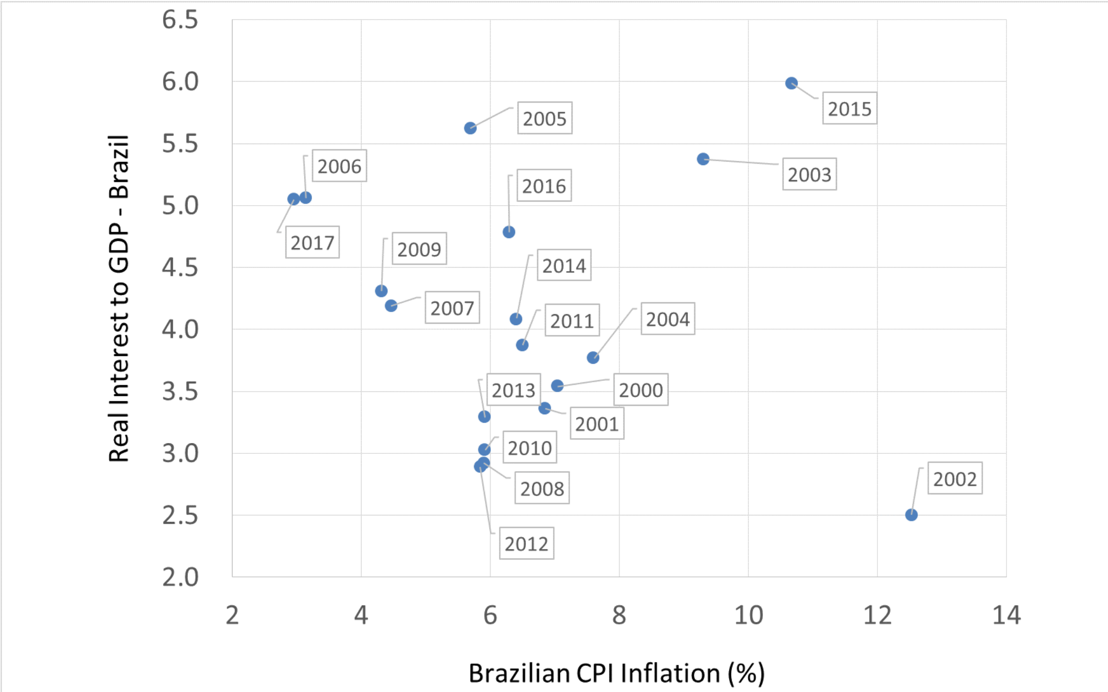

Figure 1: Brazilian Inflation and Interest Rate during Inflation Targeting Regime

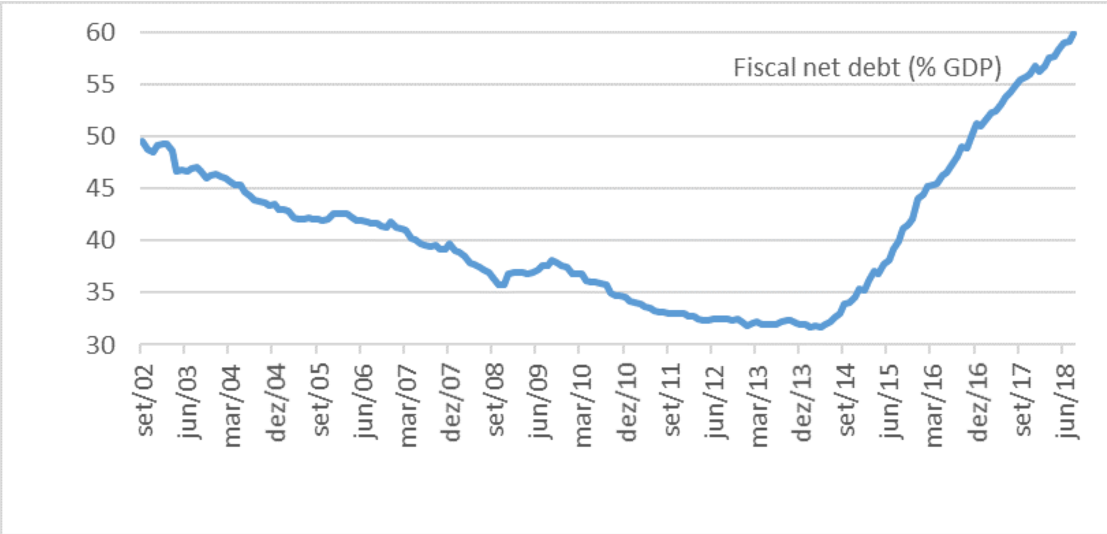

Figure 2: Brazilian Fiscal Achievements

Parameter	Value	Description
η	2.75	Set the cost of inflation;
λ	5.00	Set the cost of taxation;
β	0.85	Policymaker's intertemporal discount factor;
E	0.20	Exogenous probability of crises;
π^A	0%	Inflation Target

Table 1: Parameters used in Simulations

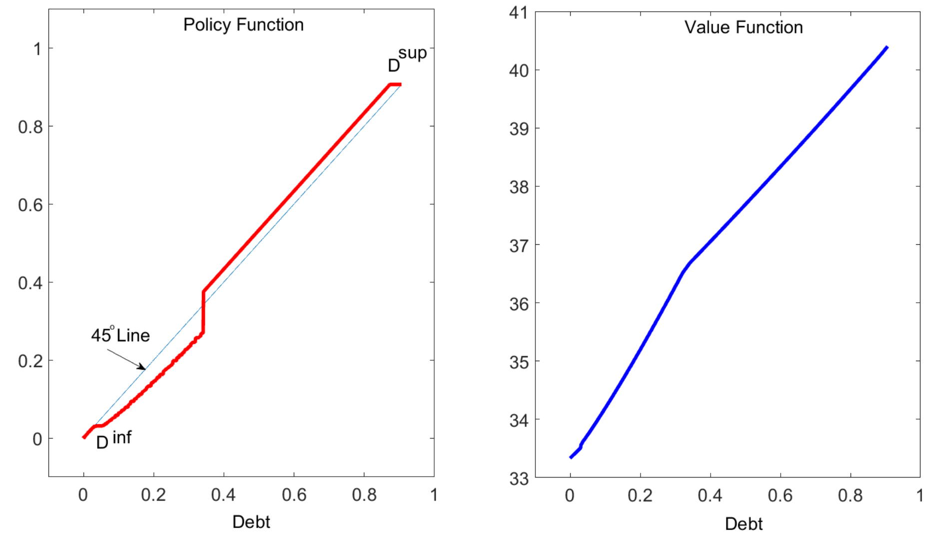

Figure 3: Debt Policy and Value Function at Low Inflation Target (0%)

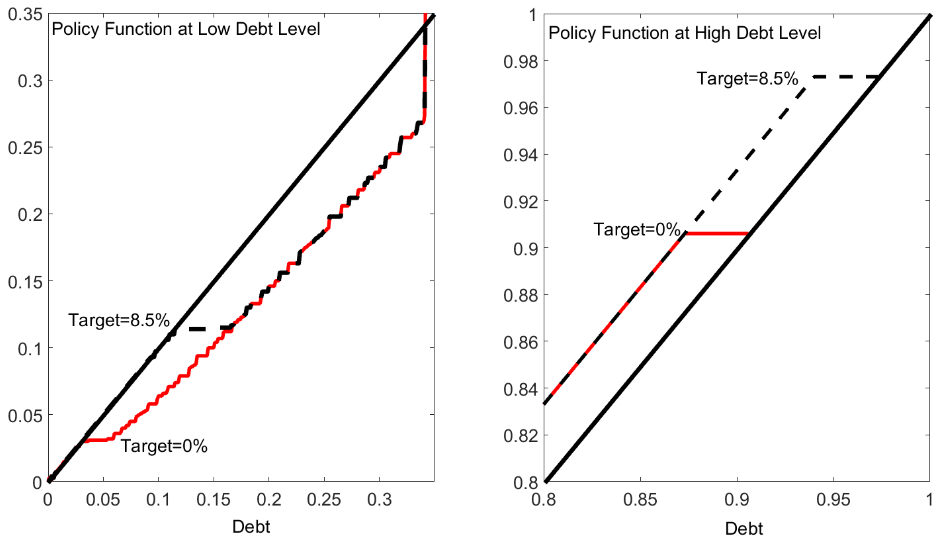

Figure 4: Inflation Target effect on Debt Policy