

Credibility Dynamics and Disinflation Plans

Rumen Kostadinov
McMaster

Francisco Roldán
IMF

IMF Speed-date-style research event
May 2020

The views expressed herein are those of the authors and should not be attributed to the IMF, its Executive Board, or its management.

Main question: How are *announcements* of future policy able to affect beliefs?

- Models
 - Commitment
 - Discretion
 - Hybrids
- This paper: rational-expectations theory of government *credibility*
 - Insights from reputation
- Application: Inflation Targeting, disinflation plans
 - Model: stubborn types committed to inflation targets
 - Planner (*very likely to not be stubborn*) announces targets
 - Anticipates reputation dynamics once plan in place, weighs against plan itself

Main question: How are *announcements* of future policy able to affect beliefs?

- Models
 - Commitment
 - Discretion
 - Hybrids
- This paper: rational-expectations theory of government *credibility*
 - Insights from reputation
- Application: Inflation Targeting, disinflation plans
 - Model: stubborn types committed to inflation targets
 - Planner (*very likely to not be stubborn*) announces targets
 - Anticipates reputation dynamics once plan in place, weighs against plan itself

Announcements

Main question: How are *announcements* of future policy able to affect beliefs?

- Models
 - Commitment ✗
 - Discretion
 - Hybrids
- This paper: rational-expectations theory of government *credibility*
 - Insights from reputation
- Application: Inflation Targeting, disinflation plans
 - Model: stubborn types committed to inflation targets
 - Planner (*very likely to not be stubborn*) announces targets
 - Anticipates reputation dynamics once plan in place, weighs against plan itself

Announcements

Main question: How are *announcements* of future policy able to affect beliefs?

- Models
 - Commitment ✗
 - Discretion ✗
 - Hybrids
- This paper: rational-expectations theory of government *credibility*
 - Insights from reputation
- Application: Inflation Targeting, disinflation plans
 - Model: stubborn types committed to inflation targets
 - Planner (*very likely to not be stubborn*) announces targets
 - Anticipates reputation dynamics once plan in place, weighs against plan itself

Main question: How are *announcements* of future policy able to affect beliefs?

- Models
 - Commitment *X*
 - Discretion *X*
 - Hybrids *X*
- This paper: rational-expectations theory of government *credibility*
 - Insights from reputation
- Application: Inflation Targeting, disinflation plans
 - Model: stubborn types committed to inflation targets
 - Planner (*very likely to not be stubborn*) announces targets
 - Anticipates reputation dynamics once plan in place, weighs against plan itself

Announcements

Main question: How are *announcements* of future policy able to affect beliefs?

- Models
 - Commitment *X*
 - Discretion *X*
 - Hybrids *X*
- This paper: rational-expectations theory of government *credibility*
 - Insights from reputation
- Application: Inflation Targeting, disinflation plans
 - Model: stubborn types committed to inflation targets
 - Planner (*very likely to not be stubborn*) announces targets
 - Anticipates reputation dynamics once plan in place, weighs against plan itself

Announcements

Main question: How are *announcements* of future policy able to affect beliefs?

- Models
 - Commitment ✗
 - Discretion ✗
 - Hybrids ✗
- This paper: rational-expectations theory of government *credibility*
 - Insights from reputation ✓
- Application: Inflation Targeting, disinflation plans
 - Model: stubborn types committed to inflation targets
 - Planner (*very likely to not be stubborn*) announces targets
 - Anticipates reputation dynamics once plan in place, weighs against plan itself

Announcements

Main question: How are *announcements* of future policy able to affect beliefs?

- Models
 - Commitment ✗
 - Discretion ✗
 - Hybrids ✗
- This paper: rational-expectations theory of government *credibility*
 - Insights from reputation ✓
- Application: Inflation Targeting, disinflation plans
 - Model: stubborn types committed to inflation targets
 - Planner (*very likely to not be stubborn*) announces targets
 - Anticipates reputation dynamics once plan in place, weighs against plan itself

Main result: Planner picks a gradual disinflation

- Does not depend on inertia or 'real' effects, only incentives
- High credibility \neq high reputation
- Story
 - CB values your belief that it follows the plan \implies has incentive to "keep the fiction alive"
 - Incentive does **not** require reputation to be high
 - Strength of the incentive depends on the entire plan
- (Technical but critical) Imperfect control, means $p \in (0, 1)$ continuously
 - Makes some plans *more credible* than others

Main result: Planner picks a gradual disinflation

- Does not depend on inertia or 'real' effects, only incentives
- High credibility \neq high reputation
- Story
 - CB values your belief that it follows the plan \implies has incentive to "keep the fiction alive"
 - Incentive does **not** require reputation to be high
 - Strength of the incentive depends on the entire plan
- (Technical but critical) Imperfect control, means $p \in (0, 1)$ continuously
 - Makes some plans *more credible* than others

Main result: Planner picks a gradual disinflation

- Does not depend on inertia or 'real' effects, only incentives
- High credibility \neq high reputation
- Story
 - CB values your belief that it follows the plan \implies has incentive to "keep the fiction alive"
 - Incentive does **not** require reputation to be high
 - Strength of the incentive depends on the entire plan
- (Technical but critical) Imperfect control, means $p \in (0, 1)$ continuously
 - Makes some plans *more credible* than others

Main result: Planner picks a gradual disinflation

- Does not depend on inertia or ‘real’ effects, only incentives
- High credibility \neq high reputation
- Story
 - CB values your belief that it follows the plan \implies has incentive to “keep the fiction alive”
 - Incentive does not require reputation to be high
 - Strength of the incentive depends on the entire plan
- (Technical but critical) Imperfect control, means $p \in (0, 1)$ continuously
 - Makes some plans *more credible* than others

Main result: Planner picks a gradual disinflation

- Does not depend on inertia or ‘real’ effects, only incentives
- High credibility \neq high reputation
- Story
 - CB values your belief that it follows the plan \implies has incentive to “keep the fiction alive”
 - Incentive does **not** require reputation to be high
 - Strength of the incentive depends on the entire plan
- (Technical but critical) Imperfect control, means $p \in (0, 1)$ continuously
 - Makes some plans *more credible* than others

Main result: Planner picks a gradual disinflation

- Does not depend on inertia or ‘real’ effects, only incentives
- High credibility \neq high reputation
- Story
 - CB values your belief that it follows the plan \implies has incentive to “keep the fiction alive”
 - Incentive does not require reputation to be high
 - Strength of the incentive depends on the entire plan \implies gradualism
- (Technical but critical) Imperfect control, means $p \in (0, 1)$ continuously
 - Makes some plans *more credible* than others \implies gradualism

Model

Framework

- A government dislikes inflation and output away from a target $y^* > 0$

$$L_t = \mathbb{E}_t \left[\sum_{s=0}^{\infty} \beta^s \left((y^* - y_{t+s})^2 + \gamma \pi_{t+s}^2 \right) \right]$$

- A Phillips curve relates output to current and expected future inflation

$$\pi_t = \kappa y_t + \beta \mathbb{E}_t [\pi_{t+1}]$$

- The government controls inflation only imperfectly (through g_t)

$$\pi_t = g_t + \epsilon_t$$

with $\epsilon_t \stackrel{iid}{\sim} F_\epsilon$

Behavioral/Stubborn types

- What is the set \mathcal{C} ?
 - ... and associated possible ϕ_c functions
- Consider $\{a_t\}_t$ paths characterized by
 - Starting point a_0
 - Decay rate ω
 - Asymptote χ

$$a_t = \chi + (a_0 - \chi)e^{-\omega t}$$

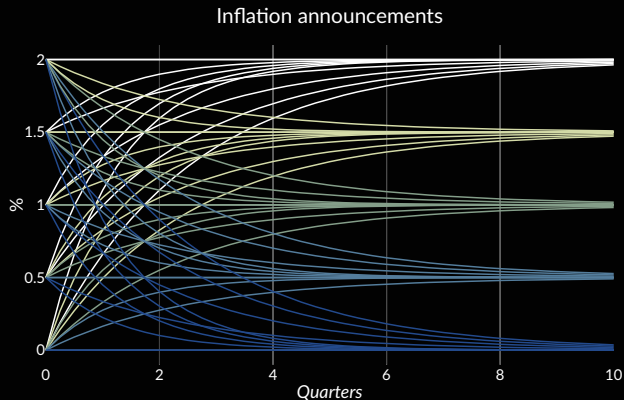
$$\phi(a) = \chi + e^{-\omega}(a - \chi)$$

Behavioral/Stubborn types

- What is the set \mathcal{C} ?
 - ... and associated possible ϕ_c functions
- Consider $\{a_t\}_t$ paths characterized by
 - Starting point a_0
 - Decay rate ω
 - Asymptote χ

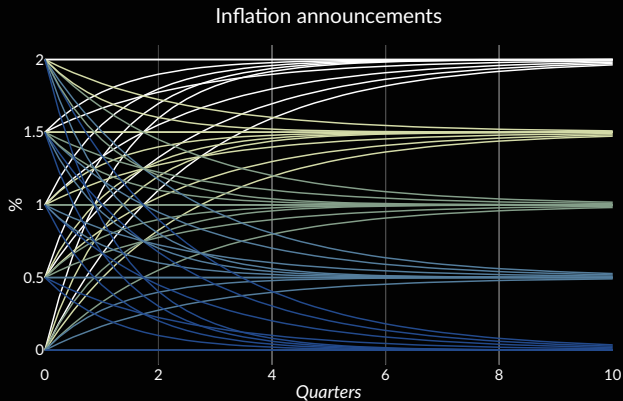
$$a_t = \chi + (a_0 - \chi)e^{-\omega t}$$

$$\phi(a) = \chi + e^{-\omega}(a - \chi)$$



Gameplay

- At $t = 0$, inflation **targets** are announced
 - Type $c \in \mathcal{C}$ says c
 - Rational type **strategizes** announces r possibly $\in \mathcal{C}$
- At time $t \geq 0$, the government sets inflation
 - Behavioral type $c \in \mathcal{C}$ implements $g_t = a_t^c$
 - Rational type acts **strategically** chooses $g_t \leq a_t^c$



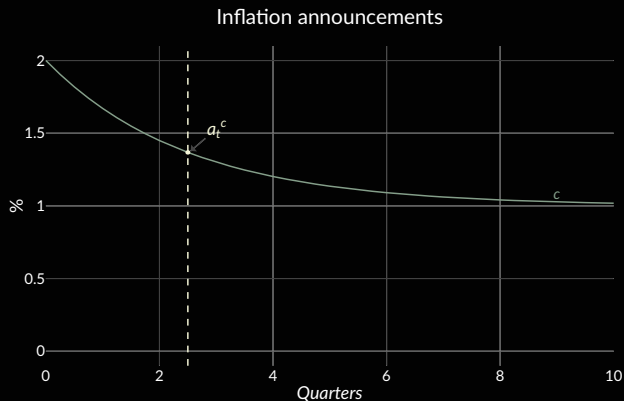
Gameplay

- At $t = 0$, inflation **targets** are announced
 - Type $c \in \mathcal{C}$ says c
 - Rational type **strategizes** announces r possibly $\in \mathcal{C}$
- At time $t \geq 0$, the government sets inflation
 - Behavioral type $c \in \mathcal{C}$ implements $g_t = a_t^c$
 - Rational type acts **strategically** chooses $g_t \begin{matrix} \leq \\ \geq \end{matrix} a_t^c$



Gameplay

- At $t = 0$, inflation **targets** are announced
 - Type $c \in \mathcal{C}$ says c
 - Rational type strategizes
announces r possibly $\in \mathcal{C}$
- At time $t \geq 0$, the government sets inflation
 - Behavioral type $c \in \mathcal{C}$
implements $g_t = a_t^c$
 - Rational type acts
strategically
chooses $g_t \begin{smallmatrix} \leq \\ \geq \end{smallmatrix} a_t^c$



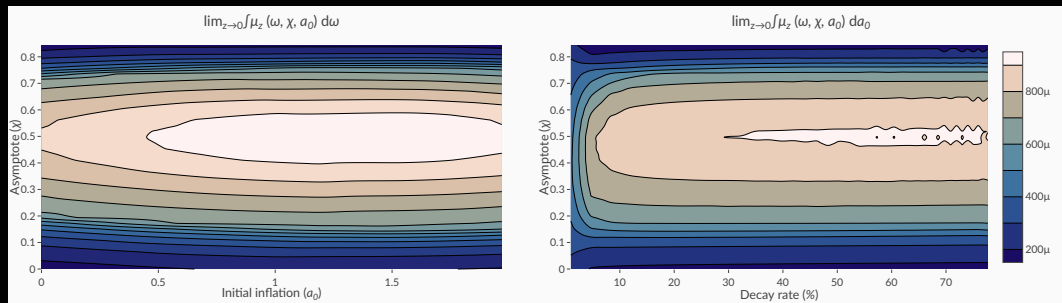
Equilibrium

Equilibrium distribution of announcements

Model solution yields a **distribution** of announcements

Equilibrium distribution of announcements

Model solution yields a **distribution** of announcements



- Gradualism: $\mathbb{P}(a_0 > \chi) = 71.3\%$. $\mathbb{P}(a_0 > 5\chi) = 18\%$. $\mathbb{P}(\text{decay} \leq 10\%) = 6.17\%$.
- Imperfect credibility: $\mathbb{P}(\chi = 0) = 0.73\%$.

Extensions: Where are we going with this?

- Model of reputation + imperfect control creates incentives for a gradual disinflation

Questions:

1. Real sources of inertia – how do they interact with gradualist incentives?
2. Fiscal policy, seignorage – two-sided reputation
3. Quantitative version(s):
 - Consumption and nominal rates
 - Open economy: carry-trade and REER
 - Investment and costs of monetary contraction
4. Flexible announcements: liftoff
5. Empirical validation of (1) + (2)

Ideas and comments welcome!

Extensions: Where are we going with this?

- Model of reputation + imperfect control creates incentives for a gradual disinflation

Questions:

1. Real sources of inertia – how do they **interact** with gradualist incentives?
2. **Fiscal** policy, seignorage – two-sided reputation
3. Quantitative version(s):
 - Consumption and nominal rates
 - Open economy: carry-trade and REER
 - Investment and **costs** of monetary contraction
4. Flexible announcements: **liftoff**
5. Empirical **validation** of (1) + (2)

Ideas and comments welcome!

Extensions: Where are we going with this?

- Model of reputation + imperfect control creates incentives for a gradual disinflation

Questions:

1. Real sources of inertia – how do they **interact** with gradualist incentives?
2. **Fiscal** policy, seignorage – two-sided reputation
3. Quantitative version(s):
 - Consumption and nominal rates
 - Open economy: carry-trade and REER
 - Investment and **costs** of monetary contraction
4. Flexible announcements: **liftoff**
5. Empirical **validation** of (1) + (2)

Ideas and comments welcome!

Extensions: Where are we going with this?

- Model of reputation + imperfect control creates incentives for a gradual disinflation

Questions:

1. Real sources of inertia – how do they **interact** with gradualist incentives?
2. **Fiscal** policy, seignorage – two-sided reputation
3. Quantitative version(s):
 - Consumption and nominal rates
 - Open economy: carry-trade and REER
 - Investment and **costs** of monetary contraction
4. Flexible announcements: **liftoff**
5. Empirical **validation** of (1) + (2)

Ideas and comments welcome!

Extensions: Where are we going with this?

- Model of reputation + imperfect control creates incentives for a gradual disinflation

Questions:

1. Real sources of inertia – how do they **interact** with gradualist incentives?
2. **Fiscal** policy, seignorage – two-sided reputation
3. Quantitative version(s):
 - Consumption and nominal rates
 - Open economy: carry-trade and REER
 - Investment and **costs** of monetary contraction
4. Flexible announcements: **liftoff**
5. Empirical **validation** of (1) + (2)

Ideas and comments welcome!

Extensions: Where are we going with this?

- Model of reputation + imperfect control creates incentives for a gradual disinflation

Questions:

1. Real sources of inertia – how do they **interact** with gradualist incentives?
2. **Fiscal** policy, seignorage – two-sided reputation
3. Quantitative version(s):
 - Consumption and nominal rates
 - Open economy: carry-trade and REER
 - Investment and **costs** of monetary contraction
4. Flexible announcements: **liftoff**
5. Empirical **validation** of (1) + (2)

Ideas and comments welcome!

Extensions: Where are we going with this?

- Model of reputation + imperfect control creates incentives for a gradual disinflation

Questions:

1. Real sources of inertia – how do they **interact** with gradualist incentives?
2. **Fiscal** policy, seignorage – two-sided reputation
3. Quantitative version(s):
 - Consumption and nominal rates
 - Open economy: carry-trade and REER
 - Investment and **costs** of monetary contraction
4. Flexible announcements: **liftoff**
5. Empirical **validation** of (1) + (2)

Ideas and comments welcome!