

Macroprudential Regulation Versus Mopping Up After the Crash

By O. Jeanne and A. Korinek

Motivation

Recent calls for macro-prudential regulation.

But some people doubt its effectiveness.

e.g. “Greenspan Doctrine”

(=Ex ante regulation is too costly compared to ex post “mopping up.”)

Summary

This paper studies the desirability of ex ante vs ex post policies in a very simple setup.

It is shown that the optimal policy consists of a combination of **both** ex ante & ex post policies.

The point of optimality is determined such that

$$\text{Marginal cost/benefit of ex ante policy} = \text{Marginal cost/benefit of ex post policy}$$

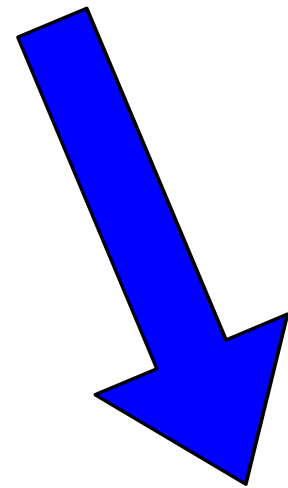
Key Assumptions

Financial markets are imperfect:

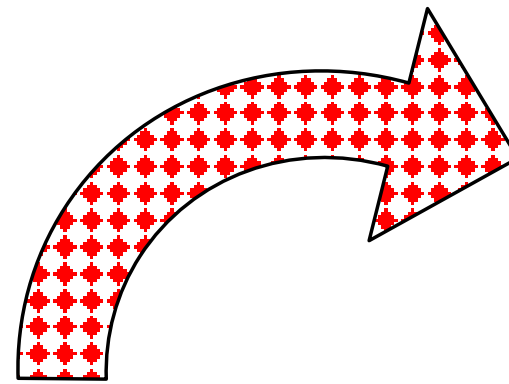
- *borrowing is subject to constraints*
 - *constraints depend on asset prices*
 - *potential for feedback spirals between*
 - *collapsing asset prices*
 - *tightening borrowing constraints*
 - *declining spending*
- *financial accelerator, debt deflation, ...*

Feedback Spirals

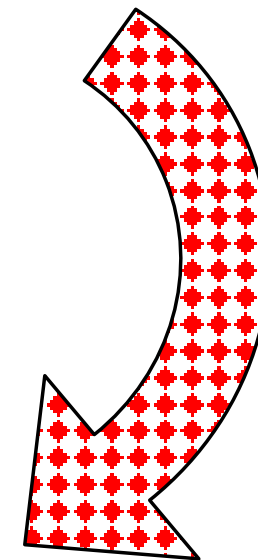
Economic shock



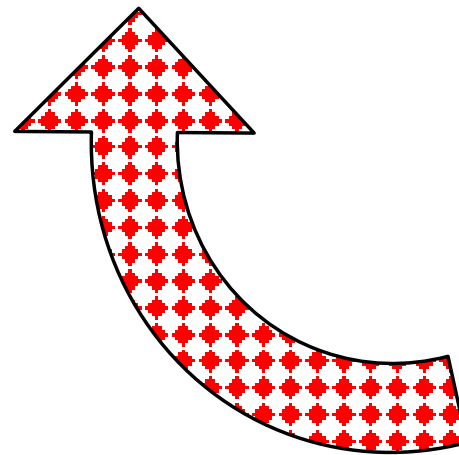
Tightening
Constraint



Falling
Spending



Adverse Movement
in Relative Prices



Model

Consider an open economy in a 1-good world with 3 time period $t=0, 1, 2$.

The economy is populated by a continuum of identical consumers with the following utility function.

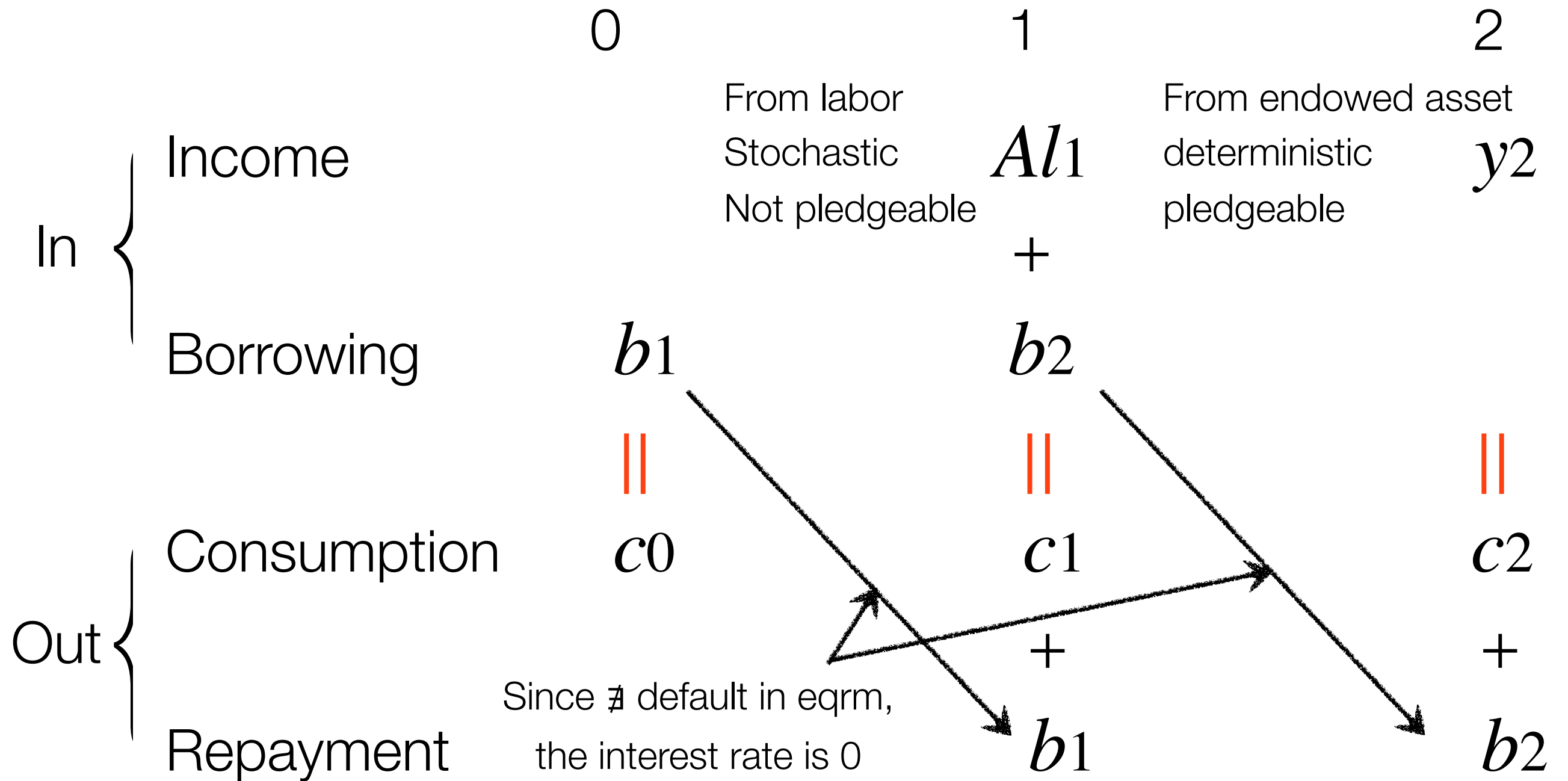
Consumption at each t Labor at $t=1$

$$u(c_0) + u(c_1) - d(l_1) + c_2.$$

Utility of consumption at each t Disutility of labor with $d(0) = d'(0) = 0 < d''(l_1)$

The diagram illustrates the utility function $u(c_0) + u(c_1) - d(l_1) + c_2$. Above the equation, 'Consumption at each t ' has arrows pointing down to $u(c_0)$ and $u(c_1)$. 'Labor at $t=1$ ' has an arrow pointing down to $d(l_1)$. Below the equation, 'Utility of consumption at each t ' has an arrow pointing up to $u(c_1)$. 'Disutility of labor with $d(0) = d'(0) = 0 < d''(l_1)$ ' has an arrow pointing up to $d(l_1)$. A long arrow points from the $u(c_1)$ term to the $d(l_1)$ term, indicating a trade-off between consumption and labor.

Model (Ctd.)



Collateral Constraint

Assume consumers can buy or sell the asset in a (perfectly competitive) market (in $t=1$).

p_t : Price of the asset in period t

Also impose the following collateral constraint in $t=1$.

Constant smaller than 1 The amount of the asset held in $t=1$.

$$b_2 \leq \theta_1 p_1$$

This induces the externality among consumers through p_t .

Ex Ante & Ex Post Policies

Ex ante

A planner can **impose a tax on borrowing in $t=0$** ,
which is rebated as a lump sum benefit.

Ex post

A planner can **subsidize labor in $t=1$** ,
the cost of which is raised via a lump sum tax.

Budget Constraint

The resulting budget constraint is as follows.

Tax on
borrowing $= \tau b_1$

$$\begin{cases} c_0 = (1 - \tau) b_1 + T, \\ c_1 + b_1 = (1 + s) A l_1 + b_2 + (\theta_0 - \theta_1) p_1 - R, \\ c_2 + b_2 = \theta_1 y_2. \end{cases}$$

Subsidy
on labor $= s A l_1$

Consumer's Problem

$$\max u(c_0) + u(c_1 - d(l_1)) + c_2.$$

(Utility function)

$$\text{s.t.} \quad \begin{cases} c_0 = (1 - \tau) b_1 + T, \\ c_1 + b_1 = (1 + s) Al_1 + b_2 + (\theta_0 - \theta_1) p_1 - R, \\ c_2 + b_2 = \theta_1 y_2. \end{cases}$$

(Budget constraint)

$$b_2 \leq \phi \theta_1 p_1 \text{ (Collateral constraint)}$$

Planner's Problem

To derive the optimal policy,
consider the following planner's problem
of maximizing consumer's utility.

$$\begin{aligned} & \max_{b_1, l_1, b_2} u(\overbrace{b_1}^{=c_0}) + E \{ u(\overbrace{Al_1 - b_1 + b_2 - d(l_1)}^{=c_1}) + y_2 - b_2 \} \\ & \quad - \lambda [b_2 - \phi p(\overbrace{Al_1 - b_1 + b_2}^{=c_2})] \end{aligned}$$

Optimal Ex Ante & Ex Post Policies

Proposition 1

If the collateral constraint is binding with positive prob. in $t=1$, then the planner chooses a **positive ex ante tax** $\tau > 0$.

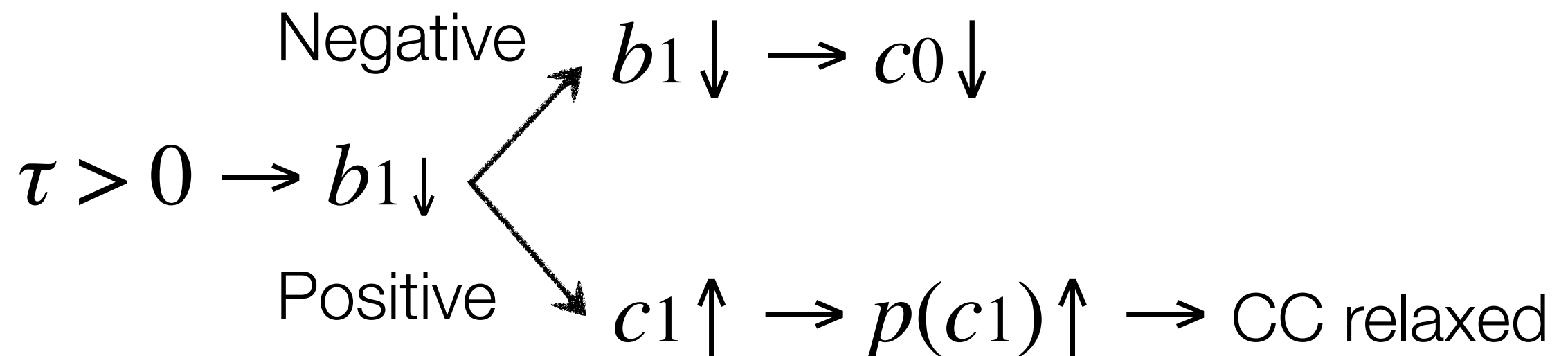
Proposition 2

If the collateral constraint is binding in $t=1$, then the planner chooses a **positive ex post subsidy** $s > 0$.

Optimal Ex Ante & Ex Post Policies

Proposition 1

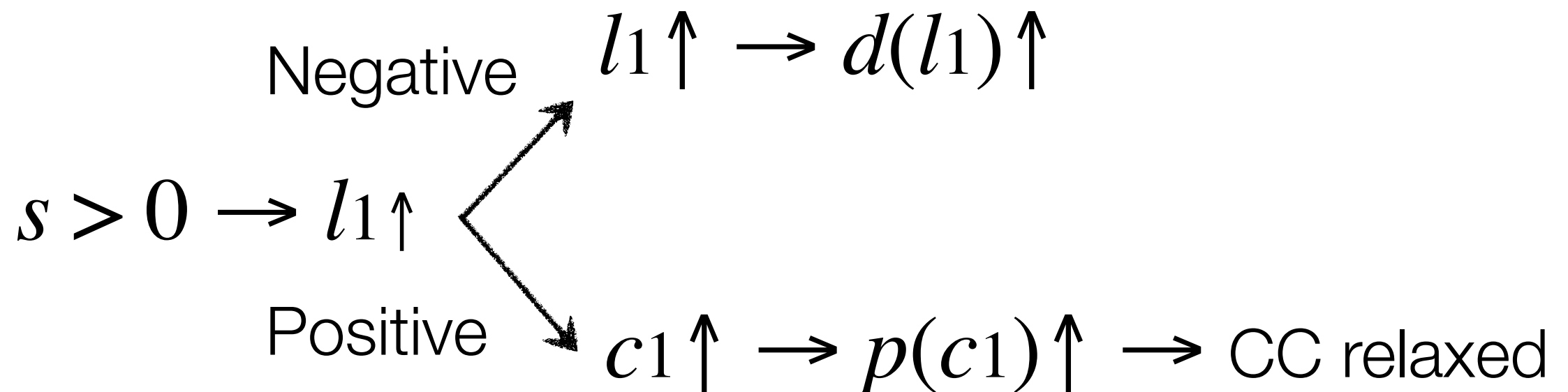
If the collateral constraint is binding with positive prob. in $t=1$, then the planner chooses a positive ex ante tax $\tau > 0$.



Optimal Ex Ante & Ex Post Policies

Proposition 2

If the collateral constraint is binding in $t=1$,
then the planner chooses a positive ex post subsidy $s > 0$.



Possibility of “Under-borrowing”

Debt **with** ex post policy > Debt **without** ex post policy

This possibility is pointed out by Benigno et al. (09, 10ab).

This result can be replicated as follows.

Fix a level of ex ante policy.

$$s > 0 \rightarrow l_1 \uparrow \rightarrow c_1 \uparrow \rightarrow c_0 \uparrow \rightarrow b_1 \uparrow$$

$$u'(c_0)(1 - \tau) \stackrel{\uparrow}{=} E[u'(c_1)]$$

(FOC for consumer's problem)

Possibility of “Under-borrowing”

On the other hand, there is also a possibility of
“over-borrowing” by ex ante policy.

Fix a level of ex post policy.

$$\tau > 0 \rightarrow c_0 \downarrow \rightarrow b_1 \downarrow$$

When the planner uses both ex ante & ex post policies,
the amount of debt **may rise or fall**,
depending on which policy has a stronger effect.

Alternative Ex Post Policy

Instead of subsidy on labor, we can consider
a generic policy instrument α
that directly relaxes the collateral constraint as

$$b_2 \leq \phi\theta_1 p_1 + \alpha \text{ with cost of } L(\alpha).$$

Assume $L(0)=L'(0)=0 < L''(\alpha)$.

Lagrange multiplier
=Marginal benefit of
relaxing the CC

Note FOC for planner's problem is $L'(\alpha) = \lambda$.

Again, $\alpha > 0$ if $\lambda > 0$.

Discussion of

**“Managing Credit Booms and Busts:
A Pigouvian Taxation Approach,”**

by Jeanne and Korinek

Timothy S. Fuerst

Senior Economic Advisor, FRB Cleveland

October 15, 2010

Financial Accelerator.

Decline in asset price tightens credit constraint.

Tighter credit constraint lowers consumption.

Lower consumption lowers asset price.

Etc.

But, the tighter credit constraint should also have a positive effect on asset prices because assets help relax the credit constraint. This positive effect should moderate the decline in asset prices coming from the decline in consumption. This effect is missing from their analysis.

Why is CE not Pareto Efficient in model?

1. Missing market? Nope. This is RA setting.
2. Value of endowment is unbounded? Nope.
3. Large agents? Nope.
4. Explicit “pollution” effect. Nope.

I suspected the laissez-faire problem is off the mark.

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