Financial Crises and Political Crises[*]

Roberto Chang[†]

Rutgers University

First Draft: May 2002. Current Version: September 2002

Abstract

Why are some financial crises associated with political crises and some are not? Does political instability cause financial fragility or the other way around? What are the implications of political distortions for policy in countries experiencing financial turmoil? This paper studies these and other questions in a formal model of debt, default, and financial crisis. A key assumption is that the default decision is made by a government that has superior information than the public about the social costs of default. Citizens, however, 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, 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, I show that there are equilibria in which crises are "only financial," and equilibria in which default and political crises occur. In some cases, both 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. Policy analysis is delicate, however, and may require linking financial policies to political outcomes.

Financial Crises and Political Crises

Roberto Chang
Rutgers University

First Draft: May 2002. Current Draft: September 2002

1. Introduction

A striking aspect of Argentina's recent episode was how the crisis spread, well beyond the economic and financial spheres, to become a near complete collapse of the political system. In view of this phenomenon, reactions have been very diverse. One position, for instance, has been to conclude that economic and financial help, in terms of advice or resources, will necessarily be wasted until the political problem is solved. At the other extreme, it is argued that the international community did not help Argentina enough, which led to its political collapse.

One thing seems certain, however. Economic observers and advisors were, and still are, completely unarmed to deal with the interplay between financial crisis and political crisis that took place in Argentina. We simply do not have a theory, let alone a satisfactory one, of how a financial crash causes or depends on political conflict. This state of affairs may reflect, to a degree, the pre Argentina sequence of crises in emerging markets. The most important episodes (Mexico 1994-95, Korea 1997-98, Brazil 1999) were not followed by political collapse.[1] As a consequence, perhaps, models of financial crises abstained from political issues to focus on other novel and salient aspects of recent episodes. However, such a research strategy neglects several important questions: Why are some crises and not others associated with political conflict? Do political distortions matter even if no political collapse is observed? And, how should the existence of political constraints affect our policy advice for countries experiencing financial problems?

---

[1]Although the Mexican crisis was preceded by the Colosio assassination, and that political turmoil engulfed Indonesia and Malaysia in 1997-98.

To tackle these and other relevant questions, I see no alternative other than to study explicit models of financial crises and political crises. This paper presents a start in that direction. I develop 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. 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 such cases, international liquidity assistance can be designed to avert financial default *and* political disaster.

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

Despite the information asymmetry, if the government's objectives coincide with those of the representative agent, no political crisis is possible in equilibrium. For a real conflict to emerge, therefore, there must be a "political distortion" in that policymaker preferences must differ from maximizing 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 size of the foreign debt and foreign exchange reserves. These quantities can be endogeneized by embedding the political scenario into a more involved investment problem, in which the government needs to borrow in the world market if it is to undertake a socially desirable investment. I fully characterize the equilibria of the extended model. One result is that 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 will demand a higher interest rate on their loans. But this increases the debt due for repayment, and hence exacerbates the political distortion. 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.

I show that, when there are multiple equilibria, international financial assistance may 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 are key differences. In particular, 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 transfer to the debtor country. Such a gift can be avoided but only if the guarantee only covers the debt if there is default *and* a political crisis. One implication for policy is that refraining from providing financial assistance to a country that is expected to have a political meltdown may amount to missing a key opportunity for Pareto improvement. I emphasize that policy analysis is delicate, however. Policy options seem more limited if equilibrium is unique.

This paper is obviously related to the literature on crises in open economies started by Krugman (1978).[2] While the literature is huge, it has by and large ignored the implications of politics.[3] In contrast, the interplay between financial crises and political issues is central to this paper. 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 costs of default. Section 3 introduces a divergence between the policymaker's objectives and those of the representative agent. I characterize

---

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

[3] A 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."

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 show how to characterize rational expectations 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.

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 setting[4] 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 under which political crises are ruled out; in particular, it will become apparent that political crises may occur only if the government's objectives differ from those of the electorate.

Consider a small open economy populated with a representative agent and a government or policymaker. There is only one period and one good, which is traded freely and costs one unit of the world 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 and the next we shall take R and D as given; later we will 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.[5] The burden of the tax on 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 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 economy keeps its reserves. Hence $V = R+$

---

[4]The economic part of the model is very similar to that used by Chang and Majnoni (forthcoming) to study contagion.

[5]Of course, we implicitly assume that the representative agent has some given income.

$X + \Psi(X)$. 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 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 repaid otherwise. In particular, if

$$\chi_L < V = R + X + \Psi(X) \leq \chi_H \qquad (2.1)$$

the representative agent repays the debt if the direct cost of default is high and default 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, 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 case of Argentina. Clearly, all of these are costly alternatives, although the magnitude of the cost may depend on exactly how the government is kicked out.

Finally, to make the problem interesting and realistic, 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 include 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) 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 the 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 of default does not really matter: in equilibrium, the representative agent believes 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. The second interpretation [6] 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 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 we will restrict parameters to satisfy:

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

This condition implies that, in the (interesting) range given by 2.1, a 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 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 not default and repay the debt regardless of the social cost of default. In other words, the outcome of the previous section is now ruled out.

There are different types of PBEs, depending on the value of default $V = R + X + \Psi(X)$.

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 interested government has any incentive to propose default, regardless of whether such an announcement results in

---

[6]Suggested by Andres Velasco.

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. If debt is larger or reserves smaller, 2.1 may hold. This 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 chooses never to dismiss the policymaker.

To check that the representative agent has no incentive to fire the policymaker, suppose first that the government announces default. Then, given the policymaker's strategy, the representative agent must 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

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

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 there is a small (prior) probability that the policymaker is self interested. This is because the representative agent can only gain from firing the government if doing so leads to correcting a "wrong" outcome. This only happens if the policymaker turns out to be self interested (and the cost of

8

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. But 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. On the other hand, political crises do not occur in Type ii equilibria.

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. 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 policymaer to propose debt repayment when $\chi = \chi_H$ if

$$V = R + X + \Psi(X) \leq \chi_H - \phi \tag{3.3}$$

It is easy to check that the same condition implies that the self interested government will choose to 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 implies avoiding the political crisis, but the cost to the government is $(1+\gamma)\chi_L - R$, 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

$$\gamma\chi_L > \phi \tag{3.4}$$

9

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.[7]

Hence, assuming 3.4, PBE Type iii obtain if $\chi_L + \phi/(1-z) < V \leq \chi_H - \phi$.[8] 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. Argentina's recent debacle may come to mind.

PBE Type iv: Too much 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 $(1-q)$. Both default and political crisis occur too often from a social point of view.

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 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,

---

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

[8]To simplify exposition, I assume that this interval is not empty.

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 $(\phi + X + \Psi(X))$ exceeds 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, $\phi + q(X + \Psi(X)) + (1 - q)(R - \chi_L)$. 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 case, if the government is dismissed, the representative agent will choose to default for sure. Assuming 3.4, in the only PBE 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 $(1 - p)$.

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	$V > \chi_H$	1	$1 - p$

11

Interestingly, the probability of default is monotonically increasing in the value of default, V. In contrast, the probability of a political crisis is not. In this model, political crises occur because of an informational problem. When the economic fundamentals are dismal, the transmission of information plays little role.

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. In so doing we will see that there may be 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 like 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 ω is the probability that the debt claims will be repaid and the government is able to raise the funds for the investment, $\omega D_1 = I$. 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 as it depends on the probability of default. Given the parameters of this model, a rational expectations 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 $D = D_0 + I/\omega$.

There are different kinds of rational expectations 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 an equilibrium, D and R must lead to a Type i PBE of the political stage, which requires,

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

This condition is intuitive: for default never to happen, the initial debt D_0 and the initial financing needs I cannot be too large. Also, the condition is more easily satisfied if R is large.

Suppose now that, in equilibrium, we obtain the outcome of PBE Type ii of the political stage, in which 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 $D = D_0 + I/\left[1 - p(1-q)\right]$. For this to be an equilibrium,

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

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.[9] 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.

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

---

[9] See, for instance, Chang and Velasco (2000).

requires

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

High D_0, large I, or low R now may lead not only to default, but to political crisis. More importantly, $q = 1 - (1 - q) < 1 - p(1 - q)$, 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. 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. 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 may, under some circumstances, prevent crises at little cost. In particular, if there are multiple equilibria, an international institution (such as the IMF) may 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 will 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.

To start, suppose that 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. 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 the latter can be ruled out by an appropriate policy.

To analyze the question, 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 hat, if at the end of the day the country has defaulted on its debt, is activated and pays foreign debtholders the

D dollars owed to them. To keep my discussion in focus, I assume that the policy is automatic and credible.[10]

Clearly, one 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 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 discussed in the previous section, in this case there is a rational expectations 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 and, as one can show, the representative agent is better off in the latter.[11]

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

---

[10] In 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.

[11] The proof goes as follows: let V_2 and V_3 denote the expresions 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.

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 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 a gift from the IFI to the debtor country, which may be problematic.

To avoid the pitfall just identified, the IFI policy must be amended in a surprising way: the IFI must commit to honor the country's debt if there is default *and* a political crisis. In other words, the guarantee must be *limited*. To see how a limited guarantee eliminates a "financial cum policy crisis" equilibrium observe that, if the political stage outcome were PBE Type iii, the debt would not be repaid if there were default and the government were not dismissed. Since foreign investors would be repaid otherwise, the probability of repayment would be $1 - p(1 - q)$. But then, 4.2 would imply a value of default V less than $\chi_L + \frac{\phi}{1-z}$, which is inconsistent with having PBE Type iii as the political stage continuation.

On the other hand, suppose that the political stage outcome is given by PBE Type ii. Then a political crisis occurs with zero probability, and as a consequence a limited guarantee is never activated and does not affect the pricing of the country's debt. Then 4.2 ensures that the "only financial crisis" equilibrium survives. Finally, the expected cost of a limited guarantee for the IFI is clearly zero.

Some readers may find the idea of making internatioanl assistance conditional on a political crisis hard to accept. However, such a prescription makes perfect sense in the context of our analysis. Moreover, our discussion illustrates a much larger issue: 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 debtorc countries at negligible costs for the international community. In fact, I have shown that international assistance can not only reduce the probability of default but also eliminate 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 limited guarantee would still involve a financial-cum-political crisis.[12] As there would be a positive probability of default with financial crisis, 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.

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.

---

[12]This is implied by the failure of 4.2.

References

[1] Chang, R. "Understanding Recent Crises in Emerging Markets," *Federal Reserve Bank of Atlanta Economic Review*, Second Quarter 1999, 6-17.

[2] Chang, R. and G. Majnoni. "Fundamentals, Beliefs, and Financial Contagion," *European Economic Review*, forthcoming 2002.

[3] Chang, R. and A. Velasco. "Liquidity Crises in Emerging Markets: Theory and Policy," in *NBER Macroeconomics Annual 1999* (Ben Bernanke and Julio Rotemberg, eds.), The MIT Press, Cambridge, 2000.

[4] Cukierman, A. and M. Tomassi. "When Does it Take Nixon to Go to China?" *American Economic Review* 88, 1998, 180-97.

[5] Drazen, A. "Political Contagion in Currency Crises." In P. Krugman, ed. *Currency Crises.* Cambridge, MA: NBER 1998.

[6] Drazen, A. *Political Economy in Macroeconomics.* Princeton, NJ: Princeton University Press, 2000.

[7] Ferejohn, J. "Incumbent Performance and Electoral Control." *Public Choice* 50 (1986), 5-26.

[8] Garber, P. and L. Svensson. "The Operation and Collapse of Fixed Exchange Rate Regimes." In *Handbook of International Economics,* G. Grossman and K. Rogoff (eds.). Amsterdam: Elsevier Science B.V., 1995.

[9] Krugman, P., "A Model of Balance of Payments Crises," *Journal of Money, Credit and Banking*, 1979, 311-25.

[10] Persson, T. and G. Tabellini. *Political Economics.*Cambridge, MA: MIT Press, 2000