SUPPLEMENTARY MATERIAL FOR "THE DOMESTIC POLITICS OF INTERNATIONAL COOPERATION: GERMANY AND THE EUROPEAN DEBT CRISIS"

Christina J. Schneider and Branislav L. Slantchev

Abstract

This supplement includes the full proofs for the claims in the paper, the analysis of the burden-sharing equilibrium, and two brief applications to the second Greek bailout, and the case of Slovakia.

Contents

Proofs

Let σ_i be the probability with which G_i acts when the crisis is serious, and μ_i be the probability with which G_i acts when the crisis is mild. Let $p_i(s_{a_1 a_2})$ be the probability of retaining G_i when the game has reached information set $s_{a_1 a_2}$, where $a_i \in \{0, 1\}$ denotes whether G_i has acted or not.

Preliminaries

The payoff structure of the model allows us to reduce electoral expectations to direct comparisons of retrospective beliefs and candidate prospects. This makes the equilibrium probability of reelection a simple function of these beliefs:

Lemma A. By subgame perfection,

$$p_i(s_{11}) = \begin{cases} 1 & \text{if } s_{11} > e_i \\ 0 & \text{if } s_{11} < e_i \\ [0,1] & \text{otherwise} \end{cases} \qquad p_i(s_{00}) = \begin{cases} 1 & \text{if } s_{00} < 1 - e_i \\ 0 & \text{if } s_{00} > 1 - e_i \\ [0,1] & \text{otherwise} \end{cases}$$

$$p_1(s_{10}) = \begin{cases} 1 & \text{if } s_{10} > e_1 \\ 0 & \text{if } s_{10} < e_1 \\ [0,1] & \text{otherwise} \end{cases} \qquad p_2(s_{10}) = \begin{cases} 1 & \text{if } s_{10} < 1 - e_2 \\ 0 & \text{if } s_{10} > 1 - e_2 \\ [0,1] & \text{otherwise} \end{cases}$$

$$p_1(s_{01}) = \begin{cases} 1 & \text{if } s_{01} < 1 - e_1 \\ 0 & \text{if } s_{01} > 1 - e_1 \\ [0,1] & \text{otherwise} \end{cases} \qquad p_2(s_{01}) = \begin{cases} 1 & \text{if } s_{01} > e_2 \\ 0 & \text{if } s_{01} < e_2 \\ [0,1] & \text{otherwise} \end{cases} \qquad \square$$

Proof. Follows immediately from sequential rationality. ■

We now establish some general results without reference to the type of governments in the dyad. These help limit the type of strategy profiles that can be supported as equilibria. In any generic equilibrium, if citizens in i act probabilistically in any given contingency, the citizens in $-i$ must either retain their government or remove it with certainty:

Lemma B. Citizens cannot generically act probabilistically in both countries for any given contingency. $\square$

Proof. Pick any contingency, say s_{11}, and recall that citizens in i will only act probabilistically if $s_{11} = e_i$. If citizens in both countries were to act probabilistically, the necessary condition is $s_{11} = e_1 = e_2$, but $e_1 = e_2$ is not generic. $\blacksquare$

If both players are mixing in one type of crisis, they must both be mixing in the other:

Lemma C. There exists no equilibrium where both players mix in one type of crisis but do not both mix in the other type of crisis: $\sigma_i \in (0,1)\ \forall i \Leftrightarrow \mu_i \in (0,1)\ \forall i$. $\square$

Proof. We first show that if both players mix when the crisis is serious, then they must both mix when the crisis is mild. Consider the general case where $\sigma_i \in (0,1)$, so both mix when the crisis is serious, not necessarily with the same probabilities. Consider the strategies when the crisis is mild:

Case I: $\mu_i = 0$: by Lemma F, either $\sigma_i = 1$ or $\sigma_i = 0$, so no equilibrium where they mix when the crisis is serious.

Case II: $\mu_i = 1$: since inaction occurs with positive probability only when the crisis is serious, $s_{00} = 1$, both governments must be removed in that case: $p_i(s_{00}) = 0$. Since governments prefer to act when the crisis is mild, $U_1(a, a|m) \geq U_1(\sim a, a|m)$, or

$$p_1(s_{11}) - t_1\alpha_1 C \geq p_1(s_{01}).$$

But since G_1 must also be indifferent when the crisis is serious, $U_1(a, \sigma_2) = U_1(\sim\! a, \sigma_2)$, or:

$$\sigma_2(p_1(s_{11}) - t_1\alpha_1 C) + (1 - \sigma_2)(p_1(s_{10}) - t_1 C)$$
$$= \sigma_2 p_1(s_{01}) + (1 - \sigma_2)(-w_1\theta_1 - t_1\alpha_1 C).$$

This equality cannot be satisfied given the inequality above. To see this, it is sufficient to establish that $p_1(s_{10}) - t_1 C > -w_1\theta_1 - t_1\alpha_1 C$. This inequality will certainly hold if it is satisfied at $p_1(s_{10}) = 0$. But then we can re-write it as $w_1\theta_1 > t_1(1-\alpha_1)C$, which holds by (A3) because $w_1\theta_1 > C > t_1(1-\alpha_1)C$. It then follows that $U_1(a, \sigma_2) > U_1(\sim\! a, \sigma_2)$, so G_1 will not mix when the crisis is serious.

CASE III: only one of the players mixes when the crisis is mild. WLOG, let $\mu_2 \in (0, 1)$. There are two possibilities. Suppose first that $\mu_1 = 1$, in which case Bayes rule pins down $s_{00} = s_{01} = 1$, which imply that $p_1(s_{00}) = p_1(s_{01}) = 0$, so G_1 is always removed for failing to act. But then acting in a serious crisis is strictly better than not acting:

$$U_1(a, \sigma_2) = \sigma_2(p_1(s_{11}) - t_1\alpha_1 C) + (1 - \sigma_2)(p_1(s_{10}) - t_1 C)$$
$$> -t_1 C > -w_1\theta_1 - t_1\alpha_1 C = U_1(\sim\! a, \sigma_2),$$

a contradiction of the supposition that G_1 is willing to mix in a serious crisis.

Suppose now that $\mu_1 = 0$, in which case Bayes rule pins down $s_{11} = s_{10} = 1$, which imply that $p_2(s_{11}) = 1$ and $p_2(s_{10}) = 0$. Since G_1 does not act when the crisis is mild but G_2 is willing to mix, it follows that $U_2(\sim\! a, a|m) = U_2(\sim\! a, \sim\! a|m)$ must obtain, so $p_2(s_{01}) - t_2 C = p_2(s_{00}) - \theta_2$. But now

$$U_2(\sigma_1, a) = \sigma_1(1 - t_2\alpha_2 C) + (1 - \sigma_1)(p_2(s_{01}) - t_2 C)$$
$$= \sigma_1(1 - t_2\alpha_2 C) + (1 - \sigma_1)(p_2(s_{00}) - \theta_2)$$
$$> \sigma_1(0) + (1 - \sigma_1)(p_2(s_{00}) - w_2\theta_2 - t_2\alpha_2 C) = U_2(\sigma_1, \sim\! a),$$

which contradicts the supposition that G_2 mixes in a serious crisis.

This exhausts the possibilities, so it cannot be the case that only one player mixes in a mild crisis when both mix in a serious one. The sole remaining possibility, of course, is that they both mix when the crisis is mild.

We now show that if both players mix when the crisis is mild, then they must both mix when the crisis is serious. Suppose $\mu_i \in (0, 1)$, and consider the three possibilities for a serious crisis.

CASE I: $\sigma_i = 1$, in which case Lemma E implies that either $\mu_i = 0$ or $\mu_i = 1$, a contradiction.

CASE II: $\sigma_i = 0$, in which case Bayes rule pins down $s_{11} = s_{10} = s_{01} = 0$. This means that $p_1(s_{11}) = p_1(s_{10}) = 0$ and that $p_1(s_{01}) = 1$. Since G_1 is willing to mix when the crisis is mild,

$$U_1(a, \mu_2) = \mu_2(-t_1\alpha_1 C) + (1 - \mu_2)(-t_1 C) = \mu_2 + (1 - \mu_2)(p_1(s_{00}) - \theta_1),$$

so a necessary condition for this to be satisfied is $-t_1 C > p_1(s_{00}) - \theta_1$. But since G_1 prefers not to act in a serious crisis when G_2 does not act either, it follows that

$$U_1(a, {\sim}a|s) = -t_1 C \leq U_1({\sim}a, {\sim}a|s) = p_1(s_{00}) - w_1\theta_1 - t_1\alpha_1 C < p_1(s_{00}) - \theta_1,$$

a contradiction with the necessary requirement we derived above.

CASE III: only one of the players mixes when the crisis is serious. WLOG, let $\sigma_2 \in (0, 1)$, so we have two possibilities to consider. Suppose first that $\sigma_1 = 1$, in which case Bayes rule pins down $s_{00} = s_{01} = 0$, which imply that $p_2(s_{00}) = 1$ and that $p_2(s_{01}) = 0$. Since G_2 mixes in a serious crisis when G_1 acts, it follows that $U_2(a, a|s) = U_2(a, {\sim}a|s)$, and so $p_2(s_{11}) - t_2\alpha_2 C = p_2(s_{10})$. But now

$$\begin{aligned} U_2(\mu_1, a|m) &= \mu_1(p_2(s_{11}) - t_2\alpha_2 C) + (1 - \mu_1)(-t_2 C) \\ &< \mu_1 p_2(s_{10}) + (1 - \mu_1)(1 - \theta_2) = U_2(\mu_1, {\sim}a|m), \end{aligned}$$

where the inequality follows from the implication above and the fact that $-t_2 C < 0 < 1 - \theta_2$. This contradicts the supposition that G_2 is willing to mix in a mild crisis.

Suppose now that $\sigma_1 = 0$, in which case Bayes rule pins down $s_{11} = s_{10} = 0$, so $p_2(s_{11}) = 0$ and $p_2(s_{10}) = 1$. Since G_2 is willing to mix in a mild crisis, it must be that

$$U_2(\mu_1, a|m) = \mu_1(-t_2\alpha_2 C) + (1-\mu_1)(p_2(s_{01}) - t_2 C) = \mu_1(1) + (1-\mu_1)(p_2(s_{00}) - \theta_2),$$

and a necessary condition for this to hold is that $p_2(s_{00}) - \theta_2 < p_2(s_{01}) - t_2 C$. But since G_1 does not act in a serious crisis,

$$U_2(\sim a, \sim a|s) \;=\; p_2(s_{00}) - w_2\theta_2 - t_2\alpha_2 C \;<\; p_2(s_{00}) - \theta_2 \;<\; p_2(s_{01}) - t_2 C \;=\; U_2(\sim a, a|s),$$

contradicting the supposition that G_2 mixes when the crisis is serious.

This exhausts the possibilities, so it cannot be the case that only one player mixes in a serious crisis when both mix in a mild one. The sole remaining possibility, of course, is that they both mix when the crisis is serious. ■

There can be no equilibrium, in which both governments do nothing in a serious crisis but one or both of them do something in a mild crisis:

Lemma D. If neither government acts when the crisis is serious, then neither government acts when the crisis is mild either: $\sigma_i = 0\ \forall i \Rightarrow \mu_i = 0\ \forall i$. □

Proof. Suppose neither player acts when the crisis is serious, $\sigma_i = 0$, but one of them, say G_1, acts with positive probability when the crisis is mild, $\mu_1 \in (0,1]$. Suppose first that $\mu_2 = 0$, in which case Bayes rule pins down $s_{10} = 0$, so $p_1(s_{10}) = 0$. Since G_1 prefers not to act in a serious crisis, $U_1(\sim a, \sim a|s) \geq U_1(a, \sim a|s)$, or $p_1(s_{00}) - w_1\theta_1 - t_1\alpha_1 C \geq -t_1 C$. But since G_1 cannot fail to act with positive probability in a mild crisis while G_2 does not act, $U_1(a, \sim a|m) \geq U_1(\sim a, \sim a|m)$, or $-t_1 C \geq p_1(s_{00}) - \theta_1 > p_1(s_{00}) - w_1\theta_1 - t_1\alpha_1 C$, a contradiction.

Suppose now that $\mu_2 = 1$, so Bayes rule pins down $s_{11} = 0$, so $p_1(s_{11}) = 0$. But then $U_1(\sim a, a|m) = p_1(s_{01}) \geq 0 > -t_1\alpha_1 C = U_1(a, a|m)$, so G_1 would not mix when the crisis is mild, a contradiction.

Suppose now that $\mu_2 \in (0, 1)$. But then Lemma C implies that $\sigma_i \in (0, 1)$, a contradiction. ■

The following two lemmata establish that if governments pool on action in a serious crisis, they must pool on a pure strategy in a mild one; and that if they pool on inaction in a mild crisis, they must pool on a pure strategy in a serious one.

Lemma E. If both governments act when the crisis is serious, then in any equilibrium either (1) neither government acts when the crisis is mild or (2) both do, in which case $s \geq \overline{s} = \max(e_1, e_2)$ is required. □

Proof. Assume that both governments act when the crisis is serious: $\sigma_i = 1$.

Suppose $\mu_i \in (0, 1)$. Bayes rule then pins down $s_{00} = s_{10} = s_{01} = 0$, which means that governments are removed for acting unilaterally, $p_1(s_{10}) = p_2(s_{01}) = 0$, retained when the other government acts unilaterally, $p_1(s_{01}) = p_2(s_{10}) = 1$, and retained if they do not act at all $p_i(s_{00}) = 1$. But since

$$\begin{aligned} U_1({\sim}a, \mu_2) - U_1(a, \mu_2) &= 1 + t_1 C - \theta_1 - \mu_2 \left[p_1(s_{11}) + t_1 C - \theta_1 - t_1 \alpha_1 C \right] \\ &\geq 1 + t_1 C - \theta_1 - \mu_2 \left[1 + t_1 C - \theta_1 - t_1 \alpha_1 C \right] \\ &= (1 - \mu_2) \left[1 + t_1 C - \theta_1 \right] + \mu_2 t_1 \alpha_1 C \\ &> 0, \end{aligned}$$

where the last inequality follows from (A3), G_1 has a strict incentive not to act, contradicting the assumption that it mixes. Thus, if one government mixes, the other must be doing nothing when the crisis is mild.

Suppose that $\mu_1 = 0$ and $\mu_2 \in (0, 1)$. Bayes rule pins down $s_{11} = 1$ and $s_{01} = s_{00} = 0$, which means that both governments are retained after a multilateral bailout and after inaction, $p_i(s_{11}) = p_i(s_{00}) = 1$, and only G_1 is retained after a unilateral bailout by G_2: $p_1(s_{01}) = 1$ and $p_2(s_{01}) = 0$. But in this case, $U_2(\mu_1, {\sim}a) = 1 - \theta_2 > -t_2 C = U_2(\mu_1, a)$, so G_2 strictly prefers not to act as well. The case with $\mu_1 \in (0, 1)$ and $\mu_2 = 0$ is equivalent, *mutatis mutandis*.

Suppose that $\mu_i = 0$. We have already analyzed this in Proposition 1.

Suppose finally that $\mu_i = 1$. Bayes rule pins down only $s_{11} = s$. If $s < e_i$, then $p_i(s_{11}) = 0$, but then G_i expects $-t_i \alpha_i C$ if it acts and at least 0 if it does not act, so it strictly prefers not to act. Thus, $\mu_i = 1$ can only be supported in equilibrium if $p_i(s_{11}) = 1$, so a necessary condition is that $s \geq \overline{s}$. ■

Lemma F. If both governments do not act when the crisis is mild, then in any equilibrium either (1) they both act when the crisis is serious or (2) neither does, in which case

$$s \leq \underline{s} = \min(1 - e_1, 1 - e_2) \quad \text{and} \quad w_i \leq \frac{1 + t_i(1 - \alpha_i)C}{\theta_i} \equiv \overline{w}_i.$$

are required. □

Proof. Consider a dyad that never acts when the crisis is mild: $\mu_i = 0$.

Suppose first that $\sigma_i \in (0, 1)$. Bayes rule pins down $s_{11} = s_{10} = s_{01} = 1$, so both are retained after a multilateral bailout, $p_i(s_{11}) = 1$, and only the one that acts unilaterally is retained, $p_1(s_{10}) = p_2(s_{01}) = 1$ and $p_1(s_{01}) = p_2(s_{10}) = 0$. But now

$$\begin{aligned} U_1(a, \sigma_2) &= \sigma_2(1 - t_1 \alpha_1 C) + (1 - \sigma_2)(1 - t_1 C) \\ &\geq 1 - t_1 C \\ &> 1 - w_1 \theta_1 - t_1 \alpha_1 C \\ &\geq \sigma_2(0) + (1 - \sigma_2)(p_1(s_{00}) - w_1 \theta_1 - t_1 \alpha_1 C) = U_1(\sim a, \sigma_2), \end{aligned}$$

where the second inequality follows from (A1). Thus, G_1 strictly prefers to act in a serious crisis, a contradiction.

Suppose that $\sigma_1 = 1$ while $\sigma_2 \in (0, 1)$. Bayes rule pins down $s_{11} = s_{10} = 1$, so $p_i(s_{11}) = 1$ but $p_1(s_{10}) = 1$ and $p_2(s_{10}) = 0$; that is, both governments are retained after a multilateral bailout but only G_1 is when it acts unilaterally. But this implies that G_2 will be unwilling to mix because it strictly prefers to act as well: $U_2(a, a) = 1 - t_2 \alpha_2 C \geq 1 - \alpha_2 C > 0 = U_2(a, \sim a)$, where the second inequality follows from (A2). The case with $\sigma_1 \in (0, 1)$ and $\sigma_2 = 1$ is the same, *mutatis mutandis*.

Suppose that $\sigma_1 = 0$ while $\sigma_2 \in (0, 1)$. Bayes rule pins down $s_{01} = 1$, so $p_1(s_{01}) = 0$ and $p_2(s_{01}) = 1$; that is, only G_2 is retained after it acts unilaterally. But then G_2's payoff from acting when the crisis is serious is $U_2(\sim a, a) = 1 - t_2 C > 1 - w_2\theta_2 - t_2\alpha_2 C \geq U_2(\sim a, \sim a)$, where the inequality follows from (A1). Thus, G_2 would strictly prefer to act. The case with $\sigma_1 \in (0, 1)$ and $\sigma_2 = 0$ is the same, *mutatis mutandis*.

Suppose that $\sigma_i = 1$. We have already analyzed this in Proposition 1.

Suppose finally that $\sigma_i = 0$. Bayes rule pins down $s_{00} = s$. If $s > 1 - e_i$, then $p_i(s_{00}) = 0$, so G_i's payoff from inaction is $-w_i\theta_i - t_i\alpha_i C$, which is strictly worse than the minimum payoff from unilateral action, $-t_i C$ (where the inequality follows from (A1)), so G_i strictly prefers to act. Thus, $\sigma_i = 0$ can only be supported in equilibrium when $p_i(s_{00}) = 1$, so a necessary condition is that $s \leq \underline{s}$.

Finally, it must be the case that reelection for inaction is sufficient to prevent unilateral action: $1 - w_1\theta_1 - t_1\alpha_1 C \geq p_1(s_{10}) - t_1 C$, which requires that $p_1(s_{10})$ be sufficiently low (the inequality is violated at $p_1(s_{10}) = 1$ by (A1)). Since we can write this as

$$w_1 \leq \frac{1 - p_1(s_{10}) + t_1(1 - \alpha_1)C}{\theta_1},$$

another necessary condition is that it is satisfied at $p_1(s_{10}) = 0$, or that $w_1 \leq \overline{w}_1$. Since this applies to G_2 as well, we obtain the requirement stated in the lemma. ■

The Citizen-Preferred Equilibrium

Proposition A. The following constitute the essentially unique *citizen-preferred equilibrium*:[1]

- Each government acts when the crisis is serious and does not act when the crisis is mild;
- When citizens in each country observe a multilateral bailout, they infer that the crisis is serious and

1. Because of the latitude in specifying off-the-path beliefs, there is a continuum of equilibria of this type, but they are all substantively the same and they induce the same probability distribution over outcomes.

retain both governments. When they observe inaction, they infer that the crisis is mild and retain both governments as well.

- When citizens in each country observe a unilateral bailout,
  - if the dyad is nationalist, citizens infer that the crisis is serious, retain the government that acts and remove the one that does not;
  - if the dyad is internationalist or mixed, citizens remain uncertain about the nature of the crisis with some $s_{10} \in [1-e_2, e_1]$ and some $s_{01} \in [1-e_1, e_2]$, and remove both governments.

This equilibrium can always be supported in a nationalist dyad, but can be supported in internationalist or mixed dyads only when governments are jointly vulnerable electorally ($e_1 + e_2 \geq 1$). It is intuitive in all dyads but collusion-proof only in nationalist and mixed dyads. □

Proof. If this is an equilibrium, Bayes rule tells us that $s_{11} = 1$ and $s_{00} = 0$, and since $e_i \in (0,1)$, by Lemma A the citizens will retain the governments in both countries along the path of play. Unilateral deviations will be unprofitable when the following four conditions are satisfied:

serious crisis: mild crisis:

$$1 - t_1\alpha_1 C \geq p_1(s_{01}) \qquad\qquad 1 - \theta_1 \geq p_1(s_{10}) - t_1 C \tag{1}$$

$$1 - t_2\alpha_2 C \geq p_2(s_{10}) \qquad\qquad 1 - \theta_2 \geq p_2(s_{01}) - t_2 C. \tag{2}$$

NATIONALIST DYAD. Since G_1 would stick to inaction in a mild crisis whenever $1 - \theta_1 \geq p_1(s_{10}) - C$, (A1) implies that it will do so for any $p_1(s_{10})$. The situation with G_2 is analogous. Nationalist governments need no additional incentives to remain inactive in a mild crisis when they are reelected for doing so.

In a serious crisis, G_1 would stick to the multilateral bailout as long as $1 - \alpha_1 C \geq p_1(s_{01})$, and since $1 - \alpha_1 C > 0$ by (A2), $p_1(s_{01}) = 0$ is sufficient to guarantee that this condition is satisfied. By the same token, $p_2(s_{10}) = 0$ is sufficient for G_2. When one of the governments is expected to take action in a serious crisis, the other needs an additional incentive to stick with the cooperative strategy and not attempt to shift the entire bailout burden on its counterpart. This incentive is provided by the electoral threat to remove any government that fails to act when the other does. The citizens' electoral strategies after unilateral bailouts can be rationalized by them believing that the crisis is serious, $s_{10} = s_{01} = 1$, in which case they remove any government that fails to act and keep any government that does. We now check whether these beliefs are intuitive.

A unilateral bailout by G_i can be observed either when G_{-i} fails to act when the crisis is serious or when G_i acts when the crisis is mild. This means that the second requirement for an intuitive equilibrium imposes no restrictions on these beliefs. Consider now an unexpected unilateral bailout by, say, G_1. The required off-the-path beliefs are $p_1(s_{10}) = 1$ and $p_2(s_{10}) = 0$. The outcome s_{10} can be induced by G_1 by deviating to action when the crisis is mild, but since it gets reelected at s_{00}, a nationalist government cannot profit by such a deviation. The outcome s_{10} can also be induced by G_2 by deviating to inaction when the crisis is serious. But for this to be profitable, G_2 would have to be reelected with positive probability, which would require the inference that the crisis is mild, a contradiction to the assumption that the outcome was induced by G_2. The equilibrium is intuitive in a nationalist dyad.

Finally, the equilibrium is also collusion-proof because nationalist governments have no incentive to provide a multilateral bailout in a mild crisis ($1 - \alpha_i C < 1 - \theta_i$) or do nothing in a serious one ($1 - w_i \theta_i - \alpha_i C < 1 - \alpha_i C$).

Thus, if the dyad is nationalist, the assessments constitute an equilibrium that is both intuitive and collusion-proof.

MIXED DYAD. Consider a dyad where G_1 is nationalist and G_2 is internationalist. As before, since a nationalist government requires no additional incentive to remain inactive when the crisis is mild, only the internationalist one is a concern in this case. If citizens were to infer that the crisis is mild when they observe unilateral action by G_2, $s_{01} = 0$, then they would remove G_2 (and retain G_1), which would be sufficient to ensure that inaction in a mild crisis is optimal for both. However, citizens cannot make this inference because their subsequent strategy would destroy the incentives for the nationalist government to participate in a multilateral bailout when the crisis is serious. To see this, recall that both types of governments must have an extra incentive to overcome international distributional conflict. If citizens were to retain G_1 after unilateral action by G_2 on the presumption that the crisis is mild, then G_1 would fail to act when the crisis is serious as well. This implies that citizens must remove both governments after unilateral action by either one. In this sense, a mixed dyad is strategically equivalent to a internationalist one, so the same conditions apply: the governments have to be jointly vulnerable.

Are these beliefs intuitive in a mixed dyad? Consider an unexpected unilateral bailout by G_1, the nationalist government. The only way G_1 can induce s_{10} is by acting when the crisis is mild but since it is reelected for not acting, this deviation is equilibrium-dominated. Thus, citizens cannot put positive probability on the outcome being induced in a mild crisis. The only other possibility is that G_2 has failed to act when the crisis is serious, but then the citizens would have to infer that the crisis is serious and remove G_2 for not acting, making such a deviation unprofitable. Consider now an unexpected unilateral bailout by G_2, the internationalist government. The only way G_2 can induce s_{01} is by acting when the crisis is mild. Since it is reelected for not acting, the deviation can only be profitable if G_2 is also reelected for acting unilaterally, so $s_{01} > e_2$, which further implies that $s_{01} > 1 - e_1$, and so it must be the case that G_1 is removed after unilateral action by G_2. But then G_1 has no incentive to induce the unilateral bailout by G_2 by failing to act when the crisis is serious, which means that citizens must assign zero probability to this event. Thus, the only way a unilateral bailout by G_2 could be profitable is when it is induced by G_2 itself in a mild crisis, which means that citizens cannot believe that it is serious with a high enough probability to retain G_2 for acting unilaterally. In other words, the equilibrium is also intuitive in mixed dyads.

Finally, observe that no collusive agreement can be had in this dyad. Either government would refuse a group deviation to inaction in a serious crisis: $1 - w_i\theta_i - t_i\alpha_i C < 1 - t_i\alpha_i C$, and the nationalist government would refuse to collude in a mild crisis: $1 - \alpha_i C < 1 - \theta_i$, which holds by (A1).

INTERNATIONALIST DYAD. Even though internationalist governments have stronger incentives to act than nationalist ones, the international distributional conflict among them will prevent them from engaging in a multilateral bailout without some additional electoral incentives. We shall use the strongest electoral threat for failing to act when the other does, $p_1(s_{01}) = p_2(s_{10}) = 0$, even though somewhat weaker threats can work as well. As we shall see shortly, citizens cannot safely infer that the crisis is serious when they observe a unilateral bailout. This means that they would need to remove the incumbent that fails to act despite being uncertain about the extent of the crisis. They would do so here as long as $s_{01} \geq 1 - e_1$ and $s_{10} \geq 1 - e_2$, or when G_2 is vulnerable electorally.

Internationalist governments must also be prevented from being too pro-active. Since neither government is supposed to act when the crisis is mild, each knows that inaction means that the crisis will continue if it does not act. Since they get reelected for doing nothing in this case, (A3) implies that if they were to also get reelected for acting unilaterally, they would strictly prefer to act. This can be seen easily be rewriting the mild crisis condition for G_1 from (1) as $1 + \delta C \geq p_1(s_{10}) + \theta_1$ and noting that it must fail if $p_1(s_{10})$ is too high because $\delta C < \theta_1$. The strongest disincentive is provided by a threat to remove any government that acts unilaterally with certainty: $p_1(s_{10}) = p_2(s_{01}) = 0$. This strategy will be optimal as long as $s_{10} \leq e_1$ and $s_{01} \leq e_2$; that is, G_1 must be vulnerable electorally as well.

Although it sounds straightforward, the requirement that a government that acts unilaterally is removed can be tricky to satisfy simultaneously with the requirement that a government that does not act when the other does is removed as well. This is because when they observe an (unexpected) unilateral bailout, citizens do not know which government did what it was not supposed to do and so cannot infer what the nature of the crisis might be. For example, a unilateral bailout by G_1 can happen either because the crisis is serious but G_2 failed to cooperate, or because the crisis is mild but G_1 acted anyway. If they knew which government deviated, citizens could tailor their punishment accordingly. In the first instance, citizens would infer that the crisis is serious and punish G_2. In the second instance, they would infer that the crisis is mild and punish G_1. To provide appropriate disincentives to internationalist governments, citizens must remove both of them after a unilateral bailout. But in our example, G_1 is removed under the presumption that the crisis is mild whereas G_2 is removed under the presumption that the crisis is serious. Thus, the citizens in country 1 must believe that the crisis is serious with sufficiently high probability simultaneously with the citizens in country 2 who must believe that it is mild with sufficiently high probability. Since their posterior beliefs about the crisis are the same, citizens in both countries must remain at least somewhat uncertain about the nature of the crisis. Putting the two belief requirements together establishes the necessary degrees of uncertainty: $s_{01} \in [1 - e_1, e_2]$ and $s_{10} \in [1 - e_2, e_1]$. Clearly, no such beliefs can exist unless governments are jointly vulnerable.

To understand the necessity of joint vulnerability, consider the citizens problem of simultaneously having to think that the crisis could be mild and that it could be serious. They can act appropriately only when there is sufficient unresolved uncertainty. How uncertain they must be to have the required incentive to remove the incumbent depends, of course, on how serious the other candidate for office is. The more attractive that candidate (the more vulnerable the incumbent), the more certain citizens can be that the incumbent did the right thing and yet be willing to remove it. Thus the electoral vulnerability of the incumbent enlarges the region of uncertainty that can sustain the citizen strategy, making it possible to maintain the citizen-preferred equilibrium. Conversely when the domestic alternative is unpalatable, citizens would need to be quite certain of wrong-doing before they remove the incumbent. But the more certain they are of the wrong-doing of one of the governments, the more certain they have to be of the right-doing of the other, which decreases the incentive to punish the other government. Thus, lower electoral vulnerability of the incumbent makes it harder (or impossible) to sustain the citizen-preferred equilibrium.

Are beliefs that make the two governments jointly vulnerable also intuitive? As before, the second requirement has no bite, so we only analyze the first. Consider an unexpected unilateral bailout by, say, G_1. This outcome can be induced either by G_1 deviating in a mild crisis or G_2 deviating in a serious one. Observe now that in either case, the deviating government can only profit if citizens infer that the other one is responsible for the deviation. That is, when G_1 acts in a mild crisis, it can only profit from doing so if it gets reelected after its unilateral bailout, which requires that voters infer that the crisis is serious (and so G_2 has deviated). Conversely, when G_2 fails to act in a serious crisis, it can only profit from doing so if it gets reelected with sufficiently high probability after G_1's unilateral bailout, which can only happen if the voters infer that the crisis is mild (and so G_1 has deviated). Not surprisingly, these requirements cannot be satisfied because whenever a government induces a deviation it can only profit if citizens infer that it has not done so. For example, for G_1's deviation to be profitable, $s_{10} > e_1$ is required so that it gets reelected. But since the beliefs make the governments jointly vulnerable, this implies that $s_{10} > 1 - e_2$, so G_2 has to be removed. But then G_2 has no incentive to deviate in a serious crisis, which means that the only plausible inference after a unilateral bailout by G_1 is that the crisis is mild, which cannot make the deviation profitable. A similar argument establishes the case for G_2's deviation, so the equilibrium is intuitive in a internationalist dyad.

Finally, we need to ask whether the equilibrium is vulnerable to collusion. The obvious possible candidate is an agreement to deviate jointly to a multilateral bailout when the crisis is serious. Since going so would result in reelection of both governments, the payoffs from the group deviation Pareto-dominate the equilibrium payoffs: $1 - \delta\alpha_i C > 1 - \theta_i$, which obtains by (A3). Moreover, since deviating from the collusive agreement results in the removal of both governments, the agreement is credible: $1 - \delta\alpha_i C > 0$, which obtains by (A3) as well. The equilibrium is not collusion-proof.

Thus, if the dyad is internationalist, the equilibrium exists only if the governments are jointly vulnerable and while it is intuitive, it is not collusion-proof. ■

False-Positive Policy Failure

We now investigate the possibility that governments do too much; namely, that they act not only when the crisis is serious — as their citizens wish them to — but also when the crisis is mild.

Burden-Sharing

We can restrict our attention to two types of equilibria when both governments act in a serious crisis (Lemma E). We have already seen the one where they do not act when the crisis is mild — the citizen-preferred equilibrium from Proposition 1. The other involves false-positive policy failure because governments always act regardless of the nature of the crisis. Since both governments act, they share the costs of the bailout.

Proof of Proposition 2 By Lemma E, we know that this equilibrium can only exist when $s \geq \bar{s}$. Since both governments act, neither government should have an incentive to shift the burden onto the other. For G_1, this means that $U_1(a, a) = 1 - t_1\alpha_1 C \geq p_1(s_{01}) = U_1(\sim a, a)$, which certainly obtains for $p_1(s_{01}) = 0$. Thus, the equilibrium requires that both governments are removed with sufficiently high probability when their counterpart acts unilaterally: $p_1(s_{01}) = p_2(s_{10}) = 0$.

Consider now collusion-proofness. Since a multilateral bailout results in reelection, acting in a serious crisis is strictly preferable than colluding on inaction regardless of the probability of reelection after inaction: $U_i(a, a|s) = 1 - t_i\alpha_i C > 1 - w_i\theta_i - t_i\alpha_i C \geq U_i(\sim a, \sim a|s)$. The only possibly profitable collusion would be to not act in a mild crisis. However, not even a nationalist government would be interested in inaction if it expects to lose the elections: $U_i(a, a|m) = 1 - t_i\alpha_i C > -\theta_i$, so $p_i(s_{00}) = 0$ is sufficient to ensure that the equilibrium is collusion-proof.

Since both governments always act, unilateral bailouts can be induced by either government failing to act regardless of the nature of the crisis. The second requirement for an intuitive equilibrium has no bite. Is there a deviation that can profit a government only in one type of crisis so that citizens could infer the type of crisis from that deviation? If G_i deviated and failed to act but the citizens inferred that the crisis is mild and retained G_i, then the deviation would be profitable: $1 > 1 - t_i \alpha_i C$. However, if voters reacted in this way to a unilateral bailout by G_{-i}, then G_i would also have an incentive not to act even when the crisis is serious. Thus, citizens cannot make such an inference, which means that the assessments forming the equilibrium are intuitive. ■

Burden-Shifting

We now consider the possibility that one government acts while the other either acts some of the time or never does. We shall establish the equilibrium for the case when only one of the governments acts in a serious crisis. The characterization of the equilibrium when the other government sometimes joins it in a bilateral bailout is involved and we relegate it to Appendix B (it adds nothing of substantive importance for the cases we are going to discuss). If burden-sharing represents the cooperative end of the false-positive failure spectrum, then this burden-shifting represents the non-cooperative end.

Lemma G. If one government does not act in a serious crisis, then the other cannot mix: $\sigma_i = 0 \Rightarrow \sigma_{-i} \in \{0, 1\}$. □

Proof. Assume $\sigma_1 = 0$ and $\sigma_2 \in (0, 1)$. Since G_2 is willing to mix in a serious crisis,

$$\begin{aligned} U_2(\sim a, a|\cdot) = p_2(s_{01}) - t_2 C = p_2(s_{00}) - w_2\theta_2 - t_2\alpha_2 C = U_2(\sim a, \sim a|s) \\ > p_2(s_{00}) - \theta_2 = U_2(\sim a, \sim a|m), \end{aligned}$$

so $\mu_2 = 1$ in any equilibrium. Bayes rule then pins down $s_{00} = 1$, so $p_2(s_{00}) = 0$. But then G_2 will not be willing to mix because $p_2(s_{01}) - t_2 C \geq t_2 C > -w_2\theta_2 - t_2\alpha_2 C$. Thus, there exists not equilibrium of this type. ■

By Lemma G, if G_i does not act when the crisis is serious, only two possible equilibria exist: either G_{-i} also does not in a serious crisis or it acts with certainty. If neither acts in a serious crisis, then Lemma D tells us that neither would act in a mild crisis. The only equilibrium then is the false-negative one from Proposition 3. If only G_{-i} acts in a serious crisis, then the equilibrium is one of complete burden-shifting, a limiting case of the more general class of equilibria in which one of the actors assumes a disproportionate burden of the bailout. The following result shows that this type of equilibrium requires that the government assuming the burden is internationalist, and that this government necessarily assumes the burden even in a mild crisis.

Lemma H. If $\sigma_i = 1$ and $\sigma_{-i} = 0$, any intuitive and collusion-proof equilibrium requires that $\mu_i = 1$ and $\mu_{-i} = 0$, and it can exist only if G_i is internationalist, and if $w_i \leq \overline{w}_i$ whenever $s < e_i$. □

Proof. Assume that $\sigma_1 = 1$ and $\sigma_2 = 0$. We have three cases to consider.

CASE I: $\mu_1 = 1$. Suppose that $\mu_2 \in (0, 1]$, in which case $s_{11} = 0$, so $p_2(s_{11}) = 0$. But then $U_2(a, a|m) = -t_2\alpha_2 C < 0 \leq p_2(s_{10}) = U_2(a, \sim a|m)$, so G_2 strictly prefers not to act in mild crisis, a contradiction.

Suppose now that $\mu_2 = 0$, so $s_{10} = s$. Since G_2 can induce s_{11} and G_1 can induce s_{00} regardless of the crisis type, the second intuitive requirement has no bite for these off-the-path beliefs. Since G_1 prefers to act in a mild crisis, $p_1(s_{10}) - t_1 C \geq p_1(s_{00}) - \theta_1$. We now have two cases to consider.

First, if $s_{10} = s < e_1$, then $p_1(s_{10}) = 0$, so the condition is $p_1(s_{00}) \leq \theta_1 - t_1 C$. If G_1 is nationalist, $\theta_1 - C < 0$, so the condition cannot be satisfied. If G_1 is internationalist, then $p_1(s_{00}) \leq \theta_1 - \delta C < 1$. If this belief intuitive? Suppose G_1 were to deviate to inaction when the crisis is mild. If doing so convinced citizens to reelect it, the deviation would be strictly profitable. This inference would be valid (and the equilibrium belief non-intuitive) if G_1 does not have an incentive to deviate if the crisis is serious even though doing so would get it reelected. For this, $1 - w_1\theta_1 - \delta\alpha_1 C < -\delta C$, or $w_1 > \overline{w}_1$ is required. In other words, the equilibrium is intuitive when $s < e_1$ only if G_1 is internationalist and $w_1 \leq \overline{w}_1$.

If $s_{10} = s > e_1$, then $p_1(s_{10}) = 1$, and the requirement is $1 - t_1 C \geq p_1(s_{00}) - \theta_1$. This is always satisfied if G_1 is internationalist. If G_1 is nationalist, however, the requirement is that $p_1(s_{00}) \leq 1 - (C - \theta_1) < 1$. Is this belief intuitive? If G_1 were to deviate to inaction in a mild crisis and if doing so got it reelected, then such a deviation would be profitable. But since $1 - C > 1 - w_1\theta_1 - \alpha_1 C$, such a deviation would not be profitable if the crisis is serious even if it resulted in reelection. This means that citizens can safely infer that the deviation had taken place in a mild crisis, so the belief is not intuitive. In other words, the equilibrium is intuitive when $s > e_1$ only if G_1 is internationalist.

CASE II: $\mu_1 = 0$. Suppose that $\mu_2 \in (0, 1)$, in which case $s_{00} = s_{01} = 0$, so $p_2(s_{00}) = 1$ and $p_2(s_{01}) = 0$. But then $U_2(\sim a, \sim a|m) = 1 - \theta_2 > 0 > -t_2 C = U_2(\sim a, a|m)$, so G_2 strictly prefers to not act, a contradiction.

Suppose now that $\mu_2 = 1$, in which case $s_{10} = 1$ and $s_{01} = 0$ so that $p_2(s_{10}) = p_2(s_{01}) = 0$. Since G_2 must prefer to act in a mild crisis, $U_2(\sim a, a|m) = -t_2 C \geq p_2(s_{00}) - \theta_2 = U_2(\sim a, \sim a|m)$ must obtain. Thus, $p_2(s_{00}) \leq \theta_2 - t_2 C$ is required. If G_2 is nationalist, $\theta_2 - C < 0$ by (A1), so this requirement cannot be satisfied. If G_2 is internationalist, then $p_2(s_{00}) \in (0, 1)$, so $s_{00} = 1 - e_2$.

This belief, however, is not intuitive. To see this, suppose G_2 were to deviate to inaction when the crisis is mild and the citizens correctly inferred at s_{00} that the crisis is mild so that $p_2(s_{00}) = 1$. Given then strategies, the only other way this outcome can be induced if by G_1 not acting when the crisis is serious, but then G_1's best possible payoff from this deviation would be $U_1(\sim a, \sim a|s) = 1 - w_1\theta_1 - t_1\alpha_1 C < 1 - t_1 C = U_1(a, \sim a|s)$, making it unprofitable. Thus, citizens can safely infer $s_{00} = 0$, making the inference $s_{00} = 1 - e_2$ nonintuitive.

Suppose finally that $\mu_2 = 0$, in which case $s_{10} = 1$ and $s_{00} = 0$, so that $p_1(s_{10}) = 1$, $p_2(s_{10}) = 0$, and $p_i(s_{00}) = 1$. Since G_1 prefers not to act in a mild crisis, $U_1(\sim a, \sim a|m) = 1 - \theta_1 \geq 1 - t_1 C = U_1(a, \sim a|m)$ must obtain, so $t_1 C \geq \theta_1$ is required. By (A1) and (A3), this inequality is only satisfied if G_1 is nationalist.

We now show, however, that in this case the equilibrium is not intuitive. Since G_2 is supposed not to act in a serious crisis, it must be that $U_2(a, \sim a|s) = 0 \geq p_2(s_{11}) - t_2\alpha_2 C = U_2(a, a|s)$, which requires that $p_2(s_{11}) < 1$. But since G_2 is the only one who can induce s_{11} with a unilateral deviation and can do so only when the crisis is serious, the intuitive requirement is that $s_{11} = 1$ so $p_2(s_{11}) = 1$, a contradiction.

CASE III: $\mu_1 \in (0, 1)$. Suppose that $\mu_2 \in (0, 1)$. But then Lemma C tells us that $\sigma_i \in (0, 1)$ for both players, a contradiction.

Suppose now that $\mu_2 = 1$, in which case $s_{11} = s_{01} = 0$ and $s_{10} = 1$ so that $p_i(s_{11}) = 0$, $p_1(s_{10}) = p_1(s_{01}) = 1$, and $p_2(s_{10}) = p_2(s_{01}) = 0$. But now $U_1(a, a|m) = p_1(s_{11}) - t_1\alpha_1 C = -t_1\alpha_1 C < 1 = p_1(s_{01}) = U_1(\sim a, a|m)$, which means that G_1 strictly prefers not to act in a mild crisis, a contradiction.

Finally, suppose that $\mu_2 = 0$, in which case $s_{00} = 0$ and $s_{10} = s/[s + \mu_1(1 - s)]$, so $p_i(s_{00}) = 1$. Observe that s_{01} can only be induced with positive probability by G_2 acting when the crisis is mild, so the intuitive requirement pins down $s_{01} = 0$, so that $p_1(s_{01}) = 1$ and $p_2(s_{01}) = 0$. (In contrast, s_{11} could be induced by G_2 irrespective of the nature of the crisis, so this requirement places no restrictions there.)

Since G_1 is willing to mix in a mild crisis, $U_1(a, \sim a|m) = p_1(s_{10}) - t_1 C = 1 - \theta_1 = U_1(\sim a, \sim a|m)$, so $p_1(s_{10}) = 1 + t_1 C - \theta_1$. By (A1), $1 + C - \theta_1 > 1$, so this requirement cannot be satisfied if G_1 is nationalist. If, on the other hand, G_1 is internationalist, then $1 + \delta C - \theta_1 \in (0, 1)$ because $1 + \delta C > \theta_1 > \delta C$ by (A3). Since $p_1(s_{10}) \in (0, 1)$ requires $s_{10} = e_1$, we obtain $\mu_1 = (1 - e_1)s/[e_1(1 - s)]$, which is only valid if $s < e_1$.

We now show that this supposed equilibrium is not collusion-proof. Since G_2 prefers not to act in a serious crisis, $U_2(a, \sim a|s) \geq U_2(a, a|s)$, or

$$p_2(s_{10}) \geq p_2(s_{11}) - t_2\alpha_2 C. \tag{3}$$

Recall that G_2's expected payoff when the crisis is mild is $\mu_1 p_2(s_{10}) + (1 - \mu_1)(1 - \theta_2)$.

Since $s_{10} = e_1$, we have only two generic possibilities to consider. If $s_{10} < 1 - e_2$ (i.e., governments are not jointly vulnerable), then $p_2(s_{10}) = 1$. But then G_2 can strictly benefit if G_1 were to provide a unilateral bailout with certainty while G_1 will continue to be indifferent. This agreement is Pareto-improving and will be credible as long as G_2 does not want to break it. When G_1 acts with certainty, $U_2(a, {\sim}a|m) = p_2(s_{10}) \geq p_2(s_{11}) - t_2\alpha_2 C = U_2(a, a|m)$, where the inequality holds by (3), so G_2 will not be willing to break it. Thus, the equilibrium is not collusion-proof when governments are not jointly vulnerable.

If $s_{10} > 1 - e_2$ (i.e., governments are jointly vulnerable), then $p_2(s_{10}) = 0$. Since $1 - \theta_2 > 0$, G_2 can strictly benefit if G_1 were not to act at all, and since G_1 will continue to be indifferent, this agreement is Pareto-improving. It would also be credible if G_2 is unwilling to break it by deviating to a unilateral bailout. If $U_2({\sim}a, a|m) = p_2(s_{01}) - t_2 C \leq 1 - \theta_2$, then the agreement would be credible, and the equilibrium will not be collusion-proof. Suppose, then, that $p_2(s_{01}) - t_2 C > 1 - \theta_2$, or $p_2(s_{01}) > 1 + t_2 C - \theta_2$. This inequality can only be satisfied if G_2 is internationalist because otherwise $1 + C - \theta_2 > 1$ by (A1). When G_2 is internationalist, $p_2(s_{01}) \in (0, 1)$ by (A3), which contradicts the requirement that the only intuitive belief is $s_{01} = 0$, which means that $p_2(s_{01}) = 0$. Thus, even a internationalist government will not want to break the collusive agreement, which means that the equilibrium is not collusion-proof when governments are jointly vulnerable either. ■

We are now ready to establish the main result for this section. Consider a situation in which one of the governments does not act when the crisis is serious. When this happens, the other government must either fail to act as well — which we have already analyzed in Proposition 3 — or must act with certainty (Lemma G). In the latter case, if one of the governments carries the entire bailout burden in a serious crisis, then it must also carry the entire bailout burden in a mild crisis (Lemma H). Moreover, such complete shifting of the burden to one of the governments is only possible when that government is internationalist. This immediately suggests, perhaps not surprisingly, that internationalist governments can be saddled with the entire burden of a bailout irrespective of the crisis type. The following proposition establishes the expectations that are required for such an equilibrium.

Proposition B. The following assessments constitute a generically unique collusion-proof *burden-shifting equilibrium* only when G_i is internationalist: G_i acts regardless of the nature of the crisis, G_{-i} never does, and

- $s < \min(e_i, 1 - e_{-i})$: on the path, only G_i is removed; off the path, G_i is removed when neither acts;
- $e_i < s < 1 - e_{-i}$ (no joint vulnerability): on the path, both governments are retained;
- $1 - e_{-i} < s < e_i$ (joint vulnerability): on the path, both governments are removed; off the path, G_i is removed when neither acts and G_{-i} is removed whenever it acts;
- $s > \max(e_i, 1 - e_{-i})$: on the path, only G_i is retained; off the path, G_{-i} is removed after a bilateral bailout, and at least one of the governments is removed after a unilateral bailout by G_{-i}.

The equilibrium is intuitive when $s > e_i$, and intuitive when $s < e_i$ only if $w_i \leq \overline{w}_i$. □

Proof. Assume that G_1 is internationalist and $\sigma_1 = \mu_1 = 1$ while $\sigma_2 = \mu_2 = 0$. Since $s_{10} = s$, we need to consider two generic cases.

CASE I: $s > e_1$, so $p_1(s_{10}) = 1$. This implies that G_1's strategy is optimal regardless of the off-the-path beliefs: $U_1(a, {\sim}a|\cdot) = 1 - \delta C > 1 - \theta_1 = \max U_1({\sim}a, {\sim}a|m) > 1 - w_1\theta_1 - \delta\alpha_1 C = \max U_1({\sim}a, {\sim}a|s)$.

Consider now G_2's strategy. Again, there are two generic possibilities. If $s < 1 - e_2$, then $p_2(s_{10}) = 1$, so G_2's strategy yields the highest possible payoff in both contingencies (reelection after a bailout by the other player). This means that G_2 would have no incentive to participate in any collusive agreement. Moreover, since G_1's strategy is optimal regardless of the off-the-path beliefs, this further implies that the equilibrium is intuitive. This equilibrium requires that $e_1 < s < 1 - e_2$.

The other possibility is that $s > 1 - e_2$, so $p_2(s_{10}) = 0$; that is, G_2 is always removed in equilibrium. To refrain from acting in this case, it must be that there is not sufficient benefit from a bilateral bailout

$U_2(a, \sim a|\cdot) = 0 \geq p_2(s_{11}) - t_2\alpha_2 C = U_2(a, a|\cdot)$, which means that $p_2(s_{11}) \leq t_2\alpha_2 C < 1$, so $s_{11} \leq e_2$ is required. This belief is intuitive because if G_2 were to get reelected at s_{11}, then it would have an incentive to deviate irrespective of the nature of the crisis.

The only potentially beneficial collusive agreement is to a unilateral bailout by G_2. This collusion can be prevented as long as either $p_1(s_{01}) \leq 1 - \delta C$ or $p_2(s_{01}) - \delta C \leq 0$; that is, as long as at least one of the governments does not get reelected with high probability after a unilateral bailout by G_2. Thus, either $s_{01} \geq 1 - e_1$ or $s_{01} \leq e_2$ would work.

To summarize, when $s > e_1$, then the equilibrium requires nothing further when governments are not jointly vulnerable, and requires that $s_{11} \leq e_2$ and either $s_{01} \geq 1 - e_1$ or $s_{01} \leq e_2$ when $s > \max(e_1, 1 - e_2)$.

CASE II: $s < e_1$, so $p_1(s_{10}) = 0$, so G_1 is always removed in equilibrium. This requires that G_1 act when the crisis is mild, so $-\delta C \geq p_1(s_{00}) - \theta_1$, or $p_1(s_{00}) \leq \theta_1 - \delta C < 1$; that is, it cannot be reelected with high probability after inaction, or $s_{00} \geq 1 - e_1$. (This also ensures the optimality of acting in a serious crisis.)

Consider now G_2's strategy. Again, there are two generic possibilities. If $s > 1 - e_2$, so $p_2(s_{10}) = 0$; that is, G_2 is also always removed in equilibrium. As before, this means that there is not enough benefit from a bilateral bailout, so $p_2(s_{11}) \leq \delta\alpha_2 C$, so $s_{11} \leq e_2$ is required. The only potentially beneficial collusive agreement is to deviate to a unilateral bailout by G_2. Although G_1 always wants to collude regardless of the probability of reelection in that contingency, G_2 would not agree to collude as long as $p_2(s_{01}) - \delta C < 0$, which requires $s_{01} \leq e_2$. This equilibrium will be intuitive as long as no player can induce citizens to reelect it. Consider G_1: if it deviated to inaction in a mild crisis and doing so persuaded the citizens to reelect it, this deviation would be profitable in a serious crisis as well as long as $w_1 \leq \overline{w}_1$. Analogously, reelection would give G_2 the same incentive to deviate to a bilateral bailout in both contingencies. Thus, the equilibrium is also intuitive. This equilibrium requires that $1 - e_2 < s < e_1$.

If $s < 1 - e_2$, then $p_2(s_{10}) = 1$, so G_2's strategy yields the highest possible payoff in both contingencies (reelection after a bailout by the other player). This means that G_2 would have no incentive to participate in any collusive agreement. The equilibrium will also be intuitive if there is no way for G_1 to persuade citizens to retain it after inaction. Suppose G_1 deviated in a mild crisis and got reelected. Citizens would do this only if G_1 has no incentive to deviate in a serious crisis as well. This requires that $1 - w_1\theta_1 - \delta\alpha_1 C \leq -\delta C$, or $w_1 > \overline{w}_1$. In other words, this equilibrium is also intuitive provided $w_1 \leq \overline{w}_1$. This equilibrium requires that $s < \min(e_1, 1 - e_2)$.

The necessary conditions on s partition the possibilities into the four cases listed in the proposition. ■

Proposition B shows that the bailout burden can be shifted entirely on one of the governments, but only if it is internationalist. The important implication is that a nationalist government cannot be induced to carry a disproportionate share of the bailout regardless of what type the other government is; not even in a serious crisis. It is perhaps worth asking why this is so: after all, failing to act in a serious crisis has very costly consequences.

The answer can be seen in the proof of Lemma H. First, the equilibrium requires that the unilateral bailout also occur when the crisis is mild. Roughly, the reason for this has to do with the inferences that voters would be making otherwise. For instance, if neither were not to act when the crisis is mild, then G_i must be retained after a unilateral bailout because this outcome could only occur when the crisis is serious. By the same token, G_{-i} would have to be removed for failing to act. But then if G_i is internationalist, it would strictly prefer to act unilaterally in a mild crisis too. If G_i is nationalist, then G_{-i} must be induced not to act in a serious crisis, which means it must be penalized for engaging in a bilateral bailout. But since G_{-i} is the only one that can induce this outcome unilaterally and can only do so when the crisis is serious, such a penalty is not intuitive: voters would have to infer that the crisis is serious and reelect G_{-i}.

Second, when G_i is the only one that acts (with certainty) irrespective of the crisis, there are two possibilities. When $s < e_i$, the unilateral bailout by G_i must end with it being removed from office. This means that

G_i cannot be induced to act in a mild crisis when it is nationalist. When $s > e_i$, then G_i must be retained after a unilateral bailout, but then the nationalist government would have to be penalized for doing nothing. Since G_i can only profit from reelection after inaction if the crisis is mild, the only inference voters can make is that when nobody acts, the crisis must be mild, which gives G_i incentives to deviate.

Thus, because of the inferences voters will be making after unexpected bilateral bailouts or inaction, only a internationalist government can be induced to carry the bailout burden unilaterally.

False-Negative Policy Failure

Proof of Proposition 3 We know from Lemma F that the probability of reelection after unilateral action should be sufficiently low, so if the equilibrium does not exist with $p_1(s_{10}) = p_2(s_{01}) = 0$, it will not exist with any other beliefs. With these beliefs and the conditions in the proposition, no government has an incentive to act regardless of the crisis.

Consider now collusion-proofness. Since inaction has worse consequences when the crisis is serious, it will be sufficient to show that governments have no incentives to collude on acting in such a crisis. Suppose that collusion is profitable in a serious crisis: $p_i(s_{11}) - t_i \alpha_i C > 1 - w_i \theta_i - t_i \alpha_i C$ (this would be true even if $p_i(s_{11}) = 0$ as long as $1/\theta_i < w_i \leq \overline{w}_i$). Such a collusive agreement cannot be sustained because each government has an incentive to renege from it given that the other will provide the bailout. For instance, under our assessment, G_1's payoff from reneging on the collusive agreement is $p_1(s_{01}) = 1$. Since the collusive agreement is not credible, the equilibrium is always collusion-proof.

Since neither government is supposed to act, unilateral bailouts can be induced by either government acting regardless of the nature of the crisis, so the second intuitive requirement has no bite.

The only deviation is for a government to act, which might be profitable if voters were to infer that the crisis is serious and retained the acting government. If G_i were to act in a serious crisis in the expectation that the voters retain it, the payoff would be $1 - t_i C > 1 - w_i \theta_i - \delta \alpha_i C$, where the inequality follows from

(A1).

Would this provide an incentive to G_i to deviate in a mild crisis? If G_i is internationalist, the answer is yes: $1-\delta C > 1-\theta_i$, where the inequality follows from (A3). Thus, a government in a internationalist dyad cannot credibly induce the profitable beliefs by deviating, which means that the equilibrium is intuitive.

If G_i is nationalist, however, the answer is no: $1 - C < 1 - \theta_i$, where the inequality follows from (A1). Thus, the nationalist government in a mixed dyad can credibly induce the profitable beliefs because it would only engage in a unilateral bailout when the crisis is serious. Thus, the equilibrium is not intuitive for mixed dyads. ∎

Limited Burden-Sharing

We have examined the two polar cases of false-positive policy failures – burden sharing (Proposition 2) and burden shifting (Proposition B). We now turn to intermediate cases where some limited burden-sharing occurs. We first show that when some such limited cooperation occurs, one of the governments must carry most of the burden regardless of the nature of the crisis (in this the result is equivalent to burden-shifting), and that the other must also be cooperating irrespective of the crisis.

Lemma I. If $\sigma_i = 1$ and $\sigma_{-i} \in (0, 1)$, then $\mu_i = 1$ and $\mu_{-i} \in (0, 1)$ in any intuitive collusion-proof equilibrium. $\square$

Proof. Assume $\sigma_1 = 1$ and $\sigma_2 \in (0, 1)$. There are three cases to consider.

CASE I: Suppose that $\mu_1 = 0$, in which case $s_{11} = 1$ and $s_{10} = 1$, so $p_i(s_{11}) = 1$ and $p_2(s_{10}) = 0$. But then $U_2(a, a|s) = 1 - t_2\alpha_2 C > 0 = p_2(s_{10}) = U_2(a, \sim a|s)$, so G_2 strictly prefers to act when the crisis is serious, a contradiction.

CASE II: Suppose that $\mu_1 \in (0, 1)$. By Lemma C, we need only consider $\mu_2 = 1$ or $\mu_2 = 0$ (because if $\mu_2 \in (0, 1)$, then both must mix in a serious crisis).

Consider first $\mu_2 = 0$, in which case $s_{11} = 1$ and $s_{00} = 0$, so $p_i(s_{11}) = p_i(s_{00}) = 1$. The indifference condition for G_1 in a mild crisis then becomes $U_1(a, \sim a|m) = p_1(s_{10}) - t_1 C = 1 - \theta_1 = U_1(\sim a, \sim a|m)$. If G_1 is nationalist, this condition cannot be satisfied because $p_1(s_{10}) - C \leq 1 - C < 1 - \theta_1$ by (A1). If G_1 is pro-EU, the condition is $p_1(s_{10}) = 1 + \delta C - \theta_1 \in (0, 1)$, because $\delta C < \theta_1 < 1 + \delta C$ by (A3). This requires that $s_{10} = e_1$. The indifference condition for G_2 in a serious crisis is $1 - t_2\alpha_2 C = p_2(s_{10})$. By (A2), this implies that $p_2(s_{10}) \in (0, 1)$, so $s_{10} = 1 - e_2$. By Lemma B, this is not a generic solution, so no such equilibrium exists.

Consider now $\mu_2 = 1$, in which case $s_{10} = 1$, and $s_{01} = 0$, so $p_1(s_{10}) = p_1(s_{01}) = 1$. But then

$U_1(a,a|m) = p_1(s_{11}) - t_1\alpha_1 C < 1 = p_1(s_{01}) = U_1(\sim a, a|m)$, so G_1 strictly prefers not to act in a mild crisis, a contradiction.

CASE III: Suppose that $\mu_1 = 1$. We have three subcases to consider.

Consider first $\mu_2 = 1$, in which case $s_{10} = 1$, so $p_1(s_{10}) = 1$ and $p_2(s_{10}) = 0$. Since G_2 mixes in a serious crisis, $U_2(a,a|s) = p_2(s_{11}) - t_2\alpha_2 C = 0 = p_2(s_{10}) = U_2(a, \sim a|s)$. Thus, $p_2(s_{11}) \in (0,1)$, so $s_{11} = e_2$ is required. Since G_1 prefers to act in a mild crisis, $U_1(a,a|m) = p_1(s_{11}) - t_1\alpha_1 C \geq p_1(s_{01}) = U_1(\sim a, a|m)$. Since $p_1(s_{01}) \geq 0$, this implies that $p_1(s_{11}) > 0$, which requires $s_{11} \geq e_1$. Since $s_{11} = e_2$, only $s_{11} > e_1$ is generic, so $p_1(s_{11}) = 1$. But then the equilibrium cannot be collusion-proof. Consider an agreement to always act in a serious crisis. This is strictly beneficial to G_1 because $1 - t_1\alpha_1 C > \sigma_2(1 - t_1\alpha_1 C) + (1-\sigma_2)(1 - t_1 C)$. Since G_2 is indifferent whenever G_1 acts, this agreement is Pareto-superior. It will be credible if G_1 does not want to break it; if G_1 fails to act when G_2 does, then its payoff will be $p_1(s_{01}) \leq 1 - t_1\alpha_1 C$, where the inequality follows from the requirement for the optimality of G_1's strategy in a mild crisis. Thus, G_1 has no incentive to break the agreement, which means that this equilibrium is not collusion-proof.

Consider now $\mu_2 = 0$, in which case $s_{11} = 1$, so $p_i(s_{11}) = 1$. Given the strategies, only G_1 can induce s_{01} and it can only do so in a serious crisis. This means that the only intuitive off-the-path belief must be $s_{01} = 1$, so $p_1(s_{01}) = 0$. Consider now an agreement to always act in a serious crisis. Since G_2 is indifferent whenever G_1 acts, we only need to show that G_1 strictly benefits from this agreement and that it would not want to break it. But then $U_1(a,a|s) = 1 - t_1\alpha_1 C > \sigma_2(1 - t_1\alpha_1 C) + (1-\sigma_2)(p_1(s_{10}) - t_1 C) = U_1(a, \sigma_2|s)$ because $1 - t_1\alpha_1 C > 1 - t_1 C \geq p_1(s_{10}) - t_1 C$, which implies that the agreement is Pareto-superior. If G_1 were to break it, $U_1(\sim a, a|s) = p_1(s_{01}) = 0 < 1 - t_1\alpha_1 C = U_1(a,a|s)$, so G_1 would not want to do so. This means that this equilibrium is not collusion-proof.

This leaves $m_2 \in (0,1)$ as the sole remaining possibility. ∎

We shall state the following result for the case where G_1 carries the larger share of the burden but the analogous result can be derived for the case where G_2 does it.

Proposition C. If $e_1 < \min(e_2, 1 - e_2) \leq s$ and G_1 is pro-EU, then there exists an intuitive collusion-proof *limited burden-sharing* equilibrium in which G_1 always acts, $\sigma_1 = \mu_1 = 1$, and G_2 sometimes does, with probabilities specified below. Define:

$$\hat{\sigma}_2 = \frac{w_1\theta_1 - (1-\alpha_1)\delta C}{w_1\theta_1 - (1-2\alpha_1)\delta C} \qquad \hat{\mu}_2 = \frac{\theta_1 - \delta C}{\theta_1 - (1-\alpha_1)\delta C}$$

$$\widetilde{\sigma}_2 = \frac{e_2}{s} \cdot \frac{s-(1-e_2)}{2e_2-1} \qquad \widetilde{\mu}_2 = \frac{1-e_2}{1-s} \cdot \frac{s-(1-e_2)}{2e_2-1}$$

$$\underline{\sigma}_2(\mu_2) = \mu_2 \cdot \frac{e_2(1-s)}{(1-e_2)s} \qquad \overline{\sigma}_2(\mu_2) = 1-(1-\mu_2)\cdot\frac{(1-e_2)(1-s)}{e_2 s}$$

$$\underline{\mu}_2(\sigma_2) = \sigma_2 \cdot \frac{(1-e_2)s}{e_2(1-s)} \qquad \overline{\mu}_2(\sigma_2) = \frac{1-s-e_2+se_2\sigma_2}{(1-e_2)(1-s)}.$$

- $s > \max(e_2, 1-e_2)$: the strategies and retention probabilities are:

$$(\sigma_2^*, \mu_2^*; p_2(s_{11}), p_2(s_{10})) = \begin{cases} (\overline{\sigma}_2(\hat{\mu}_2), \hat{\mu}_2; 1, 1-t_2\alpha_2 C) & \text{if } \hat{\sigma}_2 > \overline{\sigma}_2(\hat{\mu}_2) \\ (\hat{\sigma}_2, \underline{\mu}_2(\hat{\sigma}_2); t_2\alpha_2 C, 0) & \text{if } \hat{\sigma}_2 < \underline{\sigma}_2(\hat{\mu}_2) \\ (\underline{\sigma}_2(\hat{\mu}_2), \hat{\mu}_2; t_2\alpha_2 C, 0) & \text{if } s < \frac{1}{2} \text{ or } \hat{\sigma}_2 < \overline{\sigma}_2(0) \\ (\hat{\sigma}_2, \overline{\mu}_2(\hat{\sigma}_2); 1, 1-t_2\alpha_2 C) & \text{otherwise} \end{cases} \tag{4}$$

- $e_2 < s < 1-e_2$: if $\hat{\sigma}_2 \geq \widetilde{\sigma}_2$ and $\hat{\mu}_2 \geq \widetilde{\mu}_2$, then the strategies are given by (4); otherwise the equilibrium does not exist.

- $1-e_2 < s < e_2$: if $\hat{\sigma}_2 > \widetilde{\sigma}_2$ and $\hat{\mu}_2 > \widetilde{\mu}_2$, then the strategies are $(\widetilde{\sigma}_2, \widetilde{\mu}_2)$, with any probabilities that satisfy $p_2(s_{11}) - t_2\alpha_2 C = p_2(s_{10})$; otherwise they are given by (4).

In this equilibrium, G_1 is retained in all contingencies, whereas G_2 is retained with higher probability for cooperating in a bilateral bailout (and sometimes removed altogether for failing to act when G_1 does). □

Proof. Assume that $\sigma_1 = \mu_1 = 1$, $\sigma_2 \in (0,1)$, and $\mu_2 \in (0,1)$. The off-the-path beliefs s_{00} and s_{01} can be induced unilaterally by G_1 regardless of the nature of the crisis, so the second intuitive requirement has no bite. The on-the-path beliefs are:

$$s_{11} = \frac{\sigma_2 s}{\sigma_2 s + \mu_2(1-s)} \quad \text{and} \quad s_{10} = \frac{(1-\sigma_2)s}{(1-\sigma_2)s + (1-\mu_2)(1-s)},$$

Since G_2 mixes, $p_2(s_{11}) - t_2\alpha_2 C = p_2(s_{10})$. This implies that $p_2(s_{11}) > 0$ and $p_2(s_{10}) < 1$, so

$$s_{11} \geq e_2 \quad \text{and} \quad s_{10} \geq 1 - e_2 \tag{5}$$

are required. Moreover, it also implies that if $p_2(s_{11}) = 1$, then $p_2(s_{10}) > 0$, which then means that $p_2(s_{10}) \in (0,1)$, so $s_{10} = 1 - e_2$. Finally, if $p_2(s_{10}) = 0$, then $p_2(s_{11}) < 1$, which then means that $p_2(s_{11}) \in (0,1)$, so $s_{11} = e_2$ must hold. Collectively, these imply that at the voters in G_2 must be indifferent at least one, and possibly both, of the on-the-path information sets. Thus, the three possible configurations are $(s_{11} > e_2, s_{10} = 1 - e_2)$, $(s_{11} = e_2, s_{10} > 1 - e_2)$, and $(s_{11} = e_2, s_{10} = 1 - e_2)$.[2]

From (5), we can infer that

$$\underline{\sigma}_2(\mu_2) \equiv \mu_2 \cdot \frac{e_2(1-s)}{(1-e_2)s} \leq \sigma_2 \leq 1 - (1-\mu_2) \cdot \frac{(1-e_2)(1-s)}{e_2 s} \equiv \overline{\sigma}_2(\mu_2).$$

Observe now that since $\underline{\sigma}_2(0) = 0$ and $\overline{\sigma}_2(1) = 1$, and because both $\underline{\sigma}_2(\cdot)$ and $\overline{\sigma}_2(\cdot)$ are linear and strictly increasing, if $\overline{\sigma}_2(0) < 0$ and $\underline{\sigma}_2(1) > 1$, it will be the case that $\underline{\sigma}_2(\mu_2) > \overline{\sigma}_2(\mu_2)$ for all μ_2; i.e., there will be no mixing probabilities that can satisfy the necessary conditions. Since $\underline{\sigma}_2(1) > 1 \Leftrightarrow s < e_2$ and $\overline{\sigma}_2(0) < 0 \Leftrightarrow s < 1 - e_2$, this equilibrium can only exist when $s \geq \min(e_2, 1-e_2)$.

Observe now that $\underline{\sigma}_2(\mu_2) = \overline{\sigma}_2(\mu_2)$ yields, when it exists, $\widetilde{\sigma}_2$ and $\widetilde{\mu}_2$ as specified in the proposition. These are obviously the mixing probabilities that result in $(s_{11} = e_2, s_{10} = 1 - e_2)$. Note further that from our inferences about the admissible configurations, we can conclude that any equilibrium requires that

2. This is because $p_1(s_{11}) = 1 \Rightarrow p_1(s_{10}) \in (0,1)$, $p_1(s_{11}) = 0$ is not admissible, and $p_1(s_{11}) \in (0,1) \Rightarrow \{p_2(s_{10}) = 0 \text{ or } p_2(s_{10}) \in (0,1)\}$ because $p_2(s_{10}) = 1$ is not admissible.

the mixing probabilities lie along either $\underline{\sigma}_2(\cdot)$ only, $\overline{\sigma}_2(\cdot)$ only, or both (i.e., be at the intersection as the probabilities we just derived).

There are three possible configurations then:

- $s \geq \max(e_2, 1-e_2)$, in which case $\underline{\sigma}_2(\mu_2) < \overline{\sigma}_2(\mu_2)$ for all μ_2;
- $e_2 < s < 1-e_2$, in which case $\underline{\sigma}_2(\mu_2) < \overline{\sigma}_2(\mu_2)$ only if $\mu_2 > \widetilde{\mu}_2$;
- $1-e_2 < s < e_2$, in which case $\underline{\sigma}_2(\mu_2) < \overline{\sigma}_2(\mu_2)$ only if $\mu_2 < \widetilde{\mu}_2$.

Since G_1 must prefer to act, $U_1(a, \sigma_2) \geq U_1(\sim a, \sigma_2)$ and $U_1(a, \mu_2) \geq U_1(\sim a, \mu_2)$, or:

$$\sigma_2(p_1(s_{11}) - t_1\alpha_1 C) + (1-\sigma_2)(p_1(s_{10}) - t_1 C) \qquad (6)$$

$$\geq \sigma_2 p_1(s_{01}) + (1-\sigma_2)(p_1(s_{00}) - w_1\theta_1 - t_1\alpha_1 C)$$

$$\mu_2(p_1(s_{11}) - t_1\alpha_1 C) + (1-\mu_2)(p_1(s_{10}) - t_1 C) \qquad (7)$$

$$\geq \mu_2 p_1(s_{01}) + (1-\mu_2)(p_1(s_{00}) - \theta_1)$$

CASE I: Suppose that $p_1(s_{11}) - t_1\alpha_1 C < p_1(s_{10}) - t_1 C$, which can only be satisfied if $p_1(s_{10}) > 0$ and $p_1(s_{11}) < 1$. This makes colluding to a unilateral bailout by G_1 Pareto-dominant. We now show that if this equilibrium is collusion-proof, then it must be non-generic.

Observe that the equilibrium will be collusion-proof only when the agreement is not credible in a serious crisis. Since G_2 is indifferent when G_1 acts, we only need to consider a deviation by G_1 to inaction when G_2 is not acting with certainty. The agreement will not be credible only if $U_1(\sim a, \sim a|s) = p_1(s_{00}) - w_1\theta_1 - t_1\alpha_1 C > p_1(s_{10}) - t_1 C = U_1(a, \sim a|s)$, which can only be satisfied if $p_1(s_{10}) < 1$. Recalling that $p_1(s_{10}) > 0$, this implies that $p_1(s_{10}) \in (0, 1)$, so $s_{10} = e_1$ is required.

Observe further that if $p_1(s_{01}) \geq p_1(s_{11}) - t_1\alpha_1 C$, then the other conditions, $p_1(s_{00}) - w_1\theta_1 - t_1\alpha_1 C > p_1(s_{10}) - t_1 C > p_1(s_{11}) - t_1\alpha_1 C$, would imply that (6) cannot be satisfied. It must be the case, then, that $p_1(s_{11}) - t_1\alpha_1 C > p_1(s_{01}) \geq 0$. Recalling that $p_1(s_{11}) < 1$, we conclude that $p_1(s_{11}) \in (0, 1)$, so $s_{11} = e_1$ is also required.

But if $s_{10} = s_{11} = e_1$, then $\sigma_2 = \mu_2$, which in turn implies that $s_{10} = s_{11} = s$. But then the collusion-proof equilibrium can only exist if $s = e_1$, which is non-generic.

CASE II: Consider $p_1(s_{11}) - t_1\alpha_1 C > p_1(s_{10}) - t_1 C$. This means that G_1 strictly prefers a bilateral bailout to a unilateral one, so it provides incentives for collusion to such a bailout (because G_2 is indifferent whenever G_1 acts). For the equilibrium to be collusion-proof, this agreement must not be credible. Since G_2 is indifferent, it must be G_1 that would not want to abide by it. Thus, the equilibrium requires that $U_1(\sim a, a) = p_1(s_{01}) > p_1(s_{11}) - t_1\alpha_1 C = U_1(a, a)$. This now requires that $p_1(s_{00}) - \theta_1 < p_1(s_{10}) - t_1 C$ or else (7) cannot be satisfied. We conclude that the preference ordering for G_1 in this equilibrium must be

$$p_1(s_{01}) > p_1(s_{11}) - t_1\alpha_1 C > p_1(s_{10}) - t_1 C > p_1(s_{00}) - \theta_1 \tag{8}$$

Although there is an infinite number of ways that (8) can be satisfied, it does place some limits on the admissible probabilities. Observe now that this ordering ensures that at $\sigma_2 = \mu_2 = 0$ both (6) and (7) are satisfied with strict inequality, whereas at $\sigma_2 = \mu_2 = 1$ neither one is satisfied. Since the expected utilities are linear in the probabilities, it follows that there exist unique values that satisfy the conditions with equality:

$$\hat{\sigma}_2 = \frac{p_1(s_{10}) - t_1 C - [p_1(s_{00}) - w_1\theta_1 - t_1\alpha_1 C]}{p_1(s_{10}) - t_1 C - [p_1(s_{00}) - w_1\theta_1 - t_1\alpha_1 C] + p_1(s_{01}) - [p_1(s_{11}) - t_1\alpha_1 C]}$$
$$\hat{\mu}_2 = \frac{p_1(s_{10}) - t_1 C - [p_1(s_{00}) - \theta_1]}{p_1(s_{10}) - t_1 C - [p_1(s_{00}) - \theta_1] + p_1(s_{01}) - [p_1(s_{11}) - t_1\alpha_1 C]}$$

such that (6) is satisfied if, and only if, $\sigma_2 \leq \hat{\sigma}_2$ and (7) is satisfied if, and only if, $\mu_2 \leq \hat{\mu}_2$. These establish upper bounds on the equilibrium probabilities for G_2's strategy.

Since G_1's expected payoffs are strictly increasing in G_2's mixing probabilities and because G_2 is indifferent among mixtures, any equilibrium of this type is Pareto-inferior to any other equilibrium of this type with higher mixing probabilities. Since there is no reason to expect that governments not to coordinate on a Pareto-super equilibrium in this set, we shall now derive the appropriate mixtures.

To understand the following, note that the definitions in the propositions are such that

$$\underline{\mu}_2(\sigma_2) \equiv \underline{\sigma}_2^{-1}(\sigma_2) \quad \text{and} \quad \overline{\mu}_2(\sigma_2) \equiv \overline{\sigma}_2^{-1}(\sigma_2).$$

In other words, just like $\underline{\sigma}_2(\mu_2)$ and $\overline{\sigma}_2(\mu_2)$ return the values of σ_2 such that (σ_2, μ_2) satisfies $s_{11} = e_2$ and $s_{10} = 1 - e_2$, respectively for any given value of μ_2, so do $\underline{\mu}_2(\sigma_2)$ and $\overline{\mu}_2(\sigma_2)$ for any given value of σ_2.

Recalling the three possible configurations that restrict the sets of admissible mixing probabilities, we observe that there are six cases to consider, depending on where $(\hat{\sigma}_2, \hat{\mu}_2)$ is located with respect to these sets. The first three cases can occur under each of the configurations:

(i) $\hat{\sigma}_2 \in [\underline{\sigma}_2(\hat{\mu}_2), \overline{\sigma}_2(\hat{\mu}_2)]$. Since this means that $\underline{\sigma}_2(\hat{\mu}_2) < \hat{\sigma}_2 < \overline{\sigma}_2(\hat{\mu}_2)$, it follows that $s_{11} > e_2$ and $s_{10} > 1 - e_2$, but we know that this cannot occur in this equilibrium. One possible reduction is to the admissible probabilities $(\hat{\sigma}_2, \overline{\mu}_2(\hat{\sigma}_2))$, which makes the smallest admissible decrease in μ_2, and so dominates all other pairs that involve $\overline{\sigma}_2(\cdot)$ since they require not only further reductions in μ_2 but also lowering σ_2. The other possible reduction is to $(\underline{\sigma}_2(\hat{\mu}_2), \hat{\mu}_2)$, which dominates all other pairs that involve $\underline{\sigma}_2(\cdot)$.

Which of these would be Pareto-superior? Obviously, conditional on knowing that the crisis is serious, G_1 would have a strict preference to the equilibrium with $\hat{\sigma}_2$, but on knowing that the crisis is mild, it will strictly prefer the equilibrium with $\hat{\mu}_2$. In expectation, therefore, his preference depends on his priors: if $s > 1/2$, the former equilibrium is superior, otherwise, the latter is. We conclude that the Pareto-dominant equilibrium in this case must involve the strategies $(\hat{\sigma}_2, \overline{\mu}_2(\hat{\sigma}_2))$ if $s > 1/2$, and the strategies $(\underline{\sigma}_2(\hat{\mu}_2), \hat{\mu}_2)$ otherwise.

We should note that when $\overline{\sigma}_2(0) > \hat{\sigma}_2 > 0$, then $\overline{\mu}_2(\hat{\mu}_2)$ does not exist. Since $(\hat{\sigma}_2, 0)$ cannot occur in equilibrium by Lemma I and since $\underline{\sigma}_2(0) = 0$, so $(0, 0)$ is the other candidate profile, which is an altogether different form of equilibrium (that we studied in Proposition B), it follows that the only equilibrium of this type must be $(\underline{\sigma}_2(\hat{\mu}_2), \hat{\mu}_2)$.

(ii) $\hat{\sigma}_2 > \overline{\sigma}_2(\hat{\mu}_2) > \underline{\sigma}_2(\hat{\mu}_2)$. In this case, $\hat{\sigma}_2$ is not admissible, and the smallest reduction that admits an equilibrium is to $\overline{\sigma}_2(\hat{\mu}_2)$. This is because $\overline{\sigma}_2(\cdot)$ is increasing, which means that any other reduction to an admissible pair would require both σ_2 and μ_2 to decrease. This means that G_2's strategy in the Pareto-dominant equilibrium is $(\overline{\sigma}_2(\hat{\mu}_2), \hat{\mu}_2)$.

(iii) $\hat{\sigma}_2 < \underline{\sigma}_2(\hat{\mu}_2) < \overline{\sigma}_2(\hat{\mu}_2)$. In this case, $\hat{\mu}_2$ is not admissible, and the smallest reduction that admits an equilibrium is to μ_2 that solves $\underline{\sigma}_2(\mu_2) = \hat{\sigma}_2$, which we can write compactly as $(\hat{\sigma}_2, \underline{\mu}_2(\hat{\sigma}_2))$.

If $e_2 < s < 1 - e_2$, then any solution requires $\sigma_2 \geq \widetilde{\sigma}_2$ and $\mu_2 \geq \widetilde{\mu}_2$. By definition of this case, $\hat{\mu}_2 > \widetilde{\mu}_2$ (because otherwise $\underline{\sigma}_2(\hat{\mu}_2) < \overline{\sigma}_2(\hat{\mu}_2)$ would not be satisfied). If $\hat{\sigma}_2 \leq \widetilde{\sigma}_2$, then there can be no equilibrium: since $\underline{\sigma}_2(\cdot)$ is decreasing, any reduction of $\hat{\mu}_2$ to the required μ_2 would result in $\underline{\sigma}_2(\mu_2) < \widetilde{\sigma}_2$, which violates the requirement that $\sigma_2 \geq \widetilde{\sigma}_2$. Thus, if $e_2 < s < 1 - e_2$ this equilibrium can only exist if $\hat{\sigma}_2 > \widetilde{\sigma}_2$. It is readily verified that the other two configurations do not need additional restrictions.

The last three cases can only occur if $(\widetilde{\sigma}_2, \widetilde{\mu}_2)$ exists; i.e., if $\underline{\sigma}_2(\cdot)$ and $\overline{\sigma}_2(\cdot)$ intersect, which means that either $e_2 < s < 1 - e_2$ or $1 - e_2 < s < e_2$ obtains:

(iv) When $e_2 < s < 1 - e_2$, and either $\hat{\sigma}_2 < \widetilde{\sigma}_2$ or $\hat{\mu}_2 < \widetilde{\mu}_2$ obtains. In this case, the equilibrium does not exist because $(\widetilde{\sigma}_2, \widetilde{\mu}_2)$ are the smallest mixing probabilities that admit existence, and these exceed the limits that rationalize G_1's strategy. (This case overlaps with the exception in (iii) above.)

(v) When $1 - e_2 < s < e_2$ and both $\hat{\sigma}_2 > \widetilde{\sigma}_2$ and $\hat{\mu}_2 > \widetilde{\mu}_2$ obtain. The smallest reduction that admits an equilibrium is to the Pareto-dominant one: $(\widetilde{\sigma}_2, \widetilde{\mu}_2)$.

(vi) When $1 - e_2 < s < e_2$ and both $\hat{\sigma}_2 \leq \widetilde{\sigma}_2$ and $\hat{\mu}_2 > \widetilde{\mu}_2$ obtain. The smallest reduction is to the equilibrium where G_2's strategy is $(\hat{\sigma}_2, \underline{\mu}_2(\hat{\sigma}_2))$. (This is analogous to the solution we derived in (ii) above.)

This exhausts the possibilities and completes the description of the Pareto-dominant equilibrium. It is important to realize that these solutions all ensure that the pair of mixing probabilities will satisfy at least one, and possibly both, of the constraints in (5) with equality, as required.

Moreover, since the equilibrium mixing probabilities always lie on either $\underline{\sigma}_2(\cdot)$ or $\overline{\sigma}_2(\cdot)$ with the precise location dependent all exogenous parameters except e_1, any solution where the resulting posterior beliefs s_{11} and s_{10} happen to equal some precise value of e_1 cannot be generic. In other words, $s_{11} \neq e_1$ and $s_{10} \neq e_1$ in any generic equilibrium.

Selecting the Pareto-dominant equilibrium is not particularly constraining because the preference ordering in (8) can be satisfied in infinite ways (as can the indifference condition for G_2), and they determine the crucial limiting probabilities $\hat{\sigma}_2$ and $\hat{\mu}_2$. Consider first the off-the-path beliefs s_{01} and s_{00}. Since G_2 is mixing, a deviation by G_1 is going to result in inaction with positive probability. Unless G_2's probability of inaction in a serious crisis is significantly smaller than its probability of inaction in a mild crisis, this deviation would be worse for G_1 when the crisis is serious. If so, G_1 should be less likely to deviate when the crisis is serious: $\sigma_1 > \mu_1$. Since

$$\sigma_1 > \mu_1 \quad \Rightarrow \quad \lim_{\sigma_1 \to 1, \mu_1 \to 1} s_{01} = \lim_{\sigma_1 \to 1, \mu_1 \to 1} s_{00} = 0,$$

we can consider $p_i(s_{00}) = p_1(s_{01}) = 1$ and $p_2(s_{01}) = 0$ as reasonable off-the-path expectations regardless of the values of e_i. In that case, (8) cannot be satisfied for a nationalist G_1: $p_1(s_{10}) - C \leq 1 - C < 1 - \theta_1 = p_1(s_{00}) - \theta_1$. Thus, with these reasonable off-the-path expectations, the equilibrium can only exist if G_1 is pro-EU.

For the rest of the proof, assume that G_1 is pro-EU. Since $1 - \theta_1 > 0$, it must be that $p_1(s_{11}) > p_1(s_{10}) >$

0 as well, so $s_{10} \geq e_1$ and $s_{11} \geq e_1$ are both necessary. Since no equilibrium with $s_{11} = e_1$ or $s_{10} = e_1$ is generic (by the argument above), we conclude that in any equilibrium it must be that $s_{11} > e_1$ and $s_{10} > e_1$, so $p_1(s_{11}) = p_1(s_{10}) = 1$. In other words, this equilibrium requires not only that G_1 is pro-EU but also that it gets reelected regardless of the contingency.

Consider now the three admissible configurations of mixing probabilities for G_2. If $(s_{11} > e_2, s_{10} = 1 - e_2)$, then a necessary condition for $s_{11} > e_1$ and $s_{10} > e_1$ is $e_1 < 1 - e_2$, that is, non-competitive elections. The three orderings that admit possible values for the posterior beliefs to solve them while preserving necessary inequalities are: (i) $1 - e_2 > e_1 > e_2$: $s_{11} > e_1$ is not guaranteed; (ii) $e_2 > 1 - e_2 > e_1$: sufficient to guarantee both $s_{11} > e_1$ and $s_{10} > e_1$; (iii) $1 - e_2 > e_2 > e_1$: sufficient. If $(s_{11} = e_2, s_{10} > 1 - e_2)$, then a necessary condition for $s_{11} > e_1$ and $s_{10} > e_1$ is $e_2 > e_1$. If $1 - e_2 > e_2$, then this condition is also sufficient. If $1 - e_2 < e_2$, then $e_1 < e_2$ is sufficient. The three orderings that admit possible values for the posterior beliefs to solve them while preserving necessary inequalities are: (i) $e_2 > e_1 > 1 - e_2$: $s_{10} > e_1$ is not guaranteed; (ii) $e_2 > 1 - e_2 > e_1$: sufficient; (iii) $1 - e_2 > e_2 > e_1$: sufficient. If $(s_{11} = e_2, s_{10} = 1 - e_2)$, then the necessary conditions are $e_2 > e_1$ and $1 - e_2 > e_1$. The two orderings that admit possible values for the posterior beliefs are: (i) $e_2 > 1 - e_2 > e_1$: sufficient; (ii) $1 - e_2 > e_2 > e_1$: sufficient. To summarize these results, $e_1 < \min(e_2, 1 - e_2)$ is sufficient to guarantee that on-the-path posterior beliefs will satisfy the requirements that ensure that G_1 is reelected with certainty and the probabilities of reelection for G_2 are sequentially rational. $\blacksquare$

Slovakia's Burden-Shifting, Summer 2010

After the Eurozone members officially agreed to the bailout on May 2, the Slovakian government – the newest member in the Eurozone – proved unwilling to ratify the agreement domestically, thereby scuttling its promise to provide its share of 1.02% (€150 per Slovak citizen) to the Greek bailout package. The domestic ratification was delayed until after the elections. The government was ousted and the new government refused to sign the deal. Slovakia never paid its share of the bailout. Why did the Slovakian government agree to the bailout before the elections, but then decided to delay it until after the elections? And why did the new government not sign the deal after the elections?

From the vantage point of the Slovakian government, the situation maps onto the burden-shifting equilibrium (see Proposition B).[3] Recall that the burden-shifting equilibrium requires (1) that the governments who provide the bailout are pro-EU (with no restriction on the government who decides to shift the burden), and (2) that the citizens are relatively certain that the crisis is serious. Both requirements were satisfied after May 2. First, it had become obvious that governments were expecting for the Eurozone to fall apart without a serious intervention by the IMF and the Eurozone members. Second, all other Eurozone governments had committed to the bailout package (i.e., they are pro-EU). Initially, the Slovak government expected to win the elections hands down. Fico's Smer party was at the top of the polls and had pledged to boost social spending after elections.[4] Since the citizens were more or less convinced that the crisis was serious (despite lingering skepticism about whether the Greeks deserved help), providing the bailout should not have hurt the government's electoral prospects. With e_{-i} relatively low but s high, the situation resembles the second parameter configuration of the equilibrium, $e_i < s < 1 - e_i$, where both governments expect to be retained for acting.

3. Slovakia is G_{-i} and the other Eurozone members are G_i.

4. *Agence France Presse*. May 8, 2010. "Greek aid riles eurozone newcomer Slovakia."

Before the Slovak government could act, however, its domestic prospects worsened considerably. The opposition parties had opposed the Greek bailout, and now they managed to make it a key electoral problem. The largest opposition party, the liberal SDKY, announced that it would try to block the loan. Even Smer's coalition partner, the nationalist SNS, declared itself against the loan.[5] In addition to the public's unhappiness about helping people they perceived as having lived beyond their means, the Slovak government would have to borrow to pay their share of the loan. Experts were worried that Slovakia would not receive that money back.[6] The Greek bailout became increasingly important as a campaign issue. In mid May, opposition parties attempted to hold a parliamentary debate on Slovakia's participation in the Greek bailout and the government used various tactics to block that initiative. The debate was eventually cancelled after four unsuccessful attempts to reach the quorum necessary to open it (when members of the government party did not show up). Fico was criticized for not allowing a debate and for negotiating a deal that was highly disadvantageous for the Slovak population. The opposition argued that the only reason why the government had agreed to the loan was because it was leading Slovakia down the same path and that it expected Slovakia itself to need European financial support soon.[7]

The coalescence of the opposition on the Greek bailout lowered Smer's electoral chances (increased e_{-i}). Since it is unlikely that in the interim the voters had also lowered their estimate about the seriousness of the crisis, the resulting situation resembles the fourth parameter configuration of the equilibrium, $s > \max(e_i, 1 - e_i)$, where the government that fails to act is removed. In other words, whereas the government initially thought it would win the election because the opposition was not very attractive and voters thought the crisis was serious enough to reward the government for acting, the increasing support for the opposition resulted in a situation where the uncertainty about the seriousness of the crisis was no longer sufficient to make voters reward the government for providing the bailout. In such unpleasant circumstances, the

5. *Agence France Presse*. May 3, 2010. "Slovak PM wants Greece to act before borrowing.

6. *The Slovak Spectator*. June 28, 2010. "Slovakia stalls on euro bailout."

7. *The Slovak Spectator*. May 17, 2010. "Slovakia's new election issue: Greece."

government could at least save itself the cost of the action by shifting the entire burden on the other members of the Eurozone.

Interestingly, the equilibrium indicates that at this point Smer was doomed: it would be removed both on and off the path of play (i.e., irrespective of its actions with respect to the bailout). This does not mean, of course, that the government took it lying down. In fact, Smer attempted to deflect some of the criticism by… agreeing with it. As the elections approached, Fico grew increasingly hostile to a bailout package. Although he said that the Slovak government would not block the package itself, he insisted that any loan would have to be approved by whichever government won from the elections. No money would be transferred before that.[8] The last-ditch effort did not work: the government was ousted in June, and replaced by a different coalition controlling a slim majority (79 out of 150 seats). In fulfillment of campaign promises, the new government completed the burden-shifting by refusing to ratify the Greek bailout package.[9] Ivan Kuhn, member of the Conservative Institute think tank, justified the decision by the government:

> The European Financial and Stabilisation mechanism can work in terms of [its] legal and economic aspects without Slovakia. Slovakia's contribution is only a small fragment of the financial package. Yet the rescue package was created de facto beyond the legislative framework of the EU, so the presence of all the EU members is not necessary.[10]

In other words, the Slovak government had successfully shifted the burden onto its Eurozone colleagues.

One might wonder whether the Eurozone members could punish Slovakia for this blatant instance of free-riding. Since ours is a simple two-period model that does not allow for conditional strategies that could, in

8. The delay could not be attributed to the length of the legislative process; Fico's government had repeatedly used a shortened legislative procedure to approve different bills.

9. The new coalition comprised the liberal SDKU-DS, Freedom and Solidarity, the Christian Democrat KDH, and the ethnic Hungarian party Most-Hid) under prospective prime minister, Iveta Radicova. *Agence France Presse*. June 13, 2010. "Slovakia's emerging coalition plans austerity drive."; *The Slovak Spectator*. June 28, 2010. "Slovakia stalls on euro bailout."

10. *The Slovak Spectator*. June 28, 2010. "Slovakia stalls on the euro bailout."

principle, admit sanctions designed to deter such behavior, we cannot speak to that except to say that if, for some reason, such punishment were not credible, the behavior should emerge even in a repeated setting. In fact, the Slovak government was *not* at all concerned about possible sanctions from the European Union and its refusal to participate came despite fierce pressure from the other Eurozone members. With startling, but refreshing, frankness, Kuhn summarized the problem with potential sanctions:

> But in no way do I agree that Slovakia in such a case would find itself rejected by the rest of the EU and that we would be punished. This is something that the EU and its member countries cannot afford to do to another member country.

Thus, whereas it was electoral problems that prompted the Slovak government to backtrack on its initial agreement to participate in the bailout, its refusal to participate was not an attempt to win the elections: it was a simple matter of saving the financing costs once it was clear that others will pick up the tab.

Merkel's "Electoral Delay", Summer 2013

The first bailout did not solve the financial crisis. A second bailout was provided to Greece in July 2011, and after some up and downs, rumors about a third bailout surfaced in 2013. In August, barely a month before the federal elections, finance minister Wolfgang Schäuble announced that a third package for Greece might be in the offing.[11] Why had the German government not been more forthcoming about a third bailout earlier in 2013? Why had it been silent until the German Central Bank's statement forced its hand?[12] And why did it then agree to the bailout before the elections?

Some observers – the political opposition in particular – explained that this was merely a repeat of the failed 2010 strategy; that Merkel was delaying the bailout decision until after the elections. Gerhard Schröder, former chancellor and member of the SPD, claimed at rallies that Merkel had lied to the electorate earlier when she had claimed that she had not expected any more aid for Greece: "You cannot win the trust of the population if you conceal and disguise the truth. You can only win the trust of the population if you speak out clearly, and truthful."[13] Peer Steinbrück, front-runner for the SPD opposition party, warned Merkel not to present the German population with the bill after the election: "It is time that Mrs. Merkel speaks the truth about the costs of the Greek bailout."[14]

Some media outlets also perceived differences in sensitivity to German domestic politics in the other Eurozone members and the European Commission. Whereas in 2010 these other actors had made it impossible to conceal the bailout debate even temporarily — in fact, they had even publicly tried to shame Merkel for delaying the bailout until after the NRW elections — they were now suspiciously quiescent even after the

11. *Der Spiegel*. August 20, 2013. "Schäble hält neues Griechenland-Programm für nötig."; *Agence France Presse*. August 20, 2013. "Germany's Schäble says Greece will need more aid."; *The Times*. August 21, 2013. "The Greek cat's out of the bag."

12. *Der Spiegel*. August 11, 2013. "Schuldenkrise in Europa: Bundesbank recent 2014 mit neuem Hilfspaket für Griechen."

13. *Der Spiegel*. August 20, 2013. "Schröder macht Griechenland zum Wahlkampfthema."; *The Times*. August 14, 2013. "Merkel accused of lying over Greek bailout."

14. *Der Spiegel*. August 20, 2013. "Schröder wetter gegen "Lügen" bei der Griechen-Rettung."

need for further action on Greece and Portugal had become fairly obvious in July. "Conspiracy of silence" theories alleged that the other EU members had learnt not to force the German government into action before important elections, and were now collaborating with it in delaying bailout discussions until after the federal elections in September.[15]

This sort of reasoning seems to suggest that the hypoactive equilibrium is in play again. However, the parameter configuration in 2013 does not map onto the requirements for this equilibrium because (i) German voters were quite confident that the crisis was very serious, and (ii) the opposition was electorally weak.

Ironically, it might haven been the first bailout debacle and the subsequent inability to end the crisis that had shifted the beliefs of the German voters. By 2013, the German public was firm in its conviction that the crisis was indeed extremely serious for the country. Public opinion polls conducted by *Forschungsgruppe Wahlen* revealed that the Eurocrisis was seen as the second most important problem in Germany, just behind domestic unemployment and ahead of the economic situation, education, and retirement benefits.

Strong economic growth and very low unemployment had contributed to the high support for the incumbent government. The boost came just as the electoral campaign began: GDP grew by 0.7% in the second quarter of 2013, following a stagnant first quarter and contraction in the last quarter of 2012. German growth helped to achieve a Eurozone average growth of 0.3%.[16] Unemployment at 6.8% was also only slightly above the natural rate of unemployment and near the lowest levels since reunification in 1990. The CDU expected up to 42% of the vote, whereas the SPD trailed far behind with only 24%.[17] Merkel had also recovered her standing and "gained a reputation as a safe pair of hands, a cautious and skilled operator throughout the eurozone crisis."[18] Her approval ratings were at 70%.

These data suggest that the conditions in late summer 2013 satisfied the parameter configuration for the

15. *The Financial Times*. July 10, 2013. "Code of silence seeks to avert bailout revolt in German poll."
16. *The Business Times*. August 16, 2013. "Merkel approaches poll on rocky eurozone boat."
17. *The Financial Times*. August 23, 2013. "German growth figures set to offer election boost to Merkel."
18. *Daily Mail*. August 26, 2013. "German election could be a 'game-changer'."

burden-sharing equilibrium, $s \geq \max(e_1, e_2)$. In this equilibrium, voters reelect governments that participate in a bilateral bailout even when they know a government to be pro-EU. From the electoral perspective, there is no surprise that the German government would announce the bailout before the election. In the event, and unlike the 2010 fiasco, there was no punishment: support for the CDU/CSU remained at 41%, the SPD at 25%, and the FDP at 6%.[19] During the elections, the CDU received 41.5% of the vote (the SPD got 25.7%) and remained in power.[20]

The burden-sharing equilibrium logic suggest that there should have been no electoral reason to delay decision on a bailout given the importance the German voters already attached to the crisis. Such strong priors could have allowed Merkel to pour more money into Greece even if the crisis had, in fact, abated, and do so without fear of domestic punishment. Schäuble made a point of presenting his revelation as "old news" and very much in line with expectations: "the public was always told so."[21] Merkel was surprised by Schröder's attack: "Everyone knew what Schäuble said about Greece."[22] Schäuble, in fact, had already said in February 2012 that a third bailout could not be ruled out.[23] This was also when a report by the EU and the IMF had indicated that a bailout might be needed.[24] Thus, whatever had caused the delay in announcing the third bailout, it could not have been concern about a possible fallout during the September federal elections.[25]

19. *The Financial Times*. August 23, 2013. "German growth figures set to offer election boost to Merkel."

20. Greece received its third bailout package worth €8.3 billion in April of 2014. A week later, Greece returned to the financial markets 'triumphantly' with a €3bn bond sale (*Financial Times*. April 1, 2014. "Eurozone signs off on delayed €8.3bn bailout for Greece.").

21. *Der Spiegel*. August 21, 2013. "Schämbles Grichenland-Beichte. Endlich ehrlich."; *Agence France Presse*. August 20, 2013. "Germany's Schäble says Greece will need more aid."

22. *Associated Press Archive*. August 22, 2013. "Greek bailout talk ruffles German election."

23. *Irish Times*. February 25, 2012. "Schäuble concedes third Greek bailout on the cards."

24. *New York Times*. February 20, 2012. "Europe agrees on new bailout to help Greece avoid default."

25. Schröder's claims were so out of step with the voters that the CDU went on the offensive and blamed the need for a bailout on the SPD. They attacked Schröder who, in his capacity as chancellor at the time, had been instrumental in letting Greece join the Eurozone even though it had not been ready. It had also been his economic policies that had led to Germany's violation of

What could account for the alleged "conspiracy of silence"? In our model, the bailout package is implemented successfully whenever someone acts on it. This abstracts from the much more complex reality where financial aid is conditional on economic and fiscal reforms in recipient countries. Since we have a wealth of models that deal with contingent disbursements, we saw no need to introduce these considerations in our model, which is focused on the interaction between donors and their domestic audiences. In this particular case, however, it seems that it was the Greek government that was the intended recipient of these delaying tactics. The Eurozone members seem to have agreed not to discuss a third bailout in order to pressure the Greek government into implementing the required reforms.

This interpretation is supported by several facts. First, the Greek government had been relatively slow in implementing the conditions imposed with the second bailout. The inability to form a new coalition in May after the elections had created a political crisis and renewed speculation about a Greek exit from the Eurozone and a run on Greek banks. A new round of elections in June had brought in a governing coalition but even though it had agreed in principle to the conditionality of the bailout program, it had also asked for an extension until 2017.[26] In August, the IMF revealed that Greece's bailout program was widely off track and the Troika withheld the scheduled disbursement of €31.5 billion.[27] There were widespread fears that a clear commitment to a third bailout would further erode the incentives of the Greek government to pursue painful reforms. In August, the Eurozone governments publicly committed to delay any decision on further bailout money for Greece until after the Troika was satisfied with the progress of Greek reforms.[28]

Seen in this light, the "conspiracy of silence" was not designed to allow the German government to win the federal elections but to keep the reform pressure on the Greek government. This is why criticism

the Stability and Growth Pact (*Der Spiegel*. August 21, 2013. "Union contort Schrd̈oers Griechenland-Attacke."). Merkel simply asserted that Greece should never have been allowed to join the Euro. (*CNN Wire*. August 28, 2013. "Greece joining euro was a mistake.").

26. *Financial Times*. August 14, 2012. "Greece seeks 2-year austerity extension."
27. *Ekathimerini*
28. *Financial Times*. August 22, 2012. "Eurozone leaders delay Greece aid decision."

of Merkel by other Eurozone members, so vocal in 2010, was now conspicuous by its absence. Instead, the European Commission supported Merkel and accused the German opposition of pursuing unrealistic campaign strategies. It plainly stated that it had been necessary to keep discussion of a third bailout under wraps in order to motivate Greece to pursue the required reforms.[29] Given the logic of the burden-shifting equilibrium, one is hard pressed not to agree with this reasoning.

29. *Die Welt*. August 26, 2013. "German EU Commissioner: New Greek aid to be in lower double-digit billion range."