Government Bailouts

(of firms, not of governments)

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Main Question

Are government bailouts bad?

- Developing country aberrations?
- Political Patronage?
- Banking Industry Idiosyncracies

Long History

Bagehot 1873,

> *If the banks are bad, they will certainly continue bad and will probably become worse if the Government sustains and encourages them. The cardinal maxim is, that any aid to a present bad bank is the surest mode of preventing the establishment of a future good bank.*

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Long History in Academia

Calomiris, 2000

> *Problem 1: Counterproductive financial bailouts of insolvent banks, their creditors, and debtors by governments, often assisted by the IMF, have large social costs. Bailouts are harmful for several reasons. First, they entail large increases in taxation of average citizens to transfer resources to wealthy risk-takers. Tax increases are always distortionary, and serve to accentuate the unequal wealth distribution. Second, by bailing out risk takers local governments and the IMF subsidize, and hence encourage, risk taking. Moral-hazard incentive problems magnify truly exogenous shocks that confront banking systems. Excessive risk taking by banks results in banking collapses and produces the fiscal insolvency of governments that bail out banks, leading to exchange rate collapse. Banks willingly and knowingly take on more risks—especially default risks and exchange risks—than they would if they were not protected by government safety nets.*

- hundreds of others...

Real World

Why does this even come up?

Because this is what do governments really do.

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BusinessWeek, Nov 2010

General Motors Co.'s initial public offering showed that while U.S. President Barack Obama's administration may lose billions on the auto-industry bailout, the national budget and economy might be better off for it.

The U.S. sold almost half of its stake in the nation's largest automaker for $33 a share—about $10 less than it needs to break even. The remaining shares will need to sell for about $20 higher to make up the difference. GM opened at $35 and stayed within $1.11 of that price all day. Selling the remaining shares at that price would produce a loss of about $9 billion.

That may go down as a bargain. The U.S. would have lost $28.6 billion in spending on social services and missing tax revenue if not for the bailout of GM, its former lending arm and Chrysler Group LLC, according to a study released Nov. 17 by the Center for Automotive Research in Ann Arbor, Michigan.

"GM ends up an economic contributor to the U.S. economy,...It's manufacturing products, it's creating jobs, it's buying wholesale parts, it's doing what an industrial company is supposed to do."

Theoretical Framework for Bailouts

- Ordinary firms always operate with moral hazard.
- Social externalities—diffuse stakeholders: existing and future customers, suppliers, employees, creditors, entrepreneurs, and "communities."

- No special government power.
- In fact, G cannot even commit itself.
- Only special aspect—G cares about social welfare

- G Intervention creates moral hazard:
  - costs tax money which reduces incentives.
  - reduces incentives to avoid bailout.

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What is the optimal policy?

- Cover points on both sides.
  - Often, do not bail out even if continuation is optimal.
  - But, sometimes do bail out.

- Always expropriate manager.
- Always expropriate owners.

- Tax should be redistributive, i.e., not special on bailed-out firms.
  - we need to attract new owners. if we take away from future success states, we need to lower the price and thus increase the subsidy.
  - better to tax all firms prior to any bailouts.
- Show: owners and managers will oppose it *a priori*

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Assessing TARP

- Car companies:
  - Mostly right. fired owners and managers. takeover team was not ordinary government, but arguably more private-market types.
  - ...but government took a stake in exchange for money = extra tax.
- Bank companies:
  - Mostly wrong. (“supervising”) shareholders often remained. no managerial clawbacks.
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Model Assumptions = Limits

- Parties are themselves taxed.
- Stakeholders cannot be captured and/or taxed.
- Owners are replaceable. (Shareholders. Yes!)
- These managers are replaceable.
  (Remember: They drove the firm into the ground.)
- G is not a vulture fund, but a social optimizer.
- Additional G waste (e.g., patronage) is modest.

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Theory Now

How do you model three agency conflicts interacting with one another??

Time Line

- Time 0: Bailout policy chosen
- Time 1:
  - Firm can invest in project. Cost is $I_1 = 0$ (sunk).
  - Success: R=0.8. Failure R=0.
  - Prob of success = Effort e_1.
  - if success, pay wage w_1 and tax T_1. Stakeholders get $S = 1$. THE END.
  - if fail, go on to Time 2.
- Time 2 ("Restart"):
  - Firm can restart project at cost \$0.1. may fire M.
  - G offers to pay g if restart. may demand firing of M.
  - Success: R=\$0.8. Failure R=0.
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More Assumptions and Summary

Manager provides effort to max utility:

$$m_t = e_t \cdot w_t - (c/2) \cdot e_t^2$$

Parameters

- Exogenous: $l_1 = 0$, $l_2 = 0.1$, $R = 0.8$, $c = 2$, $S = 1$
- Endogenous: wages w_1, w_2. effort e_1, e_2. taxes T_1, T_2. Subsidy g. Firing Manager^2. Starting. Restarting.

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Boring First Best

$$sv_t = e_t \cdot (R+S) - \frac{c \cdot e_t^2}{2} - I_t \,,$$

$$sv_t = e_t \cdot 1.8 - e_t^2 \,.$$

Both Periods: $SV = sv_1(e_1) + (1-e_1) \cdot sv_2(e_2)\,.$

Optimal Effort:

$$e_2^{FB} = \frac{R+S}{c} = 0.9$$

$$e_1^{FB} = \left(\frac{R+S}{c}\right) - \frac{1}{2} \cdot \left(\frac{R+S}{c}\right)^2 + \frac{I_2}{c} = 0.545$$

Work Backwards: Time 2

- Project has failed. Last Chance.
- Assume for now that it has restarted (and no tax T_2).
- Manager maxes $m_2 = e_2 \cdot w_2 - e_2^2$
- Best Choice: $e_2 = w_2/2$
- Firm:
  $\max_w e_2 \cdot (R - T_2 - w_2) - I_2 = (w_2/2) \cdot (0.8 - T_2 - w_2) - 0.1$
- If $T_2 = 0$, then $w_2 = e_2(w_2) \cdot (R - T_2 - w_2) - I_2 \approx 0.406$.
- Best Manager Choice: $e_2 \approx 0.203$
- Manager gets $(R - T)^2/(8 \cdot c) \approx 0.04$.
- Firm gets $e_2 \cdot (R - T_2 - w_2) - I_2 \approx$
  $0.203 \cdot (0.8 - 0.406) - 0.1 + g \approx -0.02 + g$.
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Time 1/2 Bailout Time

Omitted Lemma:

- Proof that $T_2^* = 0$.
- Proof that $g^* = \{I_2 - R^2/(4 \cdot c), 0\}$.

$\rightarrow$ Either give the firm 0.02 or let it die.

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Time 1, Firm Expects No Intervention

- One period problem.
- Analogous to above, but without restart. (Upfront investment cost is \$0, not \$0.1.)
- $w_1 = 0.4$.
- $e_1 = 0.2$.
- $M = 0.04$.
- $\Pi = 0.08$
- $SV = 0.32$.

With Restart

- G needs to raise 0.02 from taxes at time 1.
  (Posit prob-success = $e_1 \approx 17.67\% \Rightarrow T_1 \approx 0.093$.)
- If manager will be fired, maxes only $e_1^* = w_1/c = w_1/2$.
- If owners know that they will get exactly 0 in case of failure, they max

$$e_1^*(w_1)\cdot(R-w_1-T_1)-I_1+(1-e_1^*(w_1))\cdot\overbrace{\pi_2^*(g^*,T_2^*)}^{=0}$$
$$\approx (w_1/c)\cdot(0.8-w_1-0.093)\,.$$

  Thus, $w_1 = (R-T_1)/(2\cdot c) \approx 0.3534$.
- Thus, $e_1^* \approx 0.1767$ (not 0.2). See how T_1 is bad?
- $SV \approx 0.468$

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With Restart

If manager expects to be retained,

- – Manager expects to get second bite; will work less.
- – Firm will pay more T_1 in eq, lowering its incentives.
- \+ Still, to reduce shirking, firm pays a little more to reduce this, $w_1 \approx 0.3693$, not 0.35.
- Manager works $e_1 \approx 0.1646$, not 0.1767.
- Government must tax $T_1 \approx 0.1015$, not 0.093
- SV = 0.453, not 0.468.

Proposition 1

1. Firm must not want to operate w/o g at time 2
2. Possible to generate the tax revenue to cover g.
3. Firm is willing to invest at time 1, despite T_1^*.
4. Social externalities S are large enough.

then

1. Give exactly enough to keep the firm operating. Leave no surplus to owners.
2. Tax just enough at time 1 to cover bailout
3. Impose no extra tax on bailed-out firms.
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If and only if

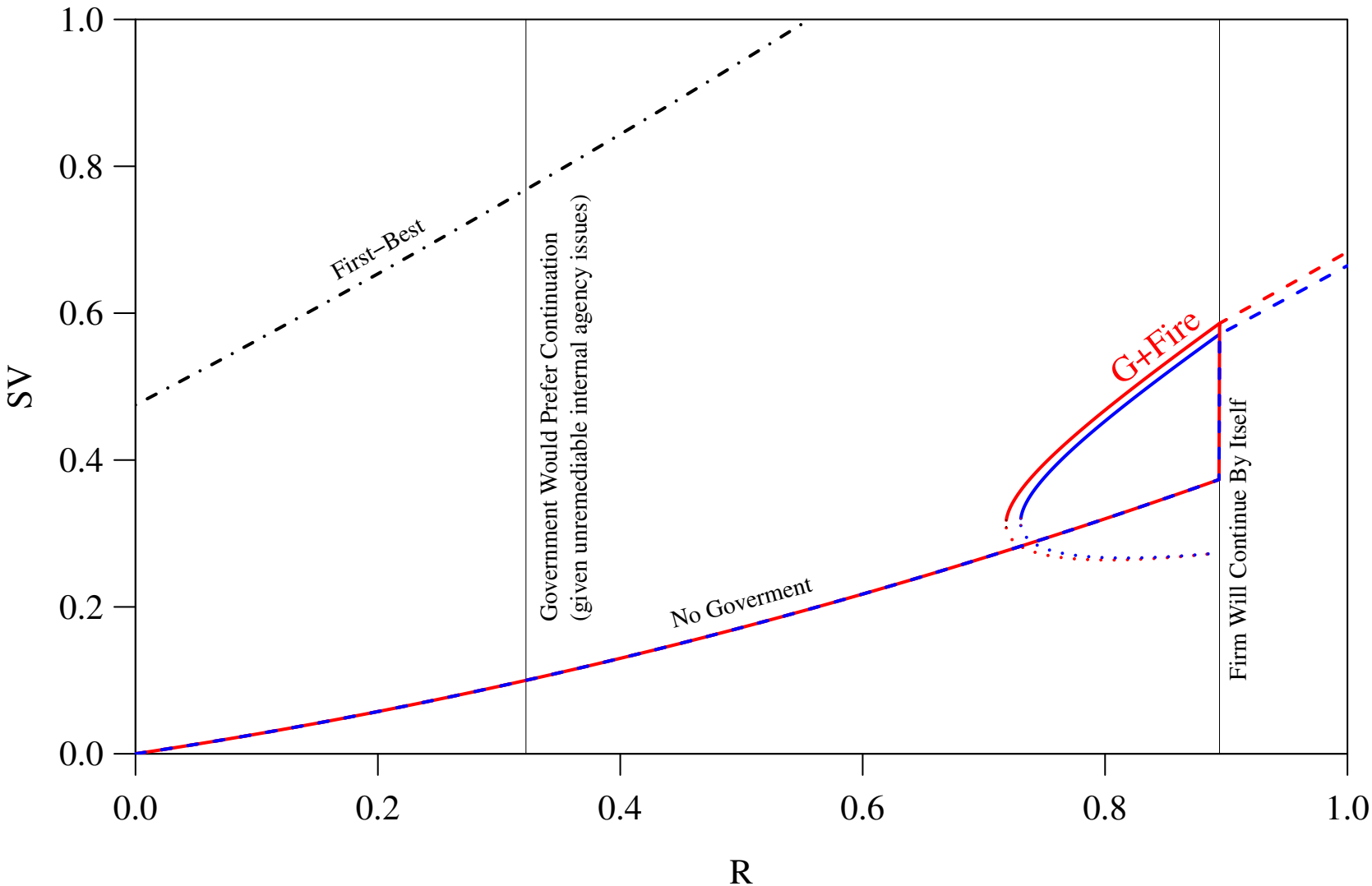
1. $\frac{R^2}{4\cdot c} - I_2 < 0$;
2. $I_2 \leq 4\cdot c - R + \frac{R^2}{4\cdot c} - \sqrt{16\cdot c^2 - 8\cdot c\cdot R}$,
3. $I_1 \leq \left[R + I_2 - \frac{R^2}{4\cdot c} + \sqrt{\left(R + I_2 - \frac{R^2}{4\cdot c}\right)^2 + 8\cdot c\cdot\left(\frac{R^2}{4\cdot c} - I_2\right)}\right]^2 \Big/ (16\cdot c)$, and
4. $S \geq \underline{S}$,

where $\underline{S}$ is a long expression, then the optimal bailout policy is

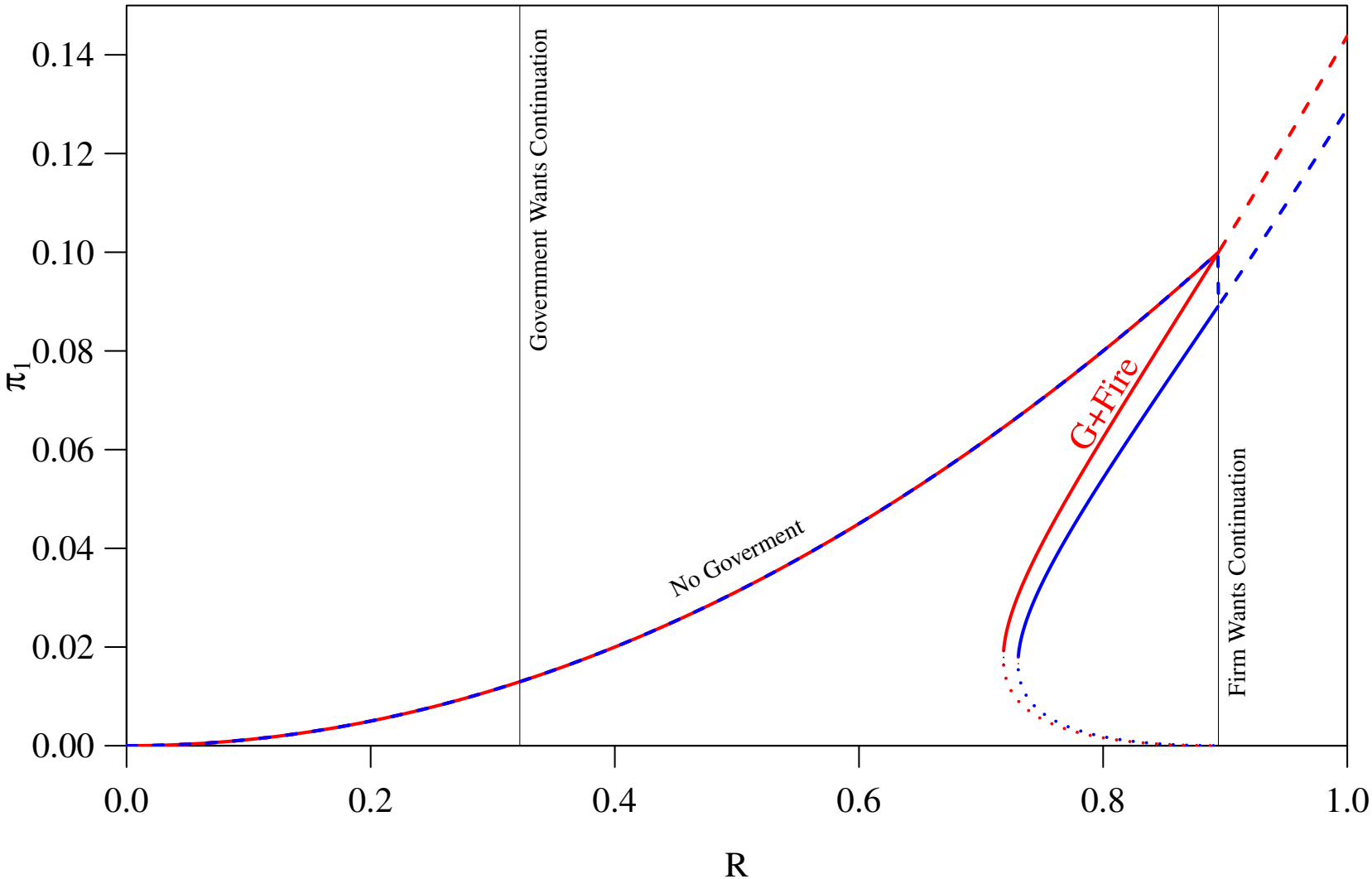
$$
\begin{aligned}
g^* &= I_2 - \frac{R^2}{4\cdot c}, \\
T_1^* &= \left[R + \frac{R^2}{4\cdot c} - I_2 - \sqrt{8\cdot\left(\frac{R^2}{4\cdot c} - I_2\right)\cdot c + \left(R - \frac{R^2}{4\cdot c} + I_2\right)^2}\right] \Big/ 2, \\
T_2^* &= 0, \\
FG &= FIRE.
\end{aligned}
$$

Otherwise, the optimal bailout policy mandates non-intervention, $\langle g^*, T_1^*, T_2^*, FG\rangle = \langle 0, 0, 0, .\rangle$.

Social Value



Firm Value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0.12
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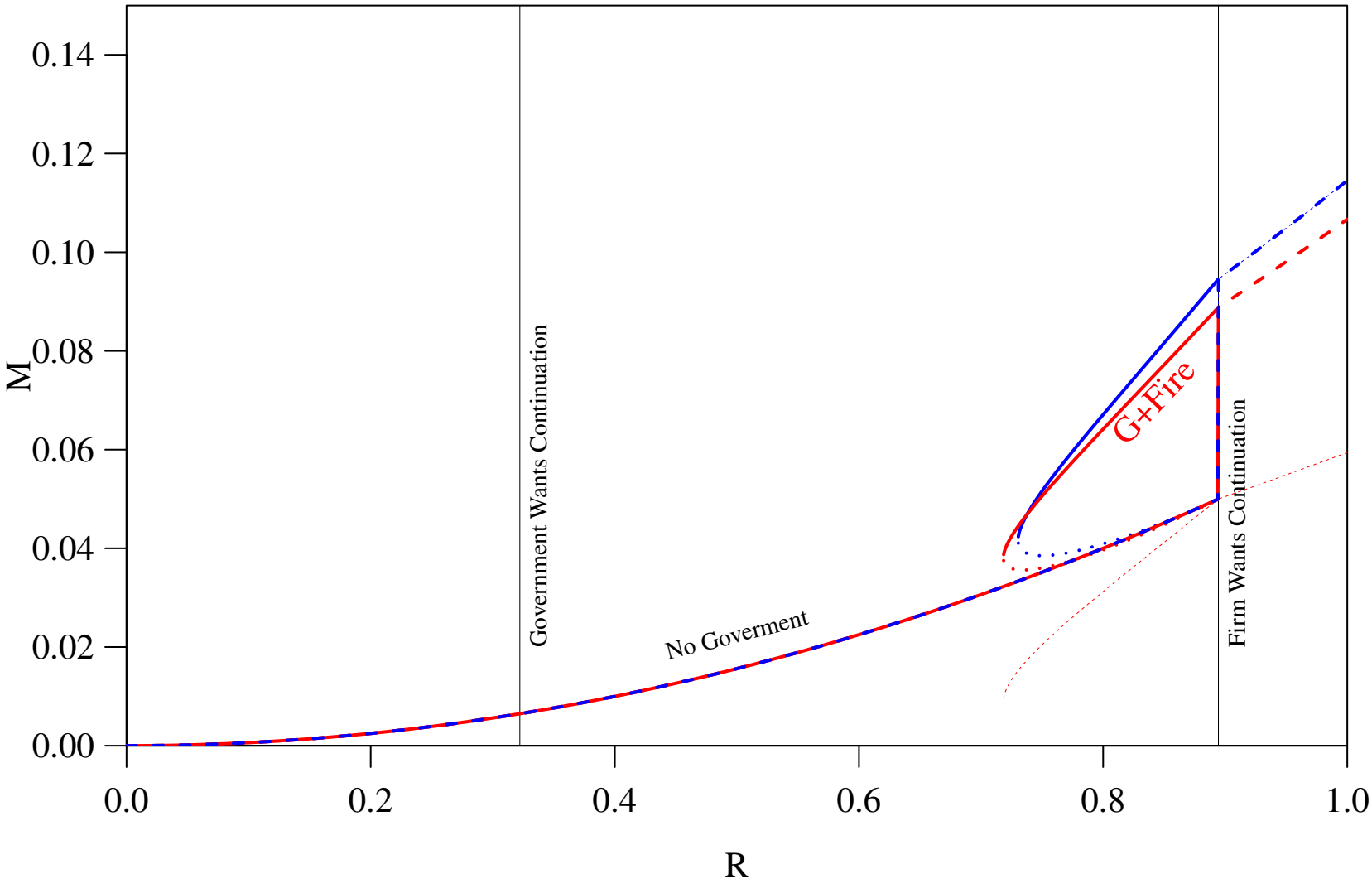
R
Government Wants Continuation
Firm Wants Continuation
No Goverment
G+Fire

Manager


0.14
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1.0
R
Government Wants Continuation
No Goverment
G+Fire
Firm Wants Continuation

Constraints

- Actuarial Constraint of Self-Funding.
  - Natural aggregate constraint.
  - Fair? (Not if heterogeneous!)
  - No third parties
- Hold-up: Citibank. Goldman.
- Lobbying Effects? (The Inside Job!)

Conclusion

- Related Literature—not much. Banking: Phillipon+Schnabl, Phillipon-Skreta, Tirole. All 2011.
- Various old banking papers (deposit insurance)

1. Use bailouts very sparingly, but don't rule them out.
2. Expropriate owners and managers.
3. No extra levies on new owners. Redistributive Tax.