Credibility Dynamics and Disinflation Plans

Rumen Kostadinov
McMaster

Francisco Roldán
IMF

April 2020

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

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

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

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

Gradualism

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

Gradualism

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

Gradualism

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

Gradualism

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

Gradualism

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

Gradualism

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 $y^\star > 0$

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

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

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

- The government controls inflation only imperfectly (through g_t)

$$\pi_t = g_t + \epsilon_t$$

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

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

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

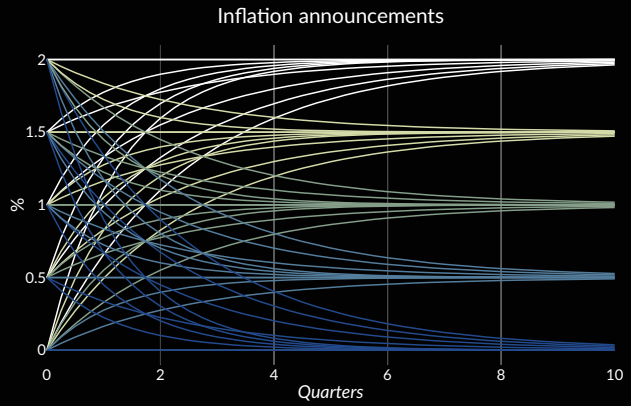
$$\phi(a) = \chi + e^{-\omega}(a - \chi)$$

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

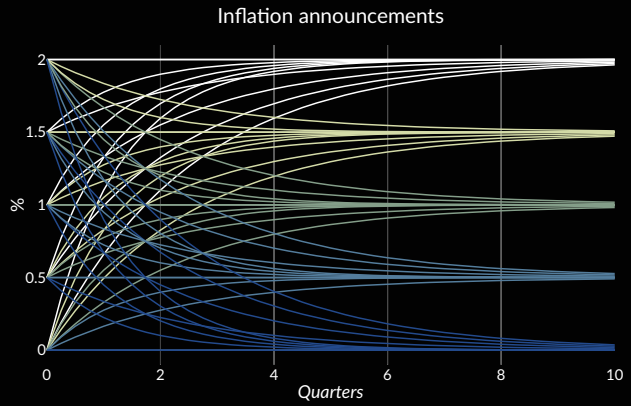
$$a_t = \chi + (a_0 - \chi)e^{-\omega t}$$

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



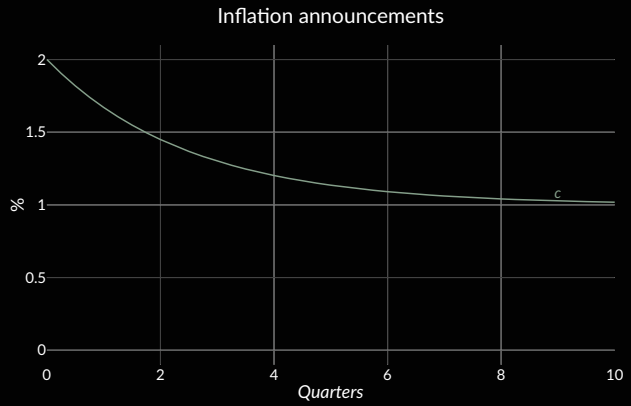
Gameplay

- 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 $g_t \lessgtr a_t^c$



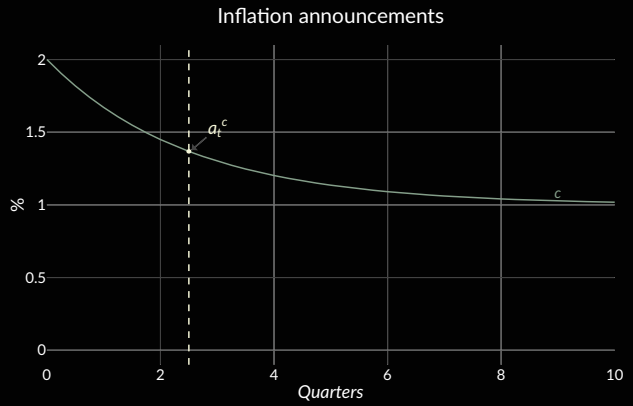
Gameplay

- 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 $g_t \lessgtr a_t^c$



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 $g_t \lessgtr a_t^c$



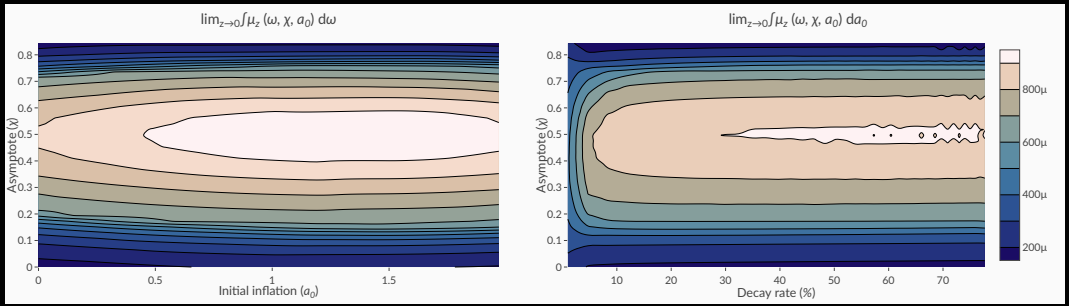
Equilibrium

Equilibrium distribution of announcements

Model solution yields a distribution of announcements

Equilibrium distribution of announcements

Model solution yields a distribution of announcements



- Gradualism: $\mathbb{P}(a_0 > \chi) = 70.5\%$. $\mathbb{P}(a_0 > 5\chi) = 17.2\%$. $\mathbb{P}(\text{decay} \leq 10\%) = 8.09\%$.
- Imperfect credibility: $\mathbb{P}(\chi = 0) = 1.35\%$.

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) + (3)

Ideas and comments welcome!

https://bit.ly/ReputationDraft

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) + (3)

Ideas and comments welcome!

https://bit.ly/ReputationDraft

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) + (3)

Ideas and comments welcome!

https://bit.ly/ReputationDraft

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) + (3)

Ideas and comments welcome!

https://bit.ly/ReputationDraft

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) + (3)

Ideas and comments welcome!

https://bit.ly/ReputationDraft

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) + (3)

Ideas and comments welcome!

https://bit.ly/ReputationDraft

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) + (3)

Ideas and comments welcome!

https://bit.ly/ReputationDraft