# Divided Government, Financial Crises and IFI Support: A Political Economy Approach

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## Abstract

Crisis are often related with changes in government, and are quite costly politically. Policy measures to avoid crises, such as tightening monetary policy, increasing taxes or reducing spending, are also costly politically. Therefore, an opposition party can try to win power by not supporting the policy adjustments needed to avoid a crisis. We show that the opposition is less likely to support adjustment if the gains from being in power are large and if the potential crisis is shallow. International support can have two effects: i) it reduces the probability of a crisis if it works as catalytic finance, and ii) it provides incentives for policy adjustment through conditionality. The incumbent will have more incentives to reform if conditionality does not significantly erode the benefits that accrue from holding office. On the other hand, conditionality is unlikely to provide incentives to the opposition to support reform if it was not willing to do so without conditionality. This occurs because a lower probability of a crisis reduces the chances that the opposition wins the next election, and because conditionality can reduce its benefits from holding office.

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# I. Introduction

A crisis is very costly to executive incumbents, who often are thrown out of office in the aftermath of a crisis.[2] Policy reform to avoid a crisis can also be costly politically. Examples are those measures that have negative short term effects on aggregate demand or on the income of certain interest groups such as expenditure cuts, tax increases, tighter monetary policy and stronger regulation and supervision of the financial sector.

The political costs of a crisis, or of efforts to avoid one, may reduce the opposition's incentives to support any reform. If the benefits that arise from holding office are substantial, the opposition can be willing to risk the occurrence of a crisis if this increases their probability of doing well in the next election, as the electorate is less likely to support an incumbent after a crisis has occurred.

The interaction between an incumbent and the opposition is analyzed in Section II. The objective is to assess when the incumbent follows reforms and when the opposition supports them. After analyzing the basic interaction between the incumbent and the opposition, an international financial institution (IFI), such as the IMF, is included in Section III as a third participant. The IFI provides resources that work as catalytic finance and reduce the probability of a crisis. On the other hand, the provision of resources by the IFI is conditional on effort by domestic policymakers, and may reduce the benefits received by the policymakers when being in office. This can happen if, as part of conditionality, domestic policymakers are more constrained in allocating resources to certain interest groups.

Given that the probability that the incumbent is reelected falls if a crisis occurs before the elections, it has more incentives than the opposition to promote reform. Given the simple framework that is used, where the incumbent and the opposition have identical preferences and the only difference arises from holding office, the opposition is never more willing to undertake reform than the incumbent. Both policymakers react similarly to changes in the parameters of the model, though the incumbent is always more willing to undertake reform. An increase in the cost of a crisis leads to higher effort. A larger electoral cost of undertaking reform and a lower effect of reform on the probability of a crisis translate into smaller reform effort by both. Larger benefits from holding office reduce reform effort by the opposition, but there are two countervailing effects for the incumbent. Higher benefits from holding office imply that the direct political costs of reforming loom larger, but so do the indirect benefits of avoiding a crisis and not being voted out of office. The larger the difference in the

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[2] Cooper (1971) found that close to 30% of governments fell within 12 months of a devaluation, compared to 17% in a control group. Frankel (2005) updates Cooper's estimates and does several robustness checks. He also finds that a currency crisis is followed by a large increase in the probability of a change in government.

probability that the incumbent is elected depending on whether a crisis took place or not implies more effort by the incumbent, as it becomes more likely she is voted out if a crisis happens, but it reduces effort by the opposition, as it becomes more likely that it is elected if a crisis occurs. Finally and most surprising, an increase in the discount factor reduces the incentives to undertake effort. As policymakers become more patient, a future loss in electoral prospects looms larger compared with the direct cost from a crisis before the election.

In case the crisis is expected to occur after the election, instead of before the election, the incentives for reform of the incumbent and the opposition are the same. If either one of them finds carrying out reform in its independent interest, then both do. Conversely, if one of them does not choose to reform, neither does the other. The incumbent has no more extra incentive given that its probability of being reelected is no longer affected by the occurrence of a crisis before the election. Incentives for reform are diluted if a crisis is not expected to occur before the elections.

The introduction of an IFI unambiguously increases the incentives of both policy makers to undertake reform if its only effect is to reduce the probability of a crisis. This arises because the IFI enhances the effect of reform followed by domestic policy makers. However, the effect on effort from IFI support may not lead to additional reform if conditionality somehow reduces the benefits of policy makers from holding office. Clearly, a participation constraint implies that policy makers will never choose lower effort than they would otherwise, but IFI support may not be sufficient to induce higher effort. In addition, while IFI support may increase the incentives for the incumbent to reform, the conditions under which they would increase the incentives for the opposition are more limited. The opposition is more reluctant to support reform with IFI conditionality because the smaller probability of a crisis reduces their chances of being elected and because the benefits from being in office in the future may be smaller due to policy conditionality. Therefore, the opposition will support reform with IFI support and conditionality only in circumstances when it would have supported reform regardless.

Political models have previously been used to analyze the collapse of exchange rate regimes. In "second generation" models of crisis, the government balances different objectives: in response to a speculative attack against the currency, the government can raise the interest rate but that would lead to lower growth and higher unemployment. Examples of these models are Obstfeld (1994), Drazen and Masson (1994) and Obstfeld (1996). These models arose to explain the failure of several European governments to defend their currencies during the ERM crisis of the early 1990s. In contrast with the currency and debt crises of the 1980s in emerging markets, there were no major policy imbalances in European countries and there was no evidence that central banks were monetizing fiscal deficits.[3] The model

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[3] This was the initial explanation used by Krugman (1979) to explain speculative attacks against fixed exchange rates.

presented here is related with the "second generation" models in that the probability of a crisis is negatively related with the level of costly effort chosen by policy makers. However, the exact interpretation of costs and benefits is different. In "second generation" models, defending the exchange rate is costly in terms of lower GDP growth. There is a striking contrast between the European devaluations of the early 1990s and crises in emerging markets, as the devaluations in Europe were typically followed by faster growth than observed before the crises while devaluations and crises in emerging markets are often followed by major contractions in output.

The model is also related with a large literature on the political economy of reform implementation. This literature focuses on the question of why is it that reforms are not implemented even if they are desirable from a social point of view. One strand of this literature argues that reforms are not adopted because of powerful interest groups whose interests would be affected by the reform. A second strand is based on public goods, where the benefits from reform affect a widely dispersed public, but there is disagreement about who should bear the costs. A third group of models stresses the existence of uncertainty about who will benefit and who bears the costs of policy adjustments. Finally, principal agent models with separate policy makers and electorate imply that the electorate may impose constraints on the actions of the policy makers given that these might pursue actions in their interest instead of the public's.[4] This paper does not try to distinguish between the different explanations for why reform is costly and difficult. It rather takes this as given and assumes that following reform has a political cost for the policymaker that pursues it when she lacks the support of the other policymaker.

In addition to the decision making by the two policymakers, this paper incorporates support from an IFI together with policy conditionality. As noted in several studies, the evidence is mixed in favor of successful conditionality by institutions such as the IMF. In particular, it seems that international aid and structural adjustment lending are more successful in countries that were following sound macroeconomic policies to begin with. Political variables have also been found to be highly significant.[5] Sachs (1989) raises three important issues concerning policy conditionality. First, if certain policies are beneficial to a country, why are they not adopted by the country in the first place? This paper captures this concern by arguing that some groups can become worse off due to the policy change, and this is reflected in a lower probability of being elected. Second, how can the lender enforce compliance? It is assumed that the IFI makes the support conditional on the amount of

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[4] Some examples of the different strands are Olson (1982) for the first; Alesina and Drazen (1991), Drazen and Grilli (1993) and Velasco (1999) for the second; Fernandez and Rodrik (1991) and Rodrik (1991) for the third; and Cukierman and Tomassi (1998a, 1998b) for the fourth. See Drazen (2000) and Persson and Tabellini (2002) for extensive reviews of political economy models.

[5] See Burnside and Dollar (1997) and Dollar and Svensson (1998).

reform that is followed. IMF programs often specify prior actions that a country has to fulfill before it receives any support, and additional resource disbursements have on occasion been delayed or canceled due to policy slippages. The third issue raised by Sachs is that programs are often negotiated between the IFI and the executive branch of government. This implies that legislative support may not be forthcoming to fulfill the conditionality in the program. This paper tries to analyze this issue explicitly.

## II. A Model of Divided Government, Elections and Financial Crises

### II. 1. The basic setup

There are two groups of policymakers, the executive incumbent ($I$) and the opposition ($O$). The incumbent (or the opposition) can carry out certain reforms to reduce the probability of a crisis, and the opposition (or the incumbent) can support the reforms. In many countries, the executive branch can carry out policy adjustments without the full support of the legislature, but more extensive reform may require legislative approval. It is assumed that this requires support from the opposition. The combination of reform effort chosen by the two groups of policymakers is given by $E = \{e_I, e_O\}$, where $e_i$ is the effort chosen by policymaker i. Either policymaker can choose to full reform effort or non at all, i.e. $e_i$ can take the values of 0 or $e$. We therefore have four possible combinations: i) no effort by either, $E = \{0,0\}$; ii) effort only by the incumbent, $E = \{e,0\}$; iii) effort only by the opposition, $E = \{0,e\}$; and iv) effort by both, $E = \{e,e\}$.

The economy lasts for three periods. In $t = 0$, a level of reform effort is chosen first by the incumbent and then by the opposition.[6] In $t = 1$, a crisis happens with a probability that depends on the effort chosen by both the incumbent and the opposition. If there is no effort by either policymaker, there is a high probability of a crisis, $p$; if only one of them reforms then the probability is intermediate, $p$-$e$; and there is a low probability if both reform, $p$-$2e$. In $t = 2$, elections take place and the probability that the incumbent is reelected depends on the occurrence of a crisis in $t = 1$, and on the level of reform followed by the incumbent and/or by the opposition. The probability that the incumbent is reelected is always smaller if there is a crisis, and it is also smaller if it is the only the support reform efforts (symmetrically, the probability that the opposition wins is smaller if it is the only one that supports reforms). If both policymakers support the reforms, then there is no political cost for either of them, so their respective possibilities of being elected are equivalent to the case when neither of them undertook reforms. We denote by $p_C$ the probability that the incumbent is reelected when there is a crisis and both policymakers efforts are the same, and $p_{NC}$ is the probability of reelection when there has been no crisis and no difference in effort, with $p_{NC} > p_C$. When the incumbent is the only one to incur effort, the loss in political support is $\mu$ so the probabilities of reelection are $p_C$ - $\mu$ if a crisis occurred and $p_{NC}$ - $\mu$ if there was no crisis. Finally, if the

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[6] A sequential interaction between the incumbent and the opposition seems reasonable as: i) the executive normally has a greater ability to carry out reforms independently of the legislature, and ii) the executive is often responsible for initiating some policy proposals, such as annual budgets.

opposition is the only one to incur effort, the corresponding probabilities that the incumbent is reelected are $p_C + \mu$ and $p_{NC} + \mu$.

In the absence of a crisis, production, income and consumption in the economy are given by $Y$.[7] If a crisis occurs in $t = 1$, then production, income and consumption fall by an amount $\delta$ in both $t = 1, 2$. Policymakers care about the state of the economy, and they also benefit from being in office by a quantity $X$. Both policymakers have a discount rate of $\rho$. Figure 1 summarizes the structure of the economy and the respective payoffs.

*II.2. Solution*

As assumed, the incumbent group first chooses its level of effort, followed by the choice of effort by the opposition. The incumbent group is rational and forward looking, so it anticipates the reaction by the opposition and takes it into account when making its choice. Therefore, we first solve for the decision of the opposition conditional on either of the two choices of the incumbent, and then for the choice of the incumbent.

The opposition, $O$, can choose between $e_O = 0$ and $e_O = e$. It will choose the one that gives it the higher expected utility conditional on the choice by the incumbent, $I$. Therefore, we need to compare the expected payoffs conditional on the two possible choices of effort by $I$. Conditional on $e_I = 0$, the expected payoffs of $O$ are:

if $e_O = 0$:

$$
\begin{aligned}
(1) \quad & Y + \rho p(Y - \delta) + \rho(1 - p_H)Y + \rho^2 p\big[p_C(Y - \delta) + (1 - p_C)(Y - \delta + X)\big] \\
& + \rho^2(1 - p)\big[p_{NC}Y + (1 - p_{NC})(Y + X)\big] \\
& = Y + \rho Y - \rho p \delta + \rho^2\{Y - p\delta + p(1 - p_C)X + (1 - p)(1 - p_{NC})X\}
\end{aligned}
$$

if $e_O = 1$:

$$
\begin{aligned}
(2) \quad & Y + \rho(p - e)(Y - \delta) + \rho(1 - p + e)Y \\
& + \rho^2(p - e)\big[(p_C + \mu)(Y - \delta) + (1 - p_C - \mu)(Y - \delta + X)\big] \\
& + \rho^2(1 - p + e)\big[(p_{NC} + \mu)Y + (1 - p_{NC} - \mu)(Y + X)\big] \\
& = Y + \rho Y - \rho(p - e)\delta \\
& \quad + \rho^2\{Y - (p - e)\delta + (p - e)(1 - p_C - \mu)X + (1 - p + e)(1 - p_{NC} - \mu)X\}
\end{aligned}
$$

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[7] We assume that there are no private savings, or that these are not easily manipulated by the policy makers.

For $O$ to choose $e_O = e$, conditional on $e_I = 0$, it must be that $(2) \geq (1)$. That is if:

$$Y + \rho Y - \rho(p-e)\delta + \rho^2 \{Y - (p-e)\delta + (p-e)(1-p_C-\mu)X + (1-p+e)(1-p_{NC}-\mu)X\} \geq$$
$$Y + \rho Y - \rho p\delta + \rho^2 \{Y - p\delta + p(1-p_C)X + (1-p)(1-p_{NC})X\}$$

Simplifying, this condition becomes:

(3)    $\delta(1+\rho)(e) \geq \rho X\{\mu + e(p_{NC} - p_C)\}$

The term on the left hand side is the benefit to $O$ from promoting a reform that would reduce the probability of a crisis, given that $O$ cares about the state of the economy. The left hand side is the loss from a reduction in the probability of being elected. Overall, the probability of being reelected falls on two accounts, the incumbent has a greater probability of being reelected if there is no crisis, and the opposition has a lower chance of being reelected if it is the only one promoting reform efforts. Therefore, for the opposition to choose $e_0 = 1$, the loss in electoral prospects would have to be compensated by caring highly about the state of the economy relative to being in power, anticipating a large crisis or being able to make a big difference on the probability of a crisis.

Solving for the case when the incumbent has chosen to reform, $e_I = 1$, the conditional payoffs of the opposition are:

if $e_O = 0$:

$$\begin{aligned}
&Y + \rho(p-e)(Y-\delta) + \rho(1-p+e)Y \\
&+ \rho^2(p-e)[(p_C - \mu)(Y-\delta) + (1-p_C+\mu)(Y-\delta+X)] \\
(4) \quad &+ \rho^2(1-p+e)[(p_{NC} - \mu)Y + (1-p_{NC}+\mu)(Y+X)] \\
&= Y + \rho Y - \rho(p-e)\delta \\
&+ \rho^2\{Y - (p-e)\delta + (p-e)(1-p_C+\mu)X + (1-p+e)(1-p_{NC}+\mu)X\}
\end{aligned}$$

if $e_O = 1$:

$$\begin{aligned}
&Y + \rho(p-2e)(Y-\delta) + \rho(1-p+2e)Y \\
&+ \rho^2(p-2e)[p_C(Y-\delta) + (1-p_C)(Y-\delta+X)] \\
(5) \quad &+ \rho^2(1-p+2e)[p_{NC}Y + (1-p_{NC})(Y+X)] \\
&= Y + \rho Y - \rho(p-2e)\delta \\
&+ \rho^2\{Y - (p-2e)\delta + (p-2e)(1-p_C)X + (1-p+2e)(1-p_{NC})X\}
\end{aligned}$$

The solution procedure is the same as before. For $O$ to choose $e_O = 1$, conditional on $e_I = 1$, it must be that $(4) \geq (3)$. This holds under the following simplified condition:

(6) $\qquad \delta(1+\rho)(e) \geq \rho X\{\mu + e(p_{NC} - p_C)\}$

This is the same condition as in the previous case, $O$ will only support the reform started by $I$ if the additional expected reduction in the crisis compensates for the reduction in the probability of wining the election.[8] The equivalence of conditions (3) and (6) arises from the fact that in both cases the reduction in the probability of a crisis is the same, and the electoral cost of effort is equivalent.

When the incumbent $I$ is choosing its level of effort it knows the response that will be followed by the opposition, $O$. As noted, the response of $O$ depends on its comparison between the gain from a lower expected value of a crisis and the loss in the probability of being elected. We therefore condition on those parameter values.

If parameters are such that (3) and (6) hold, it implies that $e_O = 1$ independently of $I$'s choice. In this case, the payoffs for the incumbent are:

if $e_I = 0$:

$$
\begin{aligned}
& Y + X + \rho(p-e)(Y+X-\delta) + \rho(1-p+e)(Y+X) \\
& + \rho^2(p-e)\big[(p_C+\mu)(Y+X-\delta)+(1-p_C-\mu)(Y-\delta)\big] \\
(7) \quad & + \rho^2(1-p+e)\big[(p_{NC}+\mu)(Y+X)+(1-p_{NC}+\mu)(Y)\big] \\
& = Y + X + \rho(Y+X) - \rho(p-e)\delta \\
& + \rho^2\{Y-(p-e)\delta+(p-e)(p_C+\mu)X+(1-p+e)(p_{NC}+\mu)X\}
\end{aligned}
$$

if $e_I = 1$:

$$
\begin{aligned}
& Y + X + \rho(p-2e)(Y+X-\delta) + \rho(1-p+2e)(Y+X) \\
& + \rho^2(p-2e)\big[p_C(Y+X-\delta)+(1-p_C)(Y-\delta)\big] \\
(8) \quad & + \rho^2(1-p-2e)\big[p_{NC}(Y+X)+(1-p_{NC})(Y)\big] \\
& = Y + X + \rho(Y+X) - \rho(p-2e)\delta \\
& + \rho^2\{Y-(p-2e)\delta+(p-2e)p_C X+(1-p+2e)p_{NC}X\}
\end{aligned}
$$

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[8] To simplify, it was assumed that the reduction in the probability of a crisis was the same if only the incumbent supported reform or if only the opposition supported reform. In reality, one might expect that the opposition alone can accomplish less than the executive incumbent alone, so the reduction in the probability of a crisis would be smaller in the first case. This would imply that the opposition may not support reform by itself even if it is willing to support a reform that was started by the incumbent.

Reform effort is chosen by *I* if:

(9)    $\delta(1+\rho)(e) \geq \rho X\{\mu - e(p_{NC} - p_C)\}$

The term on the left hand side of the inequality is positive and the same as for *O*, while the term inside the brackets on the right hand side is smaller than that for *O*. The difference arises from the fact that avoiding a crisis through effort is costly politically but this cost is compensated by an increased probability of being elected if a crisis is avoided. Therefore, if parameters are such that *O* finds it optimal to choose $e_O = e$, then so does *I*.

Finally, the choice of *I* is obtained when the parameters are such that $e_O = 0$, that is, the opposition will not undertake any reform effort irrespective of the choice by *I*. This will happen when conditions (3) and (6) do not hold. In this case, the payoffs to the incumbent are:

if $e_I = 0$:

(10)

$$Y + X + \rho p(Y + X - \delta) + \rho(1 - p)(Y + X) + \rho^2 p[p_C(Y + X - \delta) + (1 - p_C)(Y - \delta)]$$
$$+ \rho^2(1 - p)[p_{NC}(Y + X) + (1 - p_{NC})(Y)]$$
$$= Y + X + \rho(Y + X) - \rho p\delta + \rho^2\{Y - p\delta + pp_C X + (1 - p)p_{NC}X\}$$

if $e_I = 1$:

(11)

$$Y + X + \rho(p - e)(Y + X - \delta) + \rho(1 - p + e)(Y + X)$$
$$+ \rho^2(p - e)[(p_C - \mu)(Y + X - \delta) + (1 - p_C + \mu)(Y - \delta)]$$
$$+ \rho^2(1 - p + e)[(p_{NC} + \mu)(Y + X) + (1 - p_{NC} + \mu)(Y)]$$
$$= Y + X + \rho(Y + X) - \rho(p - e)\delta$$
$$+ \rho^2\{Y - (p - e)\delta + (p - e)(p_C - \mu)X + (1 - p + e)(p_{NC} - \mu)X\}$$

The incumbent chooses to incur effort if:

(12)    $\delta(1+\rho)(e) \geq \rho X\{\mu - e(p_{NC} - p_C)\}$

Conditions (9) and (12) as the same, as was the case for the conditions for *O*. As in the previous case, the right hand side of the inequality is smaller than that for *O*, given that a smaller probability of a crisis increases the probability that the incumbent is chosen. Given this difference, it can be the case that *I* decides to promote reform even if it knows that *O* will not support it.

With the previous conditions, it is possible to carry out comparative statics of the reform effort. For that we denote conditions (3)=(6) as *CO*, and (9)=(12) as *CI*:

$$CO : \delta(1+\rho)(e) - \rho X\{\mu + e(p_{NC} - p_C)\}$$

$$CI : \delta(1+\rho)(e) - \rho X\{\mu - e(p_{NC} - p_C)\}$$

The derivatives of *CO* and *CI* with respect to $\delta$ are both positive. At low levels of the cost of a crisis, neither policymaker pursues reform. At intermediate levels only *I* pursues reform, and at a high $\delta$ both support reform (see Figure 2). Increases in the direct political cost from pursuing reform, $\mu$, has the opposite effect from an increase in $\delta$. The derivative in both cases is negative, and as $\mu$ increases, *O* decides not to incur any effort and further increases lead to the same reaction by *I* (see Figure 3).

The derivative of *CO* with respect to *X*, the benefit from being in office, is negative. Therefore, as office becomes more attractive, *O* has less incentives to support reform. In contrast, the derivative of *CI* depends on the sign of $\mu - e(p_{NC} - p_C)$. *I* chooses more effort in response to higher *X* if the political cost of reform is small relative to the gain in the probability of being reelected when a crisis becomes less likely (in this case, $e_I = e$ for all *X*). When reform is very effective, and not very costly, *I* undertakes more reform as a response to an increase in the gains from being in office. On the other hand, if reform is costly and does not reduce the probability of a crisis substantially, *I* will be less likely to reform if office becomes more attractive (see Figure 4).

The derivatives of *CO* and *CI* with respect to *e*, the effectiveness of effort, are given by:

$$\frac{dCO}{de} = \delta(1+\rho) - \rho X(p_{NC} - p_C)$$

$$\frac{dCI}{de} = \delta(1+\rho) + \rho X(p_{NC} - p_C)$$

The derivative of *CI* is unambiguously positive. As effort becomes more effective, *I* has more incentives to reform (at $e = 0$ neither of them chooses to reform). The sign of the derivative of *CO* depends on the cost of the crisis relative to the indirect cost of undertaking support. If a crisis is not too costly, then higher effectiveness of effort can reduce the level of effort by *O* (as $e_O = 0$ if $e = 0$, this implies that *O* never chooses $e_O = e$; see Figure 5).

The change in *CO* and *CI* with respect to the discount rate, $\rho$, are:

$$\frac{dCO}{d\rho} = \delta e - X\{\mu + e(p_{NC} - p_C)\}$$

$$\frac{dCI}{d\rho} = \delta e - X\{\mu - e(p_{NC} - p_C)\}$$

The sign of both derivatives is ambiguous. At $\rho$ close to 0, both decide to incur effort as the crisis can start at $t = 1$, before any political costs are incurred at $t = 2$. This seems paradoxical, as more impatient policy makers always undertake effort. This result is sensitive to whether the crisis occurs before of after the election.[9] The size of the derivative depends in both cases on the gain from reducing the probability of a crisis relative to the political costs of reforming. However, in both cases, the gain from reducing the likelihood of a crisis needs to be larger than that strictly needed for a positive level of effort if the derivatives are to be positive. Given that the political cost from reform is smaller for $I$, it is more likely that $I$'s effort increases with the discount factor (see Figure 6).

Changes in the difference in the probabilities of being elected conditional on avoiding a crisis or not, $p_{NC}$-$p_C$, has the opposite effect on $CO$ and $CI$. An increase in the difference reduces $CO$ and increases $CI$. If a crisis reduces the reelection probability of the incumbent, then $O$ has weaker incentives to incur effort, while $I$ has stronger incentives. The overall evolution of effort again depends on parameter values. If $\delta(1 + \rho)(e) - \rho X\mu \geq 0$ then both choose to reform at low levels of $p_{NC} - p_C$ but at higher levels of this difference $O$ stops supporting reform. If $\delta(1 + \rho)(e) - \rho X\mu < 0$ neither supports reform initially, but $I$ eventually does at higher $p_{NC} - p_C$ (see Figure 7).

Summarizing, the higher the fall in income in case of a crisis, $\delta$, the higher is the reform effort. The higher is the direct reduction in the probability of being elected due to reform, $\mu$, the lower is the reform effort. An increase in the benefits from being in office, $X$, leads to a reduction in the effort of the opposition. An increase in the effectiveness of effort in reducing the probability of a crisis leads to a higher level of effort. An increase in the difference in probabilities of reelection for $I$, $p_{NC} - p_C$, may increase or reduce effort depending on whether a high or low level of effort was chosen initially by both policymakers. If the initial choice was to undertake effort, then an increase in the difference reduces the level of effort as $O$ eventually finds it better to avoid reform. If the initial choice was no effort, a sufficiently large increase in the difference increases effort as $I$ eventually decides to undertake reform. Most surprisingly, an increase in the discount factor, $\rho$, can lead to a reduction in effort as the future benefits from being elected in the future weigh more heavily.

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[9] This case is discussed in the next subsection.

*II.3. The timing of the crisis*

Before proceeding with IMF support, the previous model is modified to look at the case when the crisis could happen after the election. This changes the structure of payoffs significantly, as reducing the probability of a crisis after the election leads to no electoral benefit for the incumbent (see Figure 8).

In this case, the solution is extremely simple. Conditional on $e_I = 0$, the payoffs to $O$ are given by:

if $e_O = 0$:

$$(13) \quad Y(1 + \rho + \rho^2) + \rho^2 \{(1 - p_I)X - p\delta\}$$

and if $e_O = e$:

$$(14) \quad Y(1 + \rho + \rho^2) + \rho^2 \{(1 - p_I - \mu)X - (p - e)\delta\}$$

where $p_I$ is the probability that the incumbent is elected (this only depends now on the reform carried out before the election, as the crisis can only happen after the election).

The opposition chooses effort in this case if:

$$(15) \quad e\delta \geq \mu X$$

that is, if the benefit from avoiding a crisis after the election is larger than the electoral cost of reforming before the election.

Solving for $e_O$ conditional on $e_I = e$, and solving for the choice of $I$, leads to the same condition for both policymakers under any choice by the other policy maker. Therefore, there are only two possible equilibrium which depend only on parameter values, not on the actions of the other policymaker. If the benefit from a smaller probability of a crisis is larger than the cost due to a lower probability of being elected, both have incentives to undertake effort. Otherwise, neither of them decides to carry out any reform.

A comparison with the previous condition for effort by the incumbent, equation (9), shows that the incumbent incurs effort for a larger set of parameter values if the crisis can take place before the election. This occurs because in the previous specification, the avoidance of a crisis has immediate benefits, and avoiding a crisis increases the electoral chances of the incumbent. The effect on the choice by the opposition is less clear cut, as following reform to avoid a crisis now does not indirectly increase the probability that the incumbent is elected. However, the direct benefits from avoiding the crisis are also higher for $O$ in the previous setup, and are more likely to dominate. Therefore, if $O$ was not willing to reform in the previous setup, it is highly unlikely to reform in the current one.

### III. Divided Government, IFI Support and Conditionality

The previous model with a potential crisis before the elections is modified to analyze how IFI support and conditionality affects the decisions of $I$ and $O$ to support reform. IFI support is assumed to promote catalytic finance, i.e. it reduces the possibility of a crisis by providing a certain amount of liquidity and assuring a certain amount of refinancing.[10] Catalytic financing is introduced into the model by assuming that each unit of IFI support reduces the probability of a crisis by $s$. Conditionality is introduced by stipulating that the IFI provides a unit of support in response to each unit of effort chosen by domestic policymakers (see Figure 9 for the structure and payoffs of the modified model). Given that the IFI negotiates directly with the executive branch of government, it is assumed that if $e_I = 0$, then support by the IFI is equal to zero irrespectively of whether $O$ carries out reforms or not.

If obtaining IFI support has no costs for domestic policy makers, then it unambiguously increases the set of parameters for which both policy makers support reform. In the absence of any expected loss of benefits from holding office, IMF support acts as if it was making policymaker effort more effective.

By imposing limits on the level of government spending or credit provided by the central bank, conditionality might reduce the level of benefits the incumbent obtains from holding office. The effect on the probability of reelection seems more ambiguous. The probability of reelection can increase if the incumbent policymaker can "blame" the IFI for some of the effort it would have made regardless. Alternatively, the probability of reelection could fall if the public's feels that the incumbent is responding to foreign instead of domestic interests. Given the ambiguity on the probability of reelection, the focus is on a reduction in the benefits from holding office. Therefore, it is assumed that if IFI support is received, the benefits from holding office are reduced by a quantity $\psi$ per unit of support.

As before, the solution is obtained by first looking at the choice of $O$ conditional of the choice of $I$. Conditional on $e_I = 0$, $O$'s condition for choosing effort is the same as (3) as it can not independently initiate a program with the IFI. It is repeated here for convenience:

$$(3) \qquad \delta(1+\rho)(e) \geq \rho X \{\mu + e(p_{NC} - p_C)\}$$

If $e_I = e$ and it is following a program, then $O$ will choose effort if:

$$(16) \qquad \begin{aligned} \delta(1+\rho)(e+s) &\geq \rho(X-\psi)\{\mu + (e+s)(p_{NC} - p_C)\} \\ &+ \rho\psi\{(1-p_{NC}) + (p_{NC} - p_C)(p - 2(e+s))\} \end{aligned}$$

---

[10] For analysis of when catalytic finance can work see Morris and Shin (2003) and Corsetti, Guimaraes and Roubini (2003).

The new condition for $O$ differs from the one without IFI programs in several ways. First, an IFI program reduces the probability of a crisis. For $O$, it also reduces the probability of being elected given the smaller probability of a crisis (captured by the term on the left hand side of the inequality). However, gaining office has become less attractive given $I$'s choice of following conditionality. This increases the incentives of $O$ to undertake effort to avoid the crisis given that it has less to gain if it wins the election. However, the last term captures the fact that if $O$ chooses effort, it further reduces the potential gains from holding office if it wins the election. This last term contributes to a lower level of effort. The net effect of $\psi$ is to reduce the incentives for $O$ to choose to reform.

At low levels of $\psi$, the reduction in the probability of a crisis due to IFI support dominates, so $O$ chooses $e_O = e$ for a wider range of parameter values. As $\psi$ increases, the parameter range for reform becomes smaller.

In contrast with the case without IMF support, $O$'s choice depends on $I$'s choice, not only on parameter values. Conditions (3) and (16) are no longer the same, as the reduction in the probability of a crisis $s$ and the reduction in the benefits from office $\psi$ are not faced by $O$ unless $I$ chooses to reform. Can IFI support lead to a switch in $O$'s choice of reform from what it would have chosen in the absence of reform?

Assume that parameters are such that $O$ would choose $e_0 = 0$ if $e_I = 0$, that is, condition (3) does not hold. In that case, the following holds:

$$(17) \quad \delta(1+\rho) - \rho X \{\mu / e + (p_{NC} - p_C)\} < 0$$

If condition (17) holds, for $O$ to choose $e_O = e$ when $e_I = e$, then the following condition must be sufficiently larger than zero:

$$(18) \quad \{\delta(1+\rho) - \rho X (p_{NC} - p_C)\} - \rho \frac{\psi}{s} \{(1 - p_{NC} - \mu) + (p - 3(e+s))(p_{NC} - p_C)\} > 0$$

The second term is negative, so the first term would need to be positive and large. Given (17), this is unlikely to be true.[11] $O$ only chooses $e_O = e$ when $e_I = e$, conditional on choosing $e_0 = 0$ when $e_I = 0$, if $\psi/s$ is small, and (17) is not much smaller than zero. IFI support induces support by the opposition, when it was not forthcoming initially, only if the reduction in the benefits of being in office are small compared to the reduction in the probability of a crisis due to the catalytic finance role of the Fund, and when the opposition was close to supporting reform even in the absence of reform by $I$ and support by the IFI. This suggests that IFI support has a marginal role in promoting reform by the opposition when it was not initially

---

[11] For the first term in (18) to be large and positive, it must be that $\mu/e$ is large and that it is the term that leads to the negative value of (17).

predisposed to reform. The most likely outcome is that if $e_0 = 0$ when $e_I = 0$, then $e_0 = 0$ when $e_I = e$.

The opposite follows when $O$ chooses $e_O = e$ when $e_I = 0$. If this is the case, $e_0 = e$ when $e_I = e$, except when $\psi/s$ is extremely large. The terms in equation (16) can be reordered as:

$$
(19) \quad
\begin{aligned}
& e[\delta(1+\rho) - \rho X\{\mu/e + (p_{NC} - p_C)\}] + s[\delta(1+\rho) - \rho X(p_{NC} - p_C)] \\
& - \rho\frac{\psi}{s}\{(1 - p_{NC} - \mu) + (p - 3(e+s))(p_{NC} - p_C)\}
\end{aligned}
$$

The first two terms are positive if (17) holds. Therefore, the third term multiplied by $\psi/s$ would have to be large and negative for $O$ to choose $e_O = 0$. Therefore, IFI support is unlikely to make a difference in the decision by the opposition to support reform or not. When solving for the choice by $I$, we assume that this is the case.

If parameter values are such that $e_O = 0$, two conditions need to hold for $I$ to choose reform and IFI support. The first is a participation constraint which holds if $I$ is better off undertaking reform with IFI support that without it. The participation constraint holds if:

$$
(20) \quad s[\delta(1+\rho) + \rho(X - \psi)(p_{NC} - p_C)] \geq \psi\left[\frac{1}{\rho} + 1 + \rho\{(p_{NC} - \mu) - (p - e)(p_{NC} - p_C)\}\right]
$$

This condition differs in two important ways from the conditions for $O$. As in the case without IFI support, a reduction in the probability of a crisis has an electoral benefit (captured by the second term inside the brackets on the left hand side of the inequality). In contrast, the cost for $I$ arising from conditionality is higher as it benefits less from holding office currently and in the future. For (20) to hold, the direct and indirect gains from IFI support due to a smaller probability of crisis must be larger than the cost arising from the lower benefits of holding office.

The second condition compares the benefits from reforming with IFI support with the benefits from not undertaking reform. $I$ benefits from reforming with IFI support if the following holds:

$$
(21) \quad
\begin{aligned}
& \delta(1+\rho)(e+s) \geq \rho(X - \psi)\{\mu - (e+s)(p_{NC} - p_C)\} \\
& + \psi\left[\frac{1}{\rho} + 1 + \rho\{p_{NC} - p(p_{NC} - p_C)\}\right]
\end{aligned}
$$

The term on the left hand side of the inequality is the same as that for $O$ in equation (16). However, the two terms in the left hand side are different. The first term in the right hand side is smaller than that for $O$, as $I$'s electoral prospects improve if a crisis is avoided. The second term is larger than that for $O$, as the reduction in the benefits of being in office affects the incumbent from $t = 0$ onwards. If condition (20) holds, it is easy to show that condition (21) holds as well. Therefore, if $\psi$ is not too large, the incumbent is more likely to undertake

reform with IFI support than without it. As in the case without IFI support, the incumbent is more likely to undertake reform than the opposition, given that it benefits electorally from a smaller probability of a crisis, as long as the participation constraint holds, i.e. the loss in the benefits from holding office are not too large.

If parameters are such that $e_O = e$, irrespectively of $I$'s choice, then $I$ chooses effort if:

$$\delta(1+\rho)(e+2s) \geq \rho(X-\psi)\{\mu - (e+2s)(p_{NC}-p_C)\}$$

(22)
$$+\psi\left[\frac{1}{\rho}+1+\rho\{p_{NC}+\mu-(p-e)(p_{NC}-p_C)\}\right]$$

A comparison of (21) and (22) shows that the first, and positive, term incorporates an additional $s$, while the first term in the right hand side of the inequality is reduced additionally by an extra $s(p_{NC}\text{-}p_C)$. This clearly dominates the increase in cost due to any additional conditionality. Therefore, IFI support provides a large boost to the payoffs of $I$ if $O$ is willing to undertake reform.

## IV. Conclusions

This paper uses a simple model to analyze the interaction between an executive incumbent and the opposition as regards reform to avoid the occurrence of a crisis. It mixes elements that have been considered important in the recent literature on financial crisis with considerations arising from political economy analysis. Specifically, domestic policymakers can undertake costly effort to avoid a crisis. However, opportunistic behavior arises if reform is costly politically, as the opposition can prefer not to support the reform efforts of the incumbent. Additionally, the opposition has less incentives to reform given that the incumbent is the main beneficiary if a crisis does not occur.

Given the direct and indirect benefits to the incumbent, it is found that it is generally more willing to undertake reform. An exception is when the crisis happens after the elections and therefore does not affect the probability of reelection. In that case, the incentives to reform by the incumbent and the opposition are exactly the same. In all cases, the reform decisions by both policymakers are independent of the actions taken by the other policymaker. This arises because the political cost of supporting reform when the other is not is equivalent to the political cost of supporting reform when the other is (in both cases one looses a political advantage).

IFI support is found to generate higher effort unambiguously if the only thing it does is reduce the probability of a crisis. However, if conditionality also reduces the benefits that accrue to policymakers from holding office, the incentives can be sharply reduced. When the erosion of benefits from office is not too large, IFI support can still generate a higher level of reform effort by the incumbent. On the other hand, IFI support can only generate higher effort by the opposition under extreme circumstances. Any erosion in benefits from holding office needs to be minimal if IFI support is to convince the opposition to support reform when it would not support it in the absence of the support and conditionality.

The results are consistent and provide theoretical underpinnings to the empirical results which find that conditionality works when countries were following good policies before any support program was granted. In addition, it confirms the comments by Sachs (1989) that IFI support is unlikely to lead to full support for reform by all domestic policymakers if that support was not initially present.

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# Figure 1. Basic Model Structure: Choice of effort, probabilities of crisis and re-election and payoffs

**t=0**
I chooses $e_I$
O chooses $e_O$
Payoffs:
I:Y+X,
O:Y

**e = {0,0}**

- **t=1** Crisis, Pr: p, Payoffs: I:Y+X-δ, O:Y-δ
  - **t=2** I elected, Pr: $p_C$, Payoffs: I:Y+X-δ, O:Y-δ
  - **t=2** O elected, Pr: 1-$p_C$, Payoffs: I:Y-δ, O:Y+X-δ
- **t=1** No crisis, Pr: 1-p, Payoffs: I:Y+X, O:Y
  - **t=2** I elected, Pr: $p_{NC}$, Payoffs: I:Y+X, O:Y
  - **t=2** O elected, Pr: 1-$p_{NC}$, Payoffs: I:Y, O:Y+X

**e = {1,0}**

- **t=1** Crisis, Pr: p-e, Payoffs: I:Y+X-δ, O:Y-δ
  - **t=2** I elected, Pr: $p_C$-μ, Payoffs: I:Y+X-δ, O:Y-δ
  - **t=2** O elected, Pr: 1-$p_C$+μ, Payoffs: I:Y-δ, O:Y+X-δ
- **t=1** No crisis, Pr: 1-p+e, Payoffs: I:Y+X, O:Y
  - **t=2** I elected, Pr: $p_{NC}$+μ, Payoffs: I:Y+X, O:Y
  - **t=2** O elected, Pr: 1-$p_{NC}$+μ, Payoffs: I:Y, O:Y+X

**e = {0,1}**

- **t=1** Crisis, Pr: p-e, Payoffs: I:Y+X-δ, O:Y-δ
  - **t=2** I elected, Pr: $p_C$+μ, Payoffs: I:Y+X-δ, O:Y-δ
  - **t=2** O elected, Pr: 1-$p_C$-μ, Payoffs: I:Y-δ, O:Y+X-δ
- **t=1** No crisis, Pr: 1-p+e, Payoffs: I:Y+X, O:Y
  - **t=2** I elected, Pr: $p_{NC}$+μ, Payoffs: I:Y+X, O:Y
  - **t=2** O elected, Pr: 1-$p_{NC}$+μ, Payoffs: I:Y, O:Y+X

**e = {1,1}**

- **t=1** Crisis, Pr: p-2e, Payoffs: I:Y+X-δ, O:Y-δ
  - **t=2** I elected, Pr: $p_C$, Payoffs: I:Y+X-δ, O:Y-δ
  - **t=2** O elected, Pr: 1-$p_C$, Payoffs: I:Y-δ, O:Y+X-δ
- **t=1** No crisis, Pr: 1-p+2e, Payoffs: I:Y+X, O:Y
  - **t=2** I elected, Pr: $p_{NC}$, Payoffs: I:Y+X, O:Y
  - **t=2** O elected, Pr: 1-$p_{NC}$, Payoffs: I:Y, O:Y+X

**Figure 2. Choice of effort and loss of income of a crisis occurs**



Choice of *e*

$e_I$

$e_O$

$\delta$
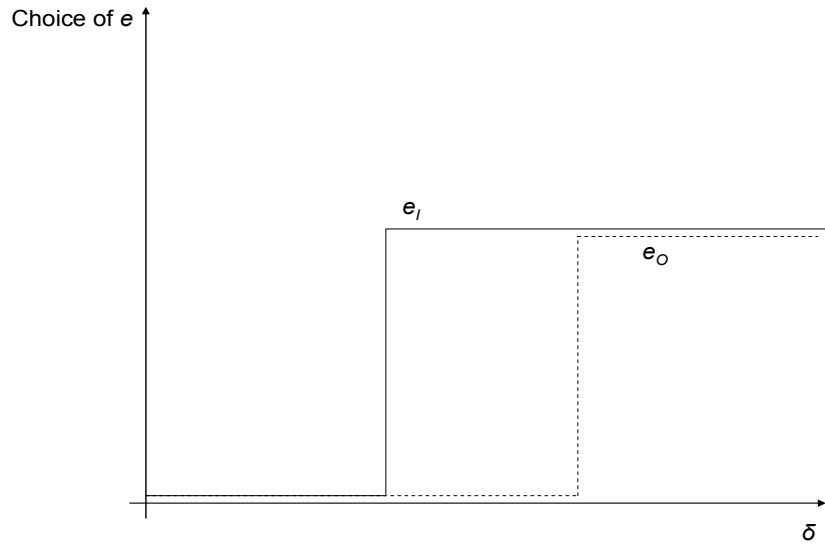
**Figure 3. Choice of effort and direct reduction in election probability due to reform**



Choice of *e*

$e_I$

$e_O$

$\mu$
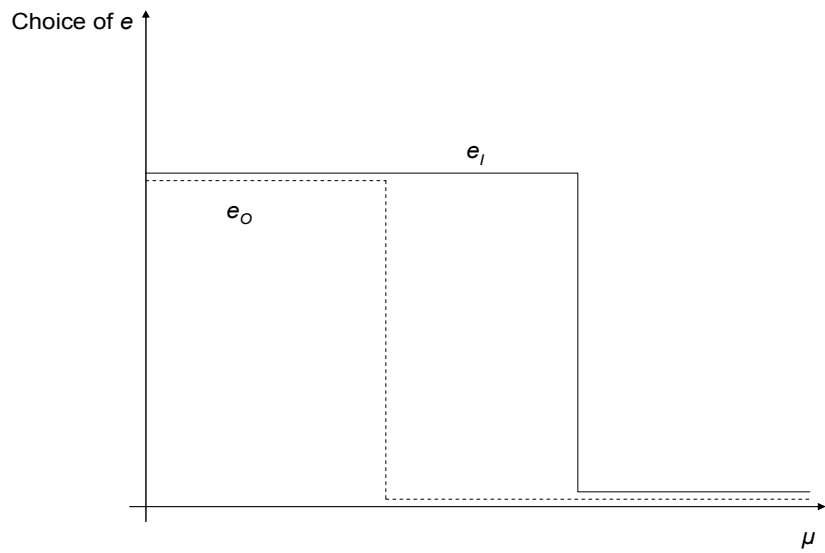
**Figure 4. Choice of effort and benefits from being in office**
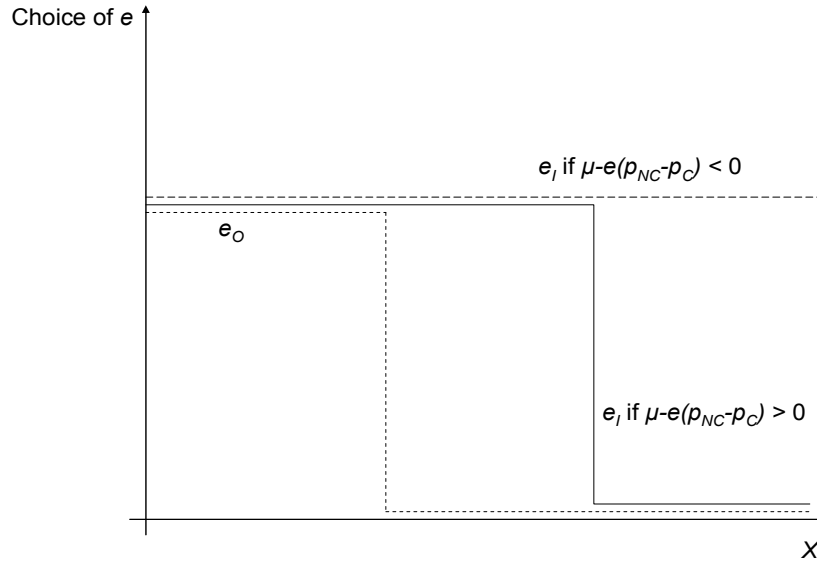


**Figure 5. Choice of effort and reduction in crisis probability if reform is followed**
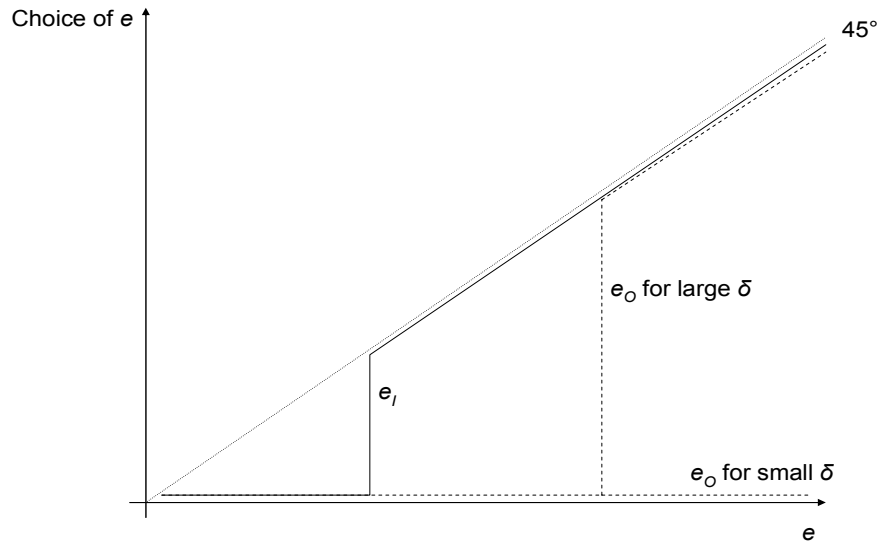
**Figure 6. Choice of effort and discount factor**

Choice of $e$

$e_I$ and $e_O$ for large $\delta$

$e_I$ for intermediate $\delta$

$e_O$ for small $\delta$

$e_I$ for small $\delta$

$e_O$ for intermediate $\delta$

$\rho$
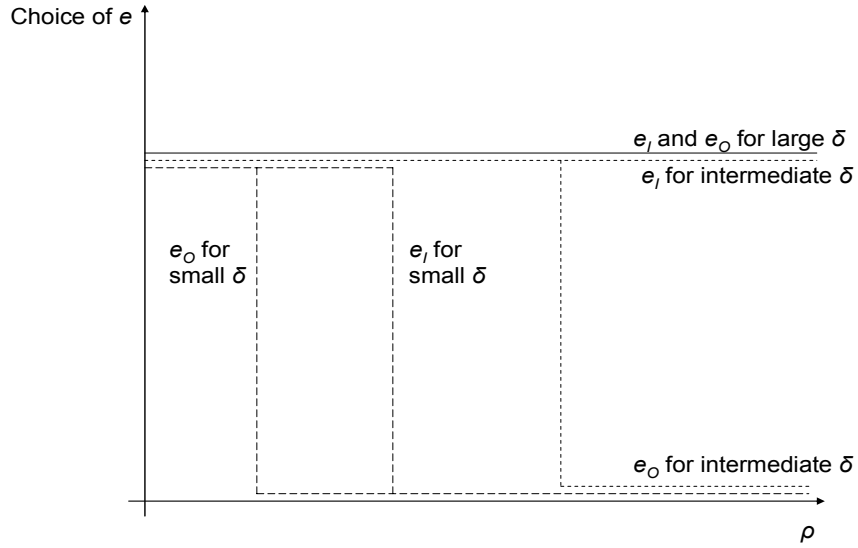
**Figure 7. Choice of effort and difference in incumbent election probabilities between non crisis and crisis states**

Choice of $e$

$e_I$ if $\delta(1+\rho)e-\rho X\mu > 0$

$e_O$ if $\delta(1+\rho)e -\rho X\mu > 0$

$e_I$ if $\delta(1+\rho)e-\rho X\mu < 0$

$e_O$ if $\delta(1+\rho)e-\rho X\mu < 0$

$p_{NC}-p_C$
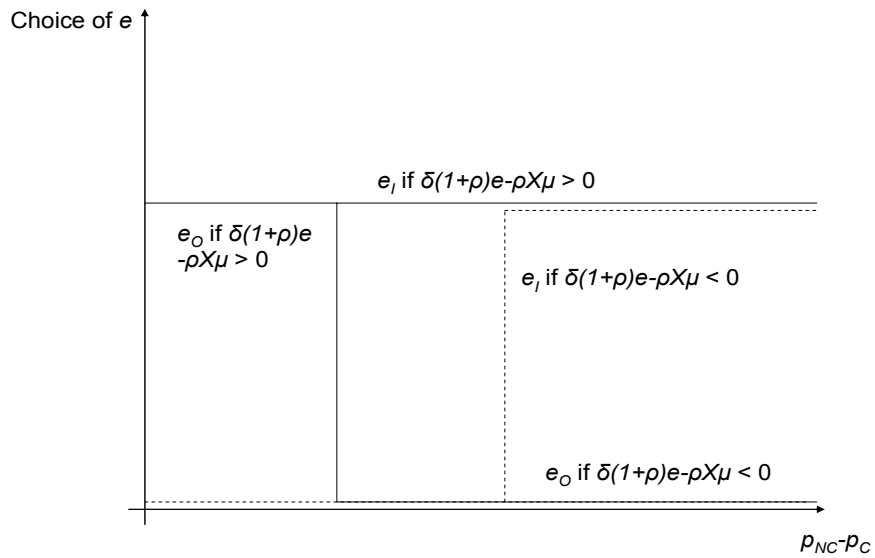
**Figure 8. Model Structure with the probability of a crisis after the elections**

t=0
I chooses $e_I$
O chooses $e_O$
Payoffs:
I:Y+X,
O:Y

**e = {0,0}**

I elected
Pr: p

- t=1 Crisis
  Pr: p
  Payoffs:
  I:Y+X-δ,
  O:Y-δ

- t=2 No Crisis
  Pr: 1-p
  Payoffs:
  I:Y+X,
  O:Y

O elected
Pr: 1-$p_I$

- t=2 Crisis
  Pr: p
  Payoffs:
  I:Y-δ,
  O:Y+X-δ

- t=2 No Crisis
  Pr: 1-p
  Payoffs:
  I:Y,
  O:Y+X

**e = {1,0}**

I elected
Pr: $p_I$-μ

- t=2 Crisis
  Pr: p-e
  Payoffs:
  I:Y+X-δ,
  O:Y-δ

- t=2 No Crisis
  Pr: 1-p+e
  Payoffs:
  I:Y+X,
  O:Y

O elected
Pr: 1-$p_I$+μ

- t=2 Crisis
  Pr: p-e
  Payoffs:
  I:Y-δ,
  O:Y+X-δ

- t=2 No Crisis
  Pr: 1-p+e
  Payoffs:
  I:Y,
  O:Y+X

**e = {0,1}**

I elected
Pr: $p_I$+μ

- t=2 Crisis
  Pr: p-e
  Payoffs:
  I:Y+X-δ,
  O:Y-δ

- t=2 No Crisis
  Pr: 1-p+e
  Payoffs:
  I:Y+X,
  O:Y

O elected
Pr: 1-$p_I$-μ

- t=2 Crisis
  Pr: p-e
  Payoffs:
  I:Y-δ,
  O:Y+X-δ

- t=2 No Crisis
  Pr: 1-p+e
  Payoffs:
  I:Y,
  O:Y+X

**e = {1,1}**

I elected
Pr: $p_I$

- t=2 Crisis
  Pr: p-2e
  Payoffs:
  I:Y+X-δ,
  O:Y-δ

- t=2 No Crisis
  Pr: 1-p+2e
  Payoffs:
  I:Y+X,
  O:Y

O elected
Pr: 1-$p_I$

- t=2 Crisis
  Pr: p-2e
  Payoffs:
  I:Y-δ,
  O:Y+X-δ

- t=2 No Crisis
  Pr: 1-p+2e
  Payoffs:
  I:Y,
  O:Y+X

# Figure 9. Model Structure with IFI Support

t=0
I chooses $e_I$
O chooses $e_O$
Payoffs:
I:Y+X,
O:Y

**e = {0,0}**

t=1 Crisis
Pr: p
Payoffs:
I:Y+X-δ,
O:Y-δ

- t=2 I elected
  Pr: $p_C$
  Payoffs:
  I:Y+X-δ,
  O:Y-δ
- t=2 O elected
  Pr: 1-$p_C$
  Payoffs:
  I:Y-δ,
  O:Y+X-δ

t=1 No crisis
Pr: 1-p
Payoffs:
I:Y+X,
O:Y

- t=2 I elected
  Pr: $p_{NC}$
  Payoffs:
  I:Y+X,
  O:Y
- t=2 O elected
  Pr: 1-$p_{NC}$
  Payoffs:
  I:Y,
  O:Y+X

**e = {1,0}**

t=1 Crisis
Pr: p-e-s
Payoffs:
I:Y+X-δ-ψ,
O:Y-δ

- t=2 I elected
  Pr: $p_C$-μ
  Payoffs:
  I:Y+X-δ-ψ,
  O:Y-δ
- t=2 O elected
  Pr: 1-$p_C$+μ
  Payoffs:
  I:Y-δ,
  O:Y+X-δ-ψ

t=1 No crisis
Pr: 1-p+e+s
Payoffs:
I:Y+X-ψ,
O:Y

- t=2 I elected
  Pr: $p_{NC}$-μ
  Payoffs:
  I:Y+X-ψ,
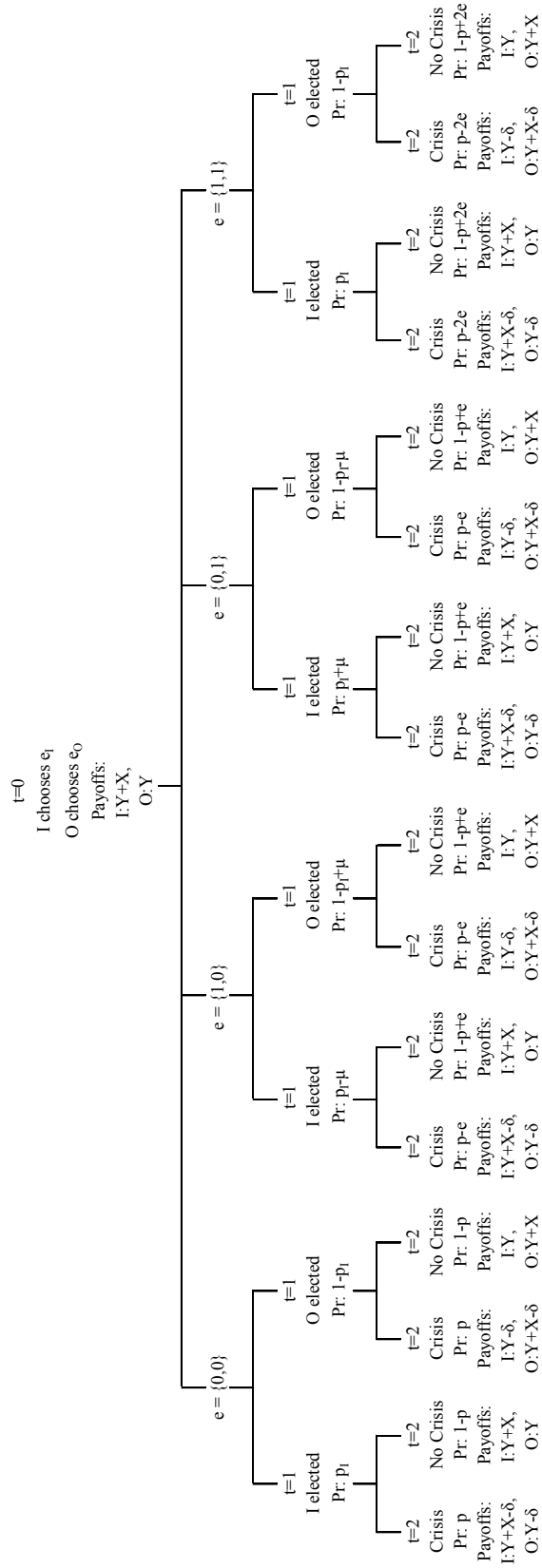  O:Y
- t=2 O elected
  Pr: 1-$p_{NC}$+μ
  Payoffs:
  I:Y,
  O:Y+X-ψ

**e = {0,1}**

t=1 Crisis
Pr: p-e
Payoffs:
I:Y+X-δ,
O:Y-δ

- t=2 I elected
  Pr: $p_C$+μ
  Payoffs:
  I:Y+X-δ,
  O:Y-δ
- t=2 O elected
  Pr: 1-$p_C$-μ
  Payoffs:
  I:Y-δ,
  O:Y+X-δ

t=1 No crisis
Pr: 1-p+e
Payoffs:
I:Y+X,
O:Y

- t=2 I elected
  Pr: $p_{NC}$+μ
  Payoffs:
  I:Y+X,
  O:Y
- t=2 O elected
  Pr: 1-$p_{NC}$-μ
  Payoffs:
  I:Y,
  O:Y+X

**e = {1,1}**

t=1 Crisis
Pr: p-2e-2s
Payoffs:
I:Y+X-δ-ψ,
O:Y-δ

- t=2 I elected
  Pr: $p_C$
  Payoffs:
  I:Y+X-δ-ψ,
  O:Y-δ
- t=2 O elected
  Pr: 1-$p_C$
  Payoffs:
  I:Y-δ,
  O:Y+X-δ-ψ

t=1 No crisis
Pr: 1-p+2e+2s
Payoffs:
I:Y+X-ψ,
O:Y

- t=2 I elected
  Pr: $p_{NC}$
  Payoffs:
  I:Y+X-ψ,
  O:Y
- t=2 O elected
  Pr: 1-$p_{NC}$
  Payoffs:
  I:Y,
  O:Y+X-ψ