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Financial Crises and Political Crises
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ABSTRACT

This paper is an analysis of the simultaneous determination of financial default and political crises and its consequences. It focuses on a small open economy that faces a debt default decision. Crucially, this decision is made by a government that has superior information than the public about the social costs of default. Citizens can dismiss the government, and overrule its default decision, at the cost of a political crisis. If there is a divergence between the objectives of the government and its people, a political crisis may emerge in equilibrium. For this to be the case, the foreign debt must be large enough, and international reserves low. When this political equilibrium is seen as a part of a larger investment problem, there are equilibria in which crises are "only financial," and equilibria in which both default and political crises occur. In some cases, these two kinds of equilibria coexist and, in this sense, a loss of confidence by foreign lenders can exacerbate the likelihood of a political crisis. If so, international intervention in financial markets may ensure financial and political stability at little cost.

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1. Introduction

That financial crises are often political instability is undisputable. To mention two recent and spectacular episodes, in Indonesia 1998 and Argentina 2002 economic and financial difficulties were followed by massive popular revolts, which ultimately toppled the incumbent governments. In spite of the notoriety of these and other cases, our understanding of them and, more generally, of the links between financial turmoil and political crises remains rather poor. Yet such an understanding may be crucial, most significantly for the formulation and evaluation of public policy.

Indeed, some observers of Indonesia and Argentina arrived to the conclusion that their crashes were driven primarily by social, institutional, and political degeneration. One logical implication of that position is that international assistance, in terms of advice or resources, to countries in such circumstances is not advisable, as it is bound to be wasted in the absence of deep institutional and political reform.¹ That analysis, therefore, denies the relevance of existing theories of financial crises, in particular those which emphasized liquidity, self fulfilling panics, and the desirability of an international lender of last resort, in situations in which political instability seems to be the dominant force.

The view that crises like those of Indonesia and Argentina are just the manifestation of underlying political forces has, of course, its own weaknesses. In particular, that view relies upon the implicit assumption that the political equilibrium is largely exogenous with respect to economic and financial events, an assumption that is clearly debatable. The popular uprisings in Indonesia and Argentina appeared to be caused by widespread anger about the economic adjustment measures proposed by the incumbent governments as the best way to overcome ongoing financial difficulties.² So it is not too hard to argue that

¹See Caballero and Dornbusch (2002), for instance.

²In Indonesia, the proximate detonant for the popular revolt of May 1998 was an increase in the cost

political instability is an endogenous response to the economic environment. Accordingly, for example, Haggard (2000), argued that for Indonesia: "...the causal arrows also work in reverse. Economic circumstances contributed to Suharto's fall... " More recently, the empirical work of Frankel (2004) indicates that, in developing countries, currency crashes are associated with a significant increase in the probability that an incumbent government loses office.³

But simply rejecting a purely political view of crises is not entirely satisfying. Ultimately, the cases of Indonesia and Argentina, and surely others, constitute *prima facie* evidence that at least some economic crises include a substantial political component. And then, the observed coexistence of financial crises and political crises presents us with substantial challenges: If political turbulence is not to invalidate existing economic theories of crises, can the latter be amended so as to account for such turbulence? And, if the necessary amendments are feasible, what are their implications for policy analysis?

To tackle these and other associated questions, there is no alternative other than to study explicit models of financial crises and political crises. This paper presents a start in that direction. It develops a very stylized model of a country that has a foreign debt which can be repudiated. In the presence of political distortions, large amounts of debt lead to default and, more to the point, to costly political crisis. But conversely, since financial markets are forward looking, the cost of credit and the magnitude of the debt depend on expectations about political stability. The main novelty of the model is, therefore, to allow

of fuel, electricity, and public transportation, which itself was one condition of the April 1998 IMF package (Globalmacro 1998, Haggard 2000). In Argentina, the political crisis of December 2001 appears to have been a response to fiscal austerity packages (such as the July 2001 zero deficit law) and, specially, controls to limit the withdrawals of bank deposits (*corralito*) and the exhaustion of foreign reserves.

³Frankel states: "Devaluation increases by 45% the probability of the executive losing his or her job" within a year. Also, a currency crash "doubles the probability of a change in the top leadership within the following six months. "

for the simultaneous determination of financial crises and political crises. I argue that this view has significant implications for the analysis of crises and yields significant policy lessons. In particular, I identify cases in which a change in the expectations of foreign lenders is not only self fulfilling but leads to the collapse of the government. In those cases, international liquidity assistance can be designed to avert financial default *and* political disaster, although the design of the appropriate policy differs in significant ways from that prescribed by the extant literature on liquidity crises.

The key aspect of the political side of the model is an information transmission problem between the government and the public. I assume that the debt repayment/default decision is made by a policymaker that has better information than the public about the social cost of default. To control the policymaker's behavior, the representative agent may dismiss her after she has announced whether or not she is about to default on the debt. But dismissing the government is costly for all agents: it constitutes a "political crisis" in the model.

Despite the information asymmetry, no political crisis can occur in equilibrium if the policymaker's objectives coincide with those of the representative agent. For a genuine conflict to emerge, therefore, there must be a "political distortion" in that policymaker's preferences must differ from the maximization of social welfare. In my model, the assumption is that the policymaker may suffer a personal cost, in addition to the social loss, if she is responsible for default. That personal cost may reflect career concerns or political biases; regardless of the interpretation, the divergence of interests means that the option to fire the policymaker now is exercised in equilibrium. In other words, political crises emerge as an implication of the political distortions.

The incidence of the political distortions, and the equilibrium probabilities of default and political crisis, both depend on the stock of foreign exchange reserves and the size of

the foreign debt. The latter is endogenized by embedding the political scenario into a more involved investment problem, in which the government must borrow in the world market in order to undertake a socially desirable investment. The cost of foreign credit and the final debt obligation must then increase with the probability of default and political crises if foreigners are to lend. But this means that, in the extended model, the size of the debt and the likelihood of financial and political crises are simultaneously determined.

The resulting *politico-economic* equilibria have several noteworthy implications. Some crises are "only financial" while others are associated with political turmoil. More interestingly, both kinds of crises can coexist. The intuition is that, if foreign lenders anticipate that a political crisis is likely, they demand a higher interest rate on their loans. But this increases the debt due for repayment, and hence exacerbates the political distortion, possibly validating the lenders' pessimism. In contrast, if lenders believe that the country is politically stable, the cost of credit is lower, which reduces the political distortion. In this sense, financial fragility may lead to political collapse.

The model provides a new perspective on some policies recently proposed to alleviate financial crises. When there are multiple equilibria, international financial assistance packages can help selecting the best equilibrium at a zero cost. This is reminiscent of the policy prescriptions of Chang and Velasco (2000) and other recent papers on liquidity crises. However, there is at least one significant difference. If an equilibrium with "only financial crisis" coexists with an equilibrium in which crises are not only financial but also political, an unconditional loan guarantee provided by the international community selects the first equilibrium, thus eliminating political crises, but implies a net expected transfer to the debtor country. Such a gift can be avoided, but this requires the guarantee to be designed so as to become effective *only* in the equilibrium with default and political crisis; this is the case, for

instance, if the guarantee is made conditional on the cost of credit to the debtor country. The overall policy lesson is that understanding the mutual causation of financial crises and political crises may allow us to find Pareto improving policy, which in my model helps not only on the financial front but also with political stability.

This paper is obviously related to the literature on crises in open economies started by Krugman (1978).⁴ While the literature is huge, it has by and large ignored the interplay between financial crises and political issues which is central to this paper.⁵ In pursuing this approach, I have benefited from many insights from the "political economics" literature usefully summarized by Drazen (2000) and Persson and Tabellini (2000). In particular, the idea that the representative agent can dismiss the policymaker is similar to that in Ferejohn (1986) to study the role of voting, while the government problem of conveying its information to the public is reminiscent of that used by Cukierman and Tomassi (1998) to explain policy reversals.

The rest of the paper is organized as follows. Section 2 describes a basic model of default and shows, in particular, that political crises never occur if there is no divergence between the policymaker's objectives and those of the public. This is the case even if the policymaker has superior information than the representative agent about the social cost of default. Section 3 introduces a divergence between the policymaker's objectives and those of the representative agent. I characterize the resulting equilibria and show that, in particular, political crises may occur if debt is sufficiently large and reserves are low. Section 4 embeds the basic setup as the final stage of a two stage investment problem. I discuss how to characterize

⁴See Garber and Svensson (1995) for a survey of "first generation" models of currency crises. For a review of more recent developments, see Chang (1999).

⁵A notable exception is Drazen (1998), which studies how a currency crisis in one country may provide information about government preferences in other countries and, hence, result in "contagion." Also, Chang (2003) analyzes the links between elections and financial turmoil.

politico economic equilibria and show, in particular, that confidence crises may lead both to an increased probability of default and of political collapse. Section 5 discusses some welfare and policy implications. Section 6 concludes. Finally, an Appendix discusses some peripheral technical material.

2. A Stylized "Non-Political" Model of Default

My analysis is built around a basic model of debt and default. This section describes the main setting⁶ and then, assuming away political distortions, shows that there can be default but never political crises, even if the default decision is delegated to a government that has superior information than the representative citizen. We shall identify conditions that rule out political crises; in particular, it will become apparent that political crises may occur only if the government's objectives differ from those of the electorate.

I focus on a small open economy populated with a representative agent and a government or policymaker. By doing so, our discussion will emphasize conflicts of interest between the government and the public, as opposed to other conflicts, such as those between different groups in the population. Hence the model is applicable to crises in which a popular consensus develops concerning the need to get rid of an incumbent government. This appears to have been the case in Indonesia 1998 and Argentina 2001.

There is only one period and one good, which is traded freely and costs one unit of the world's currency, which will be our numeraire and called *dollar*. For the time being, assume that the economy has an official debt of D dollars to foreign investors due for repayment at the end of the period, but only has $R < D$ dollar "reserves" at that point. In this section

⁶The economic part of the model is very similar to that used by Chang and Majnoni (2002) to study contagion.

and the next we take R and D as given; later we endogenize them and embed the analysis as one stage of a more fully fledged investment problem.

Since $D > R$, repaying the debt requires collecting a tax $X = D - R$ from the representative agent.⁷ The burden of the tax on the representative agent may be higher than X if, for example, taxes are distortionary. This is not essential for the analysis, however, so I just assume that the cost, measured in dollars, of repaying the debt to the representative agent is $X + \Psi(X)$, where Ψ is a non decreasing function that captures the cost of distortionary taxation.

Repudiating the foreign debt is an option for this economy. I assume that default is an all or nothing decision: either all of D is repaid, or all of D is repudiated. The value of default, which I will denote by V , has two components: the representative agent does not pay the tax (and the associated cost of adjustment) and the economy keeps its reserves. Hence $V = R + X + \Psi(X)$. On the other hand, defaulting on the debt imposes a direct cost, whose dollar value will be denoted by χ , on the representative agent. The exact nature of the direct cost of default has been extensively discussed in the sovereign debt literature,⁸ but is not essential here: χ may represent, for instance, the impact of trade sanctions or of future exclusion from foreign credit associated with default. What matters for us is that the direct cost of default χ is a random variable; for simplicity, I assume that it can only take two values, low (χ_L) or high ($\chi_H > \chi_L$). Let q denote the probability that χ is high.

Who makes the default decision and the structure of *information* are crucial. Suppose that the representative agent chooses whether or not the debt is repudiated after observing the realization of χ . Then, the solution is obvious: the debt will be repudiated if $V < \chi$ and

⁷Of course, we implicitly assume that the representative agent has some given income.

⁸For instance, see Eaton and Fernandez (1995).

repaid otherwise. In particular, if

$$\chi_L < V = R + X + \Psi(X) \leq \chi_H \tag{2.1}$$

the representative agent repays the debt if the direct cost of default is high and defaults in the opposite case. In this case, default happens with probability $(1 - q)$. If $V \leq \chi_L$, the representative agent does not default even if the direct cost is small; at the other extreme, $V > \chi_H$, there is default for sure.

The preceding setup is reasonable in a number of ways. In particular, the probability of default is increasing in the debt D and, given D , decreasing on the reserves to debt ratio R/D . These implications are roughly consistent with recent crises. Yet, the setup does not have a "political" dimension. In addition, it is not realistic as, in practice, the decision to default is not made by the public but by the government.

To introduce a political dimension and add realism, I assume that the default decision is made by the policymaker on behalf of the representative agent. The representative agent, however, can *dismiss* the policymaker and overrule her decision, at some cost $\phi > 0$. The dismissal of the government is what constitutes a "political crisis" in this model. In practice, the government can be dismissed in various ways: it can be voted out of office, for example, or it can be forced to resign by a popular revolt, as in the recent cases of Indonesia and Argentina. Clearly, all of these alternatives result in deadweight losses, although the magnitude of the cost may depend on exactly how the government is kicked out.

Finally, I shall assume that the government has some information that is not immediately available to the public. In particular, I will assume that only the policymaker observes χ , the social cost of default, without cost. This captures the idea that policymakers often obtain advance information about the pros and cons of default in debt negotiations, or through

their economists's research; this information does not necessarily becomes available to the average citizen until default is a *fait accompli*.

To mix all these ingredients in a tractable way, I assume the following sequence of events. The policymaker observes the realization of χ , and proposes to default or repay the debt. After observing the policymaker's announcement, but not χ , the representative agent chooses to retain the policymaker or to dismiss her. If the policymaker is retained, her proposal is implemented. If not, the representative citizen learns the value of χ , and chooses whether or not to default on the debt. The period under study then ends.

The outcomes of this model are given by their Perfect Bayesian Equilibria (PBEs)⁹ and depend, in particular, on whether there is a divergence between the policymaker's objectives (which I have not specified yet) and those of the electorate, that is, whether there is a "political distortion." For, if there is no such distortion, the outcome must be the same as when the representative agent chooses policy directly and, in particular, the policymaker is never dismissed.

To be more precise, suppose that the policymaker's preferences are exactly those of the electorate, and that she announces default only if the representative agent, had he been in power, would have chosen so. Then the representative agent has no incentive to dismiss the policymaker: dismissal would entail paying the political cost ϕ but would lead to the same default decision as that proposed by the government. In turn, knowing that the representative agent will retain her independently of her default announcement, the policymaker will default only if the representative agent would have done so.

In sum, even if the representative agent can "fire" the government, a political crisis does not occur in the absence of political distortions. That only the policymaker observes the cost

⁹A suitable definition of PBE is given in Gibbons (1992).

of default does not really matter: in equilibrium, the representative agent believes (correctly) that the policymaker proposes default in and only if it is socially beneficial. Financial crises may exist, but political crises cannot.

3. The Implications of Political Distortions

Things change if the government's objectives do not always coincide with those of the electorate. To allow for this possibility, let us assume now that the policymaker does not only care about social welfare but, in addition, she suffers a *personal cost* if she proposes and implements a default. The personal cost may be large or small; to simplify, I assume that it is either zero or $\gamma\chi$, with probabilities p and $(1 - p)$ respectively. Hence p is the probability that the policymaker is "benevolent," and $(1 - p)$ the probability that she is "biased" or "self interested."

The policymaker's personal cost may have at least two interesting interpretations. The first one is that the policymaker cares not only about society but also about her own career. In that case, defaulting on the debt may have an impact on the policymaker's future above and beyond the cost for the general public, due to loss of reputation and concerns about her ability.¹⁰ The second interpretation¹¹ is that the cost of a default may be different for different groups of the population. In that case, the public may not know whether the policymaker's evaluation of the costs of default are aligned with the average citizen's evaluation or, in contrast, biased towards a particular group.

With the amendment just made, the rest of the model is the same as in the previous section, except that the government knows her own objectives, as well as the direct social

¹⁰An associated interpretation is that the policymaker may be "corrupt", a suspicion that figured prominently in the recent crises of Indonesia and Argentina.

¹¹Suggested by Andres Velasco.

cost of default, before making her default proposal. On the other hand, the public never observes whether the policymaker has a bias or not.

Again, the model is a Bayesian game with private information, and its outcomes are given by its Perfect Bayesian Equilibria. These are many possibilities, and for concreteness the rest of the paper assumes that:

$$(1 + \gamma)\chi_L \geq \chi_H \tag{3.1}$$

This condition implies that, in the (interesting) range given by 2.1, the self interested policymaker will propose to repay the debt even if the social cost of default is low: together with 2.1, 3.1 guarantees (although it is stronger than necessary) that the cost of repayment, $X + \Psi(X)$, is less than the self serving policymaker's cost if she proposes default and is accepted, $(1 + \gamma)\chi_L - R$. One notable implication of these assumptions is that there cannot be a PBE in which political crisis is absent and default happens only if its social cost is low, as the self interested government would repay the debt regardless of the social cost of default. In other words, the outcome of the previous section is now ruled out.

Next, I identify five main types of PBEs, depending on the value of default $V = R + X + \Psi(X)$. As the Appendix argues, these five types exhaust the set of "reasonable outcomes" of the model.¹²

PBE Type i: Neither default nor political crisis

Suppose that $V \leq \chi_L$. Then the costs of default are always larger than the costs of servicing the debt even for the benevolent government. Then in equilibrium, the government proposes to service the debt, which is accepted by the representative agent. Hence the debt is repaid and political crisis is avoided. Neither the benevolent government nor the self

¹²I restrict attention to pure strategies.

interested government has any incentive to propose default, regardless of whether such an announcement results in dismissal. In turn, the representative agent cannot possibly gain from dismissing the policymaker.

As expected, things are fine if debt is low and reserves are large enough. Now suppose that the debt is larger or reserves smaller, so that 2.1 holds. This region is consistent with the next three kinds of equilibria.

PBE Type ii: Default but no political crisis

These PBEs are such that the policymaker proposes default if and only if she is benevolent and the social cost χ is low. In turn, the representative agent never dismisses the policymaker.

To check that the representative agent has no incentive to fire the policymaker, suppose first that the government announces default. Given the policymaker's strategy, the representative agent must then infer that χ is low with probability one. Hence default is socially optimal, and there is no reason to fire the government. After a proposal not to default, the representative agent has a more delicate inference problem: while the cost of retaining the policymaker is known and equal to $X + \Psi(X)$, the cost of firing her depends on the representative agent's beliefs about χ conditional on the policymaker's proposal. But given the policymaker's strategy, Bayes rule gives

$$\Pr\{\chi = \chi_H \mid \text{policymaker proposes to repay}\} = \frac{q}{q + (1 - q)(1 - p)} \equiv z$$

Hence dismissing the policymaker costs ϕ for sure plus an expected cost of $z(X + \Psi(X)) + (1 - z)(\chi_L - R)$, as the representative agent expects that he will himself repay the debt with probability z and default with probability $(1 - z)$. The expected cost of dismissal is then

greater than that of accepting the policymaker's proposal if $X + \Psi(X) \leq \phi + z(X + \Psi(X)) + (1 - z)(\chi_L - R)$, or

$$V \leq \chi_L + \phi/(1 - z) \tag{3.2}$$

The presence of ϕ in this condition is intuitive: if political crisis is very costly, the representative agent is more prone to accept a proposal to repay the debt even if the policymaker may be acting selfishly. More interesting is the role of z . 3.2 must hold if z is close enough to one. For given q , z close to one requires p to be close to one, that is, that the (prior) probability that the policymaker is self interested is small. This is because the representative agent can only gain from firing the government if doing so leads to correcting a "wrong" outcome, which happens when the policymaker turns out to be self interested (and the cost of default low). If p is close to one, the expected gain from dismissing the government is accordingly too small to justify the cost of dismissal.

Finally, checking that the policymaker's strategy is optimal is easy: she always obtains her most preferred outcome conditional on her type and her information.

In short, PBE Type ii obtains if $\chi_L < V \leq \chi_L + \phi/(1 - z)$. In such equilibria, as in the case without political distortions, default occurs with positive probability. Political crises do not occur. Notably, however, political distortions do play a role: default occurs only with probability $p(1 - q)$, as opposed to $(1 - q)$ in the previous section. From the viewpoint of the representative citizen, there is too little default.

PBE Type iii: Socially optimal default, but political crises.

In these PBE, the policymaker follows the same strategy as in PBE Type ii. However, she is dismissed unless she proposes default. Hence a political crisis occurs unless the policymaker is benevolent and the social cost of default is low.

The reasoning preceding 3.2 implies that 3.2 must fail for the representative agent to choose to dismiss the policymaker if she proposes to repay the debt. Assuming that is the case, let us turn to the optimality of the policymaker's strategy. If the policymaker is benevolent, it is clearly optimal for her to propose default when the cost of default is low. If the cost of default is high, the benevolent policymaker's cost from proposing repayment is $X + \Psi(X) + \phi$, as she knows that she will be fired following such an announcement, after which the representative agent will repay the debt after all. By proposing default, on the other hand, the benevolent policymaker secures a cost of $\chi_H - R$, as the political crisis will be avoided at the price of defaulting. Hence it is optimal for the benevolent policymaker to propose debt repayment when $\chi = \chi_H$ if

$$V = R + X + \Psi(X) \leq \chi_H - \phi \quad (3.3)$$

It is easy to check that the same condition implies that the self interested government will propose to repay the debt, and be dismissed, if $\chi = \chi_H$. Finally, consider the decision of the self interested government if $\chi = \chi_L$. Proposing default avoid a political crisis, but at a cost to the government of $(1 + \gamma)\chi_L - R$, since it includes the self interested policymaker's personal loss. On the other hand, proposing repayment results in dismissal, after which the representative agent will default since the cost is low; the associated cost for society and the policymaker is $\chi_L + \phi - R$. Hence proposing repayment is optimal for the policymaker if

$$\gamma\chi_L > \phi \quad (3.4)$$

which I assume hereon. The intuition is that, by proposing repayment, the self interested policymaker accepts her own dismissal. This costs ϕ to her. To remain in power, however,

she must declare default, which costs her $\gamma\chi_L$ over and above the social cost.¹³

Hence, assuming 3.4, PBE Type iii obtains if

$$\chi_L + \phi/(1 - z) < V \leq \chi_H - \phi.¹⁴$$

This is our first encounter with political crisis: in equilibrium, the policymaker is fired if she proposes to repay the debt, which occurs with probability $1 - p(1 - q)$. Default occurs when it is socially desirable to happen, with probability $(1 - q)$. However, the price is that costly government dismissal must happen with positive probability.

Note, in particular, that in this PBE the benevolent policymaker may truthfully claim that the cost of default is high and that the debt should be repaid. Nevertheless, the representative agent pays the political cost to kick her out of office, only to find out later that it is better not to default anyway. In such a case, the political distortion and asymmetric information makes it impossible to convince the population that repayment is really called for.

PBE Type iv: Excessive default plus political crisis

In this kind of PBE, the benevolent government proposes default regardless of χ , which the representative agent accepts. The self interested government proposes to repay the debt and is fired. In the latter case, the representative agent defaults if the social cost is low. Hence there is default with probability $p + (1 - p)(1 - q)$, and a political crisis with probability $(1 - p)$. From a social point of view both default and political crisis occur too often .

In this case, the cost of a political crisis is large enough for the benevolent government to be forced to propose default even if the social cost of default is large. To see why, consider the

¹³Recall that, if there is a default, the self interested policymaker suffers the loss $\gamma\chi$ only if she successfully proposes default.

benevolent government's dilemma if $\chi = \chi_H$. Proposing default has a social cost of $\chi_H - R$. But, given the strategy of the representative agent, proposing repayment has a expected cost of $\phi + X + \Psi(X)$. Hence proposing default dominates if $\chi_H - R < \phi + X + \Psi(X)$, that is, if $V > \chi_H - \phi$ (so that 3.3 fails). If the cost of default is low, the benevolent government cannot do better than proposing for default, which is accepted by the representative agent.

Consider now the self interested government. If the cost of default is low, proposing repayment and proposing default both end up in default; however, the first alternative is preferred since $\gamma\chi_L > \phi$ means that the self interested government would rather be fired than to be personally associated with the default. If the cost of default is high, proposing repayment leads to dismissal followed by repayment, while proposing default is accepted. Since $\gamma\chi_H > \gamma\chi_L > \phi$, the cost of the former ($\phi + X + \Psi(X)$) is less than the cost of the latter ($(1 + \gamma)\chi_H - R$).

To see that the representative agent strategy is optimal for him, suppose that the government has proposed to repay the debt. If the government is not dismissed, the representative agent expects a cost of $X + \Psi(X)$. To calculate the cost of firing the government, note that in this PBE the policymaker's proposal does not provide any information about the cost of default χ . Hence, the representative agent expects to default with probability $(1 - q)$ if he dismisses the government. The expected cost of dismissal is, then, $\phi + q(X + \Psi(X)) + (1 - q)(\chi_L - R)$. This is less than $X + \Psi(X)$ if 3.2 fails.

Finally, if the policymaker has proposed default, and she is fired, the expected cost to the representative agent is $q(X + \Psi(X)) + (1 - q)(\chi_L - R) + \phi$. Not firing her implies an expected cost of $q(\chi_H - R) + (1 - q)(\chi_L - R)$. Hence the representative agent must retain the policymaker if $q(\chi_H - R) < q(X + \Psi(X)) + \phi$, or if $V > \chi_H - \phi/q$, which holds if 3.3 fails.

Finally suppose that the debt is so large and reserves so low that $V > \chi_H$. Then the outcome is

PBE Type v: Sure default, and political crisis.

In this PBE, if the government is dismissed, the representative agent will choose to default for sure. The benevolent policymaker defaults and is not dismissed; the self interested policymaker proposes to repay the debt, she is fired, and the representative agent defaults. Default then obtains with probability one, while a political crisis occurs with probability $(1 - p)$.

It is easy to see that the benevolent policymaker's strategy is optimal, and that the self interested policymaker's strategy is optimal because of 3.4. After a proposal to default, it is obviously optimal for the representative agent not to dismiss the government. After a proposal to repay the debt, the situation is not as obvious: retaining the government has a known cost of $X + \Psi(X)$. On the other hand, dismissing the government and defaulting has an expected cost of $\phi + (q\chi_H + (1 - q)\chi_L) - R$, as the repayment proposal does not convey any information about χ in equilibrium. Hence dismissal is the better option only if

$$\phi + (q\chi_H + (1 - q)\chi_L) \leq V$$

This inequality is guaranteed, in the region $V > \chi_H$, if $(1 - q)(\chi_H - \chi_L) \geq \phi$, which assume for concreteness. The intuition is, clearly, that the cost of firing the government cannot be too large if the representative agent is to exercise that option.

The following table summarizes the analysis:

PBE Type	Value of default (V)	Prob. of default	Political crisis prob.
i	$V \leq \chi_L$	0	0
ii	$\chi_L < V \leq \chi_L + \frac{\phi}{1-z}$	$p(1-q)$	0
iii	$\chi_L + \frac{\phi}{1-z} < V \leq \chi_H - \phi$	$1-q$	$1-p(1-q)$
iv	$\chi_H - \phi < V \leq \chi_H$	$p + (1-p)(1-q)$	$1-p$
v	$\chi_H < V$	1	$1-p$

The probability of default is monotonically increasing in the value of default, V . In contrast, the probability of a political crisis is not. This implication may be of interest for empirical work and is intuitive: in this model, political crises occur because of an informational problem, but the transmission of information plays little role if the economic fundamentals are dismal enough.

4. Liquidity Crises and Political Crises

So far we have taken the amount of debt and reserves, D and R , as given. It is instructive, however, to make them endogenous to the problem. This allows for an interesting interplay between financial fragility and political turmoil.

The easiest way to proceed is to embed our model as the final "political stage" of a two stage investment problem. The first, or "financial" stage, is as follows. Take the environment of the previous sections but assume that at the beginning of the period of analysis the economy has an investment opportunity that costs I dollars. Assume that, at that point, the economy has a prior debt of D_0 dollars, due at the end of the period, but has no reserves (alternatively, I is the difference between the cost of the investment and the initial reserves).

The investment returns $R > 0$ dollars, but only at the end of the period. Hence, making the investment requires this economy to borrow the I dollars needed. I assume that the potential lenders are risk neutral foreign lenders, whose opportunity cost of funds is zero.

For simplicity, assume that the investment has some nonpecuniary benefits as well, so that the representative agent would choose to undertake the investment if at all possible. To do this, the government is instructed to sell claims to D_1 dollars, payable at the end of the period, to the foreign investors. As the latter are rational, if the government is able to raise the funds for the investment, the price of each claim (denoted by ω hereon) must be equal to the probability that the debt claims will be repaid, and $\omega D_1 = I$. This ends the financial stage. The continuation, political stage, is just the model of the last section.

Now, in the political stage, the amount of reserves R is given by the return on the investment (if enough funds were raised in the financial stage), still an exogenous quantity. But now the amount of debt due at the end of the period, D , is equal to $D_0 + D_1 = D_0 + I/\omega$, which is endogenous and depends on the probability of default. A *politico economic* equilibrium is now an amount of debt D and a probability of repayment ω such that, given D and R , the probability of repayment is determined by the PBE of the political stage, and $D = D_0 + I/\omega$.

It is straightforward to construct different kinds of politico economic equilibria, corresponding to the different PBE outcomes of the political stage. For instance, suppose that there is no default in equilibrium. Then the probability of repayment, ω , must be one, and hence $D = D_0 + I$. For this to be a politico economic equilibrium, D and R must lead to a Type i PBE of the political stage, which requires,

$$V = R + X + \Psi(X) = D_0 + I + \Psi(D_0 + I - R) \leq \chi_L \quad (4.1)$$

This condition is intuitive: for default never to happen, neither the initial debt D_0 nor the initial financing needs I can be too large. Also, the condition is more easily satisfied if R is large.

Let us now look for an equilibrium in which the political stage continuation outcome is given by PBE Type ii. Recall that, in such a PBE, default happens if and only if $\chi = \chi_L$ and the government is benevolent, and there is no political crisis. Then $\omega = 1 - p(1 - q)$, and $D = D_0 + I/[1 - p(1 - q)]$, and for this to be an equilibrium,

$$\chi_L < D_0 + I/[1 - p(1 - q)] + \Psi(D_0 + \{I/[1 - p(1 - q)]\} - R) \leq \chi_L + \phi/(1 - z) \quad (4.2)$$

Comparing this condition with 4.1, two implications are noteworthy. First, a higher initial debt D_0 , a larger investment requirement I , or a smaller investment return R make it more likely that 4.1 will cease to hold and 4.2 will hold instead. In this sense, bad fundamentals are associated with a higher likelihood of a financial crisis. Second, and more interestingly, *both* conditions may hold, since p and q are between zero and one. (To see this, suppose that 4.1 holds with equality. Then the first inequality of 4.2 holds, and the second inequality must hold for some parameter values.) Hence, there are two equilibria, one without default, and one in which default happens with positive probability.

That financial crises may be self fulfilling in the sense just described is not unexpected in light of recent developments in the literature.¹⁵ In fact, the model would display multiple equilibria and self fulfilling crises even if in the absence of the political distortion: that would be the case if the political stage were given not by the setting of section 3 but by the "apolitical" one of section 2. Note, however, that the probability of default would be different in the latter case.

¹⁵See, for instance, Chang and Velasco (2000).

There is a more novel possibility. Suppose that, in equilibrium, the political stage continuation outcome is PBE type iii. Then the probability of default is $1 - q$, and equilibrium requires

$$\chi_L + \phi/(1 - z) < D_0 + I/q + \Psi(D_0 + (I/q) - R) \leq \chi_H - \phi \quad (4.3)$$

High D_0 , large I , or low R now may lead not only to default, but to political crisis. In addition, since $q = 1 - (1 - q) < 1 - p(1 - q)$, both 4.2 and 4.3 can be satisfied. In such a case, there are two equilibria, one in which the probability of default is only $p(1 - q)$ and there are no political crises, and another in which default occurs with higher probability $(1 - q)$ and a political crisis occurs with positive probability.

Hence an equilibrium with "only financial " crisis may coexist with an equilibrium with both financial *and* political crisis. The intuition is that, if lenders hold adverse expectations about the politico-economic outcome, they will demand a higher interest rate on their loans; the high cost of capital increases the debt D and, hence, exacerbates the political problem so as to validate pessimistic expectations. This is not a necessary outcome, however: if lenders anticipate a more favorable outcome in the political stage, the interest rate on the debt is lower, which eliminates political crises. In this sense, financial fragility can result in political collapse.

5. Welfare and Policy Implications

Recent work on liquidity crises has emphasized that suitable policies can, under some circumstances, prevent crises at little cost. In particular, if there are multiple equilibria, an international institution (such as the IMF) can effectively eliminate Pareto dominated crisis outcomes by providing international loan guarantees or acting as an international lender

of last resort. In addition, those assistance packages are not needed in the surviving equilibrium, and hence they have a zero expected cost for the international institution. In this section, I argue that international policy intervention can be similarly beneficial in this model, but that the interaction between financial crisis and political crisis may require remarkable modifications to the analysis.

The recent case for international liquidity assistance remains valid in our model if both 4.1 and 4.2 hold so that there are two rational expectations equilibria, one without any crisis and another with "only financial" crisis. In this case, it is easy to check that the no default equilibrium is less costly for the representative agent than the financial crisis equilibrium. Then the natural question is whether the latter can be ruled out by an appropriate policy.

To find the answer, suppose now that some external institution (IFI for short) agrees to provide a guarantee of the debt of the country under study. Here, an (international) *guarantee* is a facility that, if at the end of the day the country has defaulted on its debt, is activated and pays foreign debt holders the D dollars owed to them. To keep my discussion in focus, I assume that the policy is automatic and credible.¹⁶

Clearly, a key effect of the guarantee is to make the country's debt riskless from the viewpoint of lenders. Hence the country will be able to raise the investment funds it needs, I , at a zero rate of interest. This ensures that, at the political stage, $D = D_0 + I$. But then 4.1 and 4.2 imply that only PBE Type i can be an equilibrium continuation of the political stage. In this sense, the guarantee selects the no crisis equilibrium. And since there is default with zero probability in that equilibrium, the guarantee is activated with zero probability, and the expected cost to the IFI is zero.

This analysis shows that the main policy implications of the recent literature on liquidity

¹⁶In so doing, I set aside two relatively ignored but arguably critical questions for future research: the incentive structure of the IFI and its own financing.

crises survive if a no default equilibrium and an "only financial crisis" equilibrium coexist. In this case, ignoring the possibility of a political crisis in the policy analysis has no adverse consequences.

However, extending the policy analysis to a case in which a political crisis may happen with positive probability is not trivial. To illustrate, suppose that 4.2 and 4.3 hold while 4.1 fails. As shown in the previous section, in this case there is a politico economic equilibrium in which the political stage outcome is PBE Type iii and, hence, a political crisis happens with positive probability. Such a "financial cum political crisis" equilibrium coexists with the "only financial crisis" equilibrium. Moreover, as one can easily show, the representative agent is better off in the latter.¹⁷

Consider now the implications of an international guarantee. As already seen, an international guarantee implies that the country's cost of credit falls to zero and $D = D_0 + I$. This and 4.2 then imply that the PBE Type iii can no longer be an equilibrium continuation at the political stage. So the guarantee does eliminate the "financial cum political crisis" equilibrium. On the other hand, the failure of 4.1 together with 4.2 means that the continuation at the political stage must be PBE Type ii: the "only financial crisis" equilibrium survives.

Hence a guarantee seems to be helpful at selecting a good equilibrium also in this case. However, there is a key difference. While the guarantee does rule out political crises, it implies that the IFI must expect to *lose* money: since default occurs with positive probability in the "only financial crisis" equilibrium, the IFI must service the country's debt with positive

¹⁷The proof goes as follows: let V_2 and V_3 denote the expressions in the middle of 4.2, and 4.3 respectively, and $X = D_0 + I / [1 - p(1 - q)]$. Then, the representative agent's expected cost can be written as $X + \Psi(X) + p(1 - q)(\chi_L - V_2)$ in the only financial crisis equilibrium, and as $(\chi_L - R) + q(V_3 - \chi_L) + (1 - p(1 - q))\phi$ in the financial cum political crisis equilibrium. It is then straightforward to check that the last quantity is larger than the preceding one.

probability. The counterpart is that the country's representative agent benefits from the guarantee. This is because the country's cost of credit would be zero with the guarantee, but positive without the guarantee in the "only financial crisis" equilibrium. In other words, the guarantee implies an expected gift from the IFI to the debtor country, which may be problematic.

To avoid the pitfall just identified, the IFI policy must be tailored to so that it is called upon only in the worst equilibrium, in which financial crisis coexists with political crisis. One way for the IFI to do this is to make the guarantee *conditional* on the cost of credit to the debtor country. To be more precise, suppose that the IFI commits to guarantee the country's debt, but only if the price of the debt issue at the financial stage (ω) falls below its price in the better equilibrium, $1 - p(1 - q)$. Such a conditional guarantee eliminates a "financial cum political" crisis, as in any politico-economic equilibrium the price of the debt issue cannot be less than $1 - p(1 - q)$, with together with 4.2 rules out the occurrence of PBE Type iii at the political stage. By construction, on the other hand, the conditional guarantee leaves unaffected the "only financial crisis" equilibrium. Finally, since this is the only equilibrium left and the conditional guarantee is not activated in it, the expected cost of the guarantee is zero.

The conditional guarantee just described, therefore, succeeds at eliminating the "financial cum political" crisis at a zero expected cost for the international community. The same result may be achieved in other ways. For instance, the same outcome obtains if the IFI commits to honor the country's debt if default *and* a political crisis both occur.¹⁸ This approach may be less palatable, however, it directly links international assistance to the realization of political events.¹⁹

¹⁸The proof of this assertion is easy and left to the interested reader.

¹⁹There is nothing in the model, however, to justify such reluctance. Also, in a conditional guarantee linked

The main point, though, is that this model implies that the interaction between financial crises and political crises may have substantial implications for policy analysis. While that interaction can be safely ignored in some cases, there are other cases in which policy prescriptions must be altered in nontrivial ways. Even in the latter cases, though, it may be possible to find policy packages that benefit debtor countries at negligible costs for the international community. In fact, I have shown that suitable international assistance not only reduces the probability of default but also, at the same time, eliminates the possibility of a political crisis.

To close this section, I should emphasize that, as stressed in the liquidity crisis literature, policy options are more limited if equilibria are unique. Suppose that 4.3 holds but 4.1 and 4.2 fail, so that in the absence of IFI intervention the only equilibrium involves a financial-cum-political crisis. Then one can check that a conditional guarantee would still involve a financial-cum-political crisis.²⁰ And, as a positive probability of default would remain, the limited guarantee would imply an expected loss for the IFI, although the country's cost of credit would fall.

6. Final Remarks

Three assumptions are most clearly responsible for the interplay between financial distortions and political crises in my analysis: that policy is delegated to the government, that there is a principal-agent type of problem between the government and the representative citizen, and that that problem is exacerbated by the existence of foreign debt. Political crises emerge in equilibrium as a response to that combination.

to the price of the debt issue, international financial assistance depends on political equilibria, although here the connection is less direct and becomes active with zero probability.

²⁰This is implied by the failure of 4.2.

While the model is perhaps too stylized to be realistic, it may be instructive to speculate on some policy aspects not already discussed. The conflict between the government and the public depends on an asymmetry of information along two dimensions: the social costs of default and the policymaker's objectives. In the model, the social cost of default χ is a catch all for the different fundamental variables that may affect the costs and benefits of default. If the representative agent could observe χ , presumably he would be able to avoid political crises (by just telling the policymaker when to default). Hence the model suggests that attempts at increasing transparency, in the sense for example of faster and better dissemination of economic data, may have a beneficial effect not only in economic terms but also on political stability.

The role of asymmetric information in the policymaker's objectives may be more subtle, and its policy implications may depend on the interpretation one gives to the policymaker's personal cost of default. If the personal cost can be associated with career concerns of the policymaker, the incentives problem can perhaps be addressed by a suitable contract that compensates the policymaker appropriately if she has to manage a default. Existing incentives would seem to work, if anything, in the opposite direction. If the personal cost, on the other hand, can be associated with a political bias in favor of some social groups that suffer disproportionately from a default, corrective policies may be harder to find. One may have to ask how such a policymaker was elected in the first place.

Finally, as already mentioned, by assuming a representative agent the model focuses on a conflict between the government and its people. I have argued that this focus is warranted for some episodes, but it may be less so when the heterogeneity of interests within the population is a key issue. This indicated the need for more research to understand issues such as the observed relationship between financial volatility and electoral uncertainty, recently

exemplified by financial turbulence in Brazil. ²¹

²¹Empirical evidence on this issue is given by Bussiere and Mulder (1999). Chang (2003) provides a theoretical model.

Appendix

The purpose of this Appendix is to analyze the possibility of PBEs not discussed in section 3. Its main point is that other candidates are quickly ruled out, or are supported by questionable beliefs out of the equilibrium path.

The discussion in the main text leaves open two main possibilities:

1. PBEs in which the government is fired only after a default announcement. Then, as the reader can check, both policymaker types must propose repayment if $\chi = \chi_H$. If $\chi = \chi_L$ there are two alternatives:

(i) If $V \geq \phi + \chi_L$ both policymakers must announce default. But then both are being truthful, and hence it cannot be optimal for the representative agent to dismiss either.

(ii) If $V < \phi + \chi_L$ both policymakers must announce repayment. This possibility is readily ruled out by the Intuitive Criterion (discussed, for instance, in Gibbons 1992).²²

2. PBEs in which the policymaker is fired no matter what she says. As easily shown, this can be optimal for the representative agent only if $\chi_L \leq V \leq \chi_H$. Otherwise the representative agent is better off dismissing only a policymaker that is observed lying.

I restrict attention to the case in which the good government acts truthfully. In this case, there are two alternatives not already settled:

(i) The bad government always proposed default. Then, after a repayment proposal, the representative agent learns that $\chi = \chi_H$ for sure and has no incentive to fire the government.

²²A default proposal is out of the equilibrium path. But, if $\chi = \chi_L$, announcing default is equilibrium dominated by the self servient policymaker and not for the benevolent one. This implies that after a default proposal, the representative agent should place zero probability to the event that the policymaker is self servient and $\chi = \chi_L$.

(ii) The bad government always lies. One can show that this can be a PBE only if

$$\phi \left[2 + \frac{q}{1-q} \left(\frac{p}{1-p} + \frac{1-p}{p} \right) \right] < \chi_H - \chi_L$$

To rule out this PBE, I assume that the inequality fails: a sufficient condition is that either p or q is close enough to one.

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