

# Bailouts and Financial Fragility

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*Norges Bank Research Conference*  
September 3, 2010

## The question

- Widespread agreement that bailing out financial institutions creates moral hazard
  - distorts ex ante incentives; increases financial fragility
- How should policy makers deal with this issue?
- One view: focus on credibly committing to no future bailouts

Phillip Swagel: *“A resolution regime that provides certainty against bailouts will reduce the riskiness of markets and thus help avoid a future crisis.”*

- in addition, minimizes need for regulation and other ex ante intervention

- Not clear if such a commitment is feasible
  - open for debate; some argue bailouts are inevitable

Q: If feasible, would commitment to a no-bailouts policy be *desirable*?

- would it increase financial stability?
- would it raise welfare?
- In general, should policy focus on commitment or regulation?
- Analyze this issue in a version of the Diamond-Dybvig model
  - add fiscal policy and limited commitment

## Results

- The anticipation of a bailout in times of crisis distorts incentives
  - financial intermediaries become too illiquid
- Committing to a no-bailout policy *over-corrects* the problem
  - intermediaries become too liquid (i.e., do too little maturity transformation)
  - can *increase* financial fragility (surprisingly)
  - can either raise or lower welfare, depending on parameters
- A tax on short-term liabilities - with no restriction on bailouts - can implement the constrained efficient allocation

## The environment

- 3 times periods,  $t = 0, 1, 2$
- Continuum of investors,  $i \in [0, 1]$

– utility

$$u(c_{1i} + \theta_i c_{2i}) + v(g)$$

$$\text{where } \theta_i = \begin{cases} 0 \\ 1 \end{cases} \text{ if investor is } \begin{cases} \text{impatient} \\ \text{patient} \end{cases}$$

–  $c_{ti}$  is private consumption,  $g$  is a public good

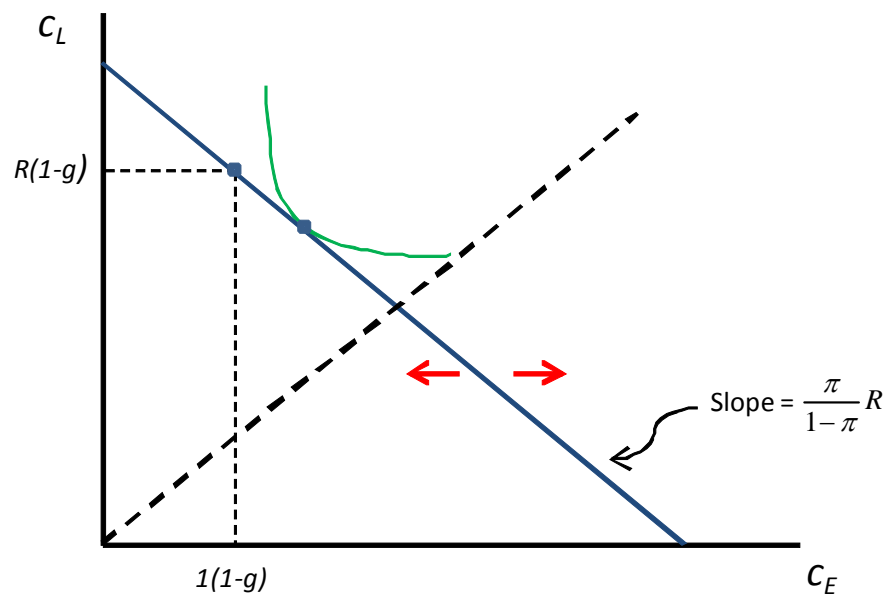
- Type is revealed at  $t = 1$ ; private information
  - $\pi =$  probability of being impatient for each investor

## Technologies:

- Private investment at  $t = 0$  yields  $\left\{ \begin{array}{c} 1 \\ R > 1 \end{array} \right\}$  at  $t = \left\{ \begin{array}{c} 1 \\ 2 \end{array} \right\}$
- Public good can be created using private goods as inputs at  $t = 1$ 
  - endowments can be taxed at  $t = 0$
- Investors pool funds at  $t = 0$ , withdraw in either  $t = 1$  or  $t = 2$ 
  - can interpret as a bank, other financial intermediary, etc.
  - withdrawals at  $t = 1$  subject to sequential service (Wallace, 1988)

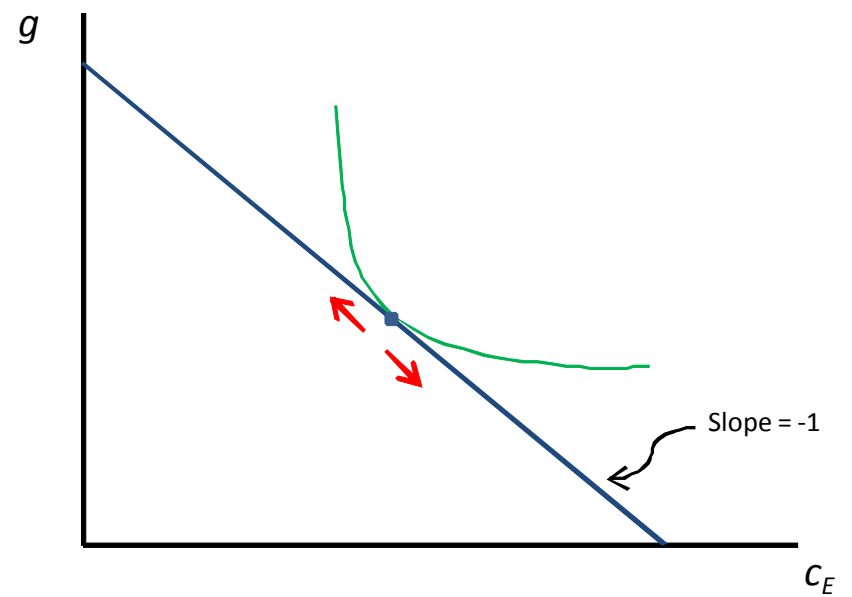
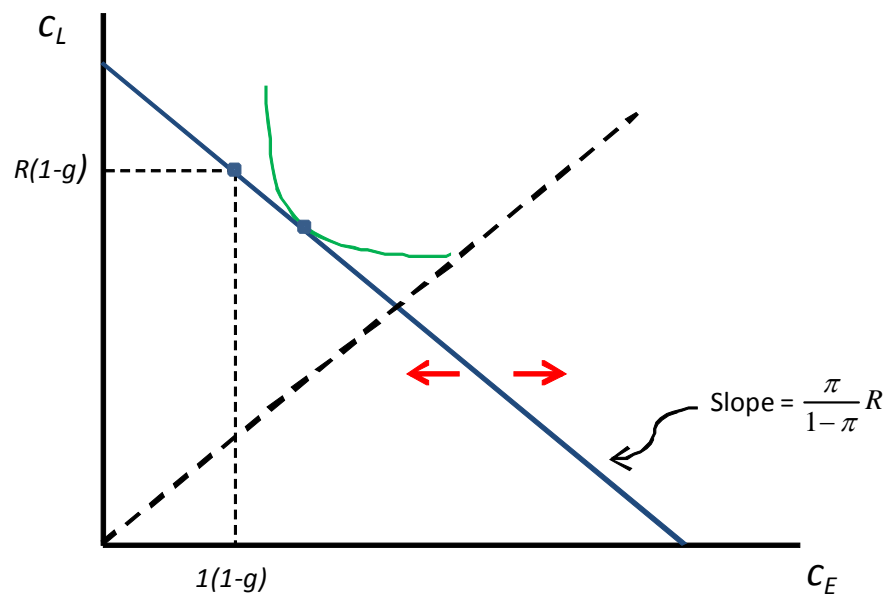
# Graphically

- A standard Diamond-Dybvig environment ...



# Graphically

- A standard Diamond-Dybvig environment ...



- ... combined with a simple public-finance problem



## Efficient allocations with financial crises

- Suppose all investors attempt to withdraw early

Q: What is the efficient allocation conditional on this behavior?

- The run by investors generates a misallocation of resources
  - some patient investors withdraw and consume early
  - raises the marginal utility of private consumption
- **Result:**  $g_{\text{crisis}} < g_{\text{normal}} \Rightarrow$  a “bailout”
  - emphasize: this is a property of the *efficient* allocation
  - intuition is clear, fairly general

## Equilibrium under discretionary policy

- In period 0 :
  - policy maker collects taxes; intermediaries take deposits
- In period 1 :
  - investors observe type; make withdrawal decisions
- If a run has occurred:
  - policy maker can transfer goods to intermediaries
  - intermediaries distribute remaining resources efficiently

- The ex post efficient bailout will equalize consumption across remaining investors

⇒ an intermediary with fewer resources receives a larger bailout

- Define *illiquidity* to be

$$\rho \equiv \frac{\text{short-term liabilities}}{\text{short-run value of assets}}$$

- **Result:**  $\rho_{\text{equilibrium}} > \rho_{\text{efficient}}$

– result of the incentive problem: too much illiquidity

- Note this problem only arises if  $\text{Prob}(\text{crisis}) > 0$   
(not an “unexpected shock” )

## Measuring fragility

- Consider an economy defined by parameter values  $(R, \pi, u, v, q)$
- Is there in equilibrium in which a crisis occurs with positive probability?
- Let  $\Phi^D =$  set of economies for which answer is 'yes'
- For comparison, let  $\Phi^* =$  set of economies for which answer would be 'yes' under the *efficient* allocation
- **Result:**  $\Phi^* \subset \Phi^D$ 
  - higher illiquidity in the decentralized economy increases fragility

## A no-bailouts policy

- Suppose policy maker can commit to  $b = 0$  in all states
- **Result:** Illiquidity is now *lower* than in the efficient allocation
  - intermediaries must self-insure against a run
- **Result:**  $\Phi^* \subset \Phi^{NB}$ 
  - moreover, some economies are in  $\Phi^{NB}$ , but not  $\Phi^D$
  - these economies *become* fragile when policy is introduced
- **Result:** If Prob(crisis) is small,  $W^{NB} < W^D$

## How can a no-bailout policy increase fragility?

- Common intuition: policy leads intermediaries to be more liquid
  - ⇒ safer; less incentive for an investor to run
- But ... there is a competing effect
  - a bailout provides insurance against the loss from staying invested in a crisis
  - ⇒ removing this insurance increases the incentive to withdraw
    - a familiar argument; think of deposit insurance
- Removing this insurance can increase financial fragility

## Taxing short-term liabilities

- Now suppose the policy maker places imposes a tax on either short-term liabilities or illiquidity ( $\rho$ )
  - no restrictions on bailout policy
  - note: many other policies would have the same effect
- **Result:** There exists a tax rate that implements the efficient allocation
  - efficient tax rate exactly offsets the incentive problem
- Policy *decreases* fragility relative to either  $\Phi_D$  or  $\Phi_{NB}$

## Takeaways

- Efficient policy response to a financial crisis typically involves a redistribution of resources
  - resembles a “bailout” of investors facing losses
- Anticipation of this bailout distorts ex ante incentives
- Committing to no/limited bailouts cannot fix the problem
  - the bailout is efficient if a crisis occurs, plus ...
  - removing this insurance has ex ante negative effects
- In the model here, the best approach is to not restrict bailouts
  - use taxation/regulation to correct the distortion



- Bailouts here represent the *efficient* reallocation of resources
  - no rent-seeking behavior, political motivations, etc.
  - not clear how well the actions we have observed fit this criterion
  - inefficient bailouts are bad both ex ante and ex post
- Message is **not** that any bailout policy is ok as long as ex ante effects are corrected
  - limits on policy makers' ability to do certain types of redistribution may well be desirable
- Point: limits on bailouts alone cannot generate the efficient allocation
  - some ex ante taxation/regulation is needed