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Crisis Lending, Moral Hazard, and IMF Conditionality

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Abstract:

We present a framework that clarifies the financial role of the IMF, the rationale for conditionality, and the conditions under which IMF-induced moral hazard can arise. In the model, countries undertake crisis prevention efforts before, and crisis resolution efforts after an adverse shock. Traditional conditionality commits country authorities to undertake crisis resolution efforts, facilitating the return of private capital, and ensuring repayment to the IMF. Nonetheless, moral hazard can arise if country authorities discount crisis resolution costs too much relative to the social optimum. Moral hazard can be avoided by making IMF lending conditional on crisis prevention efforts.

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I. INTRODUCTION

Over the last ten years, the IMF's crisis lending policies have been at the center of debates on IMF reform. Some have questioned the objectives of IMF crisis lending, while others have been concerned with the "moral hazard" that such lending may generate, as well as the nature and extent of IMF conditionality. Protagonists in such debates often fail to reach consensus at least in part because they have different implicit models in mind, or use the same term, such as moral hazard, to mean different things. It does not help, from that point of view, that there is no unified theoretical framework able to encompass a wide range of the arguments that are made about IMF crisis lending and conditionality.

The purpose of this paper is to propose such a framework, and then to study the implied mapping from assumptions to policy implications. The questions that this framework will help to address include: Should the IMF act as a lender of last resort that lends exclusively to "illiquid but solvent" countries? Does IMF crisis lending generate moral hazard and, if so, through which channels? What should be the main purpose of IMF conditionality? Should it be to minimize the welfare cost of crises, to ensure that the IMF's loans get repaid, or to ensure that foreign investors are repaid? Should conditionality be applied only *ex post*, accompanying IMF assistance in the event of crisis, or also *ex ante*, as a way of pre-qualifying countries that would be eligible for IMF loans?

The theoretical framework in this paper is based on the assumption that the IMF has a role to play in crises, because it is more effective than uncoordinated private investors in eliciting policy adjustments from crisis countries. As shown in more detail in the next section of this paper, the IMF achieved this ability over time by developing a "lending technology" based on tranching, close monitoring, and conditionality. Although this view of the IMF is not new—it is consistent with Tirole's (2002) view of the IMF as "delegated monitor"² and with Khan and Sharma's (2001) analysis of IMF conditionality as a form of collateral—this paper represents, to our knowledge, the first attempt to model this view of the IMF's role and systematically draw its implications based on a rigorous welfare analysis.³

² The IMF acts as a delegated monitor for the creditors *ex post* (in a crisis), which benefits the debtor country *ex ante* (when the borrowing takes place): "the IMF's role is to substitute for the missing contracts between the sovereign and individual foreign investors and thereby to help the host country benefit fully from its capital account liberalization. Accordingly, the IMF should act as a delegated monitor and a trustee for foreign interests precisely to facilitate the country's favorable access to foreign borrowing." (Tirole, 2003)

³ See Federico (2001) for an earlier paper that models both *ex post* and *ex ante* conditionality within one framework. *Ex ante* conditionality has also been modeled by Jeanne and Zettelmeyer (2000, 2001a) and Weithöner (2006). See also the survey by Frech (2005).

The main conclusions are as follows. First, if the IMF’s purpose is to undertake crisis lending and not international transfers, it follows that it should lend only to solvent countries. However, the prescription of lending only to “illiquid but solvent” countries is simplistic, not so much because this difference may not be perfectly observable (as is often argued), but because the perception of solvency is determined by expectations about future policies, which themselves are endogenous to the intervention of the IMF. The relevant question for a given crisis country is whether it is *conditionally* solvent, in the sense that the IMF can help to re-establish solvency through instruments in its toolbox—in particular, conditional tranching lending.

As regards moral hazard and conditionality, two questions are crucial:

- Is IMF *ex post* conditionality effective in re-establishing solvency?
- Are the objectives of domestic policymakers well aligned with the maximization of domestic welfare?

We find that if the answer to both questions is positive, countries are likely to “produce” the optimal degree of crisis prevention effort, IMF lending does not generate moral hazard, and there is no reason to extend conditionality beyond measures that are required to reestablish solvency after a crisis.⁴ If, on the other hand, the answer to one (or both) of the above questions is negative, then countries are likely to produce a sub-optimal level of crisis prevention effort, IMF lending will create some moral hazard, and there may be a good case for mitigating this moral hazard through *ex ante* conditionality (or pre-qualification).

Our own reading of the evidence is that IMF lending to emerging market countries—which has always been repaid in full—does not involve substantial transfers,⁵ but that the answer to the second question may well be negative in some cases. It is plausible to assume that countries tend to invest insufficiently in crisis prevention because of standard political economy distortions, such as policymakers discounting the future at an excessively high rate. These distortions will have implications for the optimal design of the conditionality associated with crisis lending, as discussed below.

In the sections that follow, we first sketch the historical context of the debate to which this paper speaks. We then briefly describe the academic literature on the themes of this paper—

⁴ This assumes that there is no international externality in trade or finance. Such an externality would provide an additional rationale for conditionality from a crisis prevention perspective, as shown by Weithöner (2006).

⁵ See Jeanne and Zettelmeyer (2001b) and Zettelmeyer and Joshi (2005) for details. Note that IMF lending to poor countries has been different in this regard, involving both heavily subsidized interest rates, and eventual debt relief. This has not been the case for middle income countries.

the rationale for IMF lending, the role of IMF conditionality, and the potential for IMF-induced moral hazard—focusing on theoretical work in this area. Our model comes next, followed by a concluding section.

II. HISTORY

IMF conditionality developed gradually. From 1947 until the mid-1950s, the Fund allowed members to borrow without explicit conditions. A country requesting an IMF loan would make the case that it needed IMF resources consistent with the purposes of the Fund—namely, to give the country the “opportunity to correct a maladjustment in the balance of payments without resorting to measures destructive of national or international prosperity”—and the Fund would let it draw based on the merits of that case.⁶

The idea to commit members to policy actions coincided with the creation, in 1952, of a new instrument, the “Stand-By Arrangement,” which provided countries with a time window over which they could draw from the Fund without having to make a new request. Initially, Stand-By Arrangements were granted for only six months, “as some Executive Directors had expressed the view that it would not be possible to foresee conditions in a member country for more than six months, and it was therefore inadvisable for the Fund to commit itself for a longer period” (Spitzer, 1969, p. 470). However, in 1954, Peru asked for a *one year* stand by arrangement. This was granted with the provision that Peru’s right to draw could be interrupted if the IMF felt that “developments had occurred that would no longer justify the belief that [Peru’s] Exchange Stabilization Program could be made effective.”⁷

“Prior notice” clauses of this type, which gave the Fund the option to effectively rescind Stand-By Arrangements if it disagreed with member policies during the period of the arrangement, were incorporated in more than 30 Stand-Bys in the 1954-1960 period; in one case—Bolivia in 1958—the clause was in fact used. However, these clauses remained controversial because they gave the Fund discretion on the issue of whether a country had deviated sufficiently from its original policy intention to justify “prior notice”. Beginning in the late 1950s, the prior notice clause was replaced by explicit (and typically quantitative) fiscal and monetary “performance criteria” which set a verifiable standard for when an arrangement could be discontinued. In other words, the policy effort that the IMF expected countries to exert in order to be able to draw from the Fund was explicitly written into the arrangement. Several other elements that came to characterize Stand-By Arrangements were added by the early 1960s, including: periodic reviews of the agreed performance criteria by

⁶ Article I (v) of the IMF’s Articles of Agreement. The evolution of IMF lending practices in the 1950s and early 1960s is described, in order of increasing detail, in Fleming (1964), Spitzer (1969), and Horsefield (1969). Boughton (2001, Chapter 13) provides a brief summary.

⁷ 1954 Stand-By Arrangement with Peru, paragraph 7, quoted in Spitzer (1969, p. 478).

the IMF staff; “phased” drawings following these reviews; and guidelines for “waiving” performance criteria in the event of unforeseen shocks, and for negotiating new arrangements.

The result was a unique institutional apparatus—no analogous private sector framework for setting and monitoring lending conditions has ever developed—for minimizing the debtor moral hazard problem inherent in the relationship between the IMF and its borrowers.⁸ While countries could of course promise policy effort, draw once, and go “off track,” they could not draw again without either meeting the agreed performance criteria or renegotiating, which required convincing the Fund that the new program was more credible than the previous one. Although the ultimate effect of IMF programs on economic outcomes has been controversial,⁹ the fact that agreed performance criteria have generally had a commitment effect on country policies is not. Furthermore, the fact that the IMF has generally been repaid in full constitutes *prima facie* evidence that IMF conditionality was effective by the standards of its original purpose, namely, to safeguard Fund resources.¹⁰

In contrast, IMF conditionality was not designed to minimize moral hazard with respect to *third parties*, such as neighboring countries, private creditors, or, in countries with less-than-benevolent governments, creditor country citizens. In principle, such moral hazard problems could occur when crises induced by poor policies have external effects through trade or financial linkages, or redistributive effects. In the context of the IMF of the 1950s and 1960s, however, these effects were arguably of much less concern, for two reasons. First, the behavior of countries was constrained by other commitments of IMF membership—not to interfere with current payments, and not to adjust exchange rate parities except with the permission of the Fund—which were also viewed as the main channels for externalities on other members. Second, Fund supported arrangements were meant to address *flow* imbalances *prior* to a currency crisis or devaluation. In this sense, all IMF lending was intended to be pre-crisis lending (although this was not always the case in practice). Successful adjustment in the context of a Fund supported program meant preventing a crisis, and, therefore, its unpleasant effects on third parties.

This changed with the demise of the Bretton Woods system of fixed parities and the sharp rise of capital flows to developing countries. For the most part, the IMF code of conduct that constrained member policies in the original Articles of Agreement broke down, or became

⁸ There are, however, predecessors to IMF conditionality in the context of official lending, particularly lending by the League of Nations: see Santaella (1993), and Khan and Sharma (2001) for an overview.

⁹ See the survey by Haque and Khan (1998).

¹⁰ The main exception is subsidized lending to low income countries, which was ultimately forgiven in many cases following the “highly indebted poor countries” (HIPC) and “multilateral debt relief” (MDRI) initiatives of the last decade (IMF, 2007b).

much more difficult to enforce. Moreover, IMF lending from this point often occurred in the aftermath of currency, debt, or banking crises, and hence arguably affected incentives vis-à-vis parties that were not part of its “contract” with the country. By the early 1980s, critics of the Fund were charging that, by making it less painful for countries to reschedule their debts to the private sector, the Fund “encourages both further threats of default and further bank lending to borrowers which have proved themselves to be not creditworthy” (Vaubel, 1983). Some of the same critics also proposed a solution, namely, to apply conditionality *ex ante* rather than *ex post*, excluding countries with poor macroeconomic policies from access to IMF lending in the event of a crisis (Vaubel 1988). This idea remained unexploited, however, and IMF conditionality continued to focus on policy actions *ex post*. This reflected the view at the time that IMF lending with *ex post* conditionality was unlikely to distort country incentives to begin with.¹¹

Following the large crises of the 1990s, concerns that IMF “bail-outs” could be a cause of moral hazard became more acute, both inside and outside the IMF. Critics such as Harvard University’s Robert Barro argued that “the IMF doesn’t put out fires, it starts them,” and that it had better change its name to “IMH—the Institute for Moral Hazard.”¹² At the same time, the question whether the IMF should require countries to meet *ex ante* conditions for drawing on its resources (at least for large scale drawings) became the subject of a wider debate.¹³ After much discussion, in 1999 the IMF created a new facility, the “Contingent Credit Line” (CCL) reserved for members with strong policies, without however spelling out specific *ex ante* conditions, and without limiting access to existing IMF facilities. In the event, the CCL did not attract any borrowers, in part, because it did not envisage a significantly lower burden in traditional conditionality than standard IMF facilities, and it was allowed to lapse in 2003.

¹¹ Polak (1991), p 54, writes: “*Ex ante* conditionality would be unlikely to work. It seems too much to hope that a government interested primarily in its own survival would be held back from unwise policies by the mere knowledge that the IMF would not stand ready to mitigate the severity of the eventual adjustment crisis.” Implicit in this sentence is the view that traditional IMF lending was not a cause of unwise policies to begin with. In the context of the 1980s reschedulings, this is indeed a plausible view, since the interest subsidy implicit in IMF lending was “modest” (Polak, p. 55), and it was hard to argue that the IMF was facilitating redistribution from bank creditors to countries.

¹² Barro (1998). See also *Wall Street Journal* (April 23, 1998); Calomiris (1998a); Meltzer (1998); Willett (1999); Council on Foreign Relations (1999); Nunnenkamp (1999); Mussa (1999, 2004); International Financial Institutions Advisory Commission (2000); and Eichengreen (2000). An extensive empirical literature on moral hazard ensued. Key contributions include: Zhang (1999); Lane and Phillips (2000); Kamin (2002); Brealey and Kaplanis (2004); Haldane and Scheibe (2005); Dell’Ariccia, Schnabel and Zettelmeyer (2006); and Lee and Shin (2007). Kim (2007) presents a calibrated model to gauge the potential moral hazard effect due the expected subsidy embodied in IMF loans (resulting from the riskiness of IMF lending).

¹³ Calomiris (1998b), Council on Foreign Relations (1999), International Financial Institutions Advisory Commission (2000), Jeanne and Zettelmeyer (2001a,b; 2005), Kenen (2001), Cohen and Portes (2004), Cordella and Levy Yeyati (2005) and Ostry and Zettelmeyer (2005).

Two recent papers, written after the demise of the CCL, spelled out how *ex ante* conditionality might be integrated into IMF operations. Cordella and Levy Yeyati (2005) discuss *ex ante* conditionality in the context of a specific CCL-like lending facility. Ostry and Zettelmeyer (2005) make a case for the use of *ex ante* conditionality in all Fund lending. The idea in their paper is to use the IMF's surveillance process to rate all member countries based on the quality of their domestic policies and institutions such as financial sector regulation and supervision, debt levels and debt structure, fiscal and exchange rate policy, and data dissemination. Access to IMF resources would be based on the score received. For example, access to large scale crisis lending would be reserved to a group of high scorers; and some low scorers might be cut off from most IMF credit, while countries in between would enjoy "standard" access. Their argument is that this would improve incentives not just by encouraging good policies but also by discouraging private capital from flowing to countries where it is unlikely to be used in socially beneficial ways.

Very recently, there has been an attempt to revive the idea of a large-scale credit window for qualified countries (the "Reserve Augmentation Line", or RAL, which is currently under discussion by the IMF's Executive Board; see IMF, 2006, 2007a). Compared to the CCL, the RAL would have a more clearly defined qualification framework while requiring less conditionality *ex post*, making it more attractive to borrowing countries. Like the CCL, however, the RAL would be introduced at the margin. Countries that do not meet the *ex ante* qualification criteria of the RAL would continue to have access to standard IMF lending, including large-scale lending.

III. LITERATURE

There appear to be four main strands of theoretical models that try to make sense of the IMF's role.¹⁴

First, a small set of papers, including Chami, Sharma and Shim (2004) and Weithöner (2006), models the IMF as a risk sharing arrangement among countries. Private capital markets play no role in these models; instead, the IMF is interpreted as a contract and/or a fund providing loans or transfers to members hit by adverse shocks (possibly, as in Chami, Sharma and Shim, 2004, involving a specialized monitoring structure). Moral hazard in these

¹⁴ What follows does not pretend to be a complete survey of models involving the IMF. It leaves out, in particular, a literature on IMF conditionality focused on conflicts of interest between the IMF and the borrowing country and on program compliance (see Mosley, 1987, 1992; White and Morrissey, 1997; Bird, 1998; Killick, 1996, 1997, 1998; Hermes and Schilder, 1997, Drazen and Fischer, 1997, and Joyce, 2003, [others]). Similarly, it ignores papers on whether conditionality should be outcome-based rather than policy-based (Ivanova, 2006); and how streamlined conditionality should be (Erbas, 2003). The focus here is on models that rationalize the IMF's role in terms of correcting particular market or policy failures.

models can arise through two channels: first, as in any model involving transfers or loans, through a potential or actual subsidy to the borrower or recipient. Second, and more interestingly, by aggravating an existing externality across countries. In Weithöner (2006), there are crisis spillovers across countries. This gives rise to moral hazard, as the level of crisis prevention effort that each country exercises is too low from a social point of view. The presence of an IMF safety net can aggravate this problem, by making crises less painful individually (of course, it could also mitigate the problem if it mitigates contagion, see Clark and Huang, 2001). The solution to this problem is *ex ante* conditionality, i.e., conditioning the amount of IMF lending on the crisis prevention effort that countries exercise.

Second, there is a group of papers—motivated mainly by the IMF’s role in the large crises of the 1990s—in which the IMF solves a pure coordination problem in international lending. Some are based on the traditional approach of modeling of coordination failures in terms of multiple equilibria (Sachs, 1984, 1995; Zettelmeyer, 2000; Jeanne and Wyplosz, 2001; Jeanne and Zettelmeyer, 2002). In more recent set of models, this modeling strategy is replaced by the “global games” approach, in which there is a unique equilibrium which may or may not involve a run on reserves, and in which the probability of a run depends on the available liquidity (Morris and Shin, 2006; Corsetti, Guimarães and Roubini, 2006; Kim, 2006, 2007). It is possible to introduce an effort variable in those models and study the impact of IMF lending on policy incentives. For example, Corsetti, Guimarães and Roubini, 2006 show that the effect of IMF lending on policy effort is ambiguous: on the one hand, there is the standard debtor moral hazard effect driven by a potential transfer from the creditor to the debtor, but on the other, countries may actually want to exercise higher effort if the presence of IMF lending means that their efforts are more likely to succeed in averting a crisis (see also Penalver, 2004). But these models ignore IMF conditionality, and the coordination problem that the IMF solves could arguably be solved by any (large) lender, and even by mechanisms that involve no lending at all.¹⁵ Hence, while they give a nice interpretation to why IMF lending can help in a crisis, they do not provide a very tight justification for the existence of the IMF.

Third, there is a new and growing literature that focuses on the role of the IMF in correcting information and incentive problems in international capital markets (Marchesi and Thomas, 1999; Federico, 2001; Clark and Huang, 2001; Tirole, 2002, Penalver, 2004; Jeanne and Zettelmeyer, 2005; de Resende, 2007). Some of these papers are motivated by crisis lending; others focus on the interactions of country policies, private financing, and the IMF in normal, that is non-crisis, times. The IMF’s ability to impose conditionality and/or monitor the country is generally critical in these papers. In Marchesi and Thomas (1999), IMF-supported programs serve as screening devices; governments that pursue strong reforms ask for Fund

¹⁵ See, in particular, Miller and Zhang (2000) and Haldane and Kruger (2001), who propose payments standstills to resolve creditor coordination failures.

conditionality as a way of credibly signaling their credentials. In several other papers, IMF conditionality acts as a commitment device: by committing the country to a higher policy effort, or more generally to actions that preserve creditor interests, the IMF catalyzes foreign capital flows and ultimately raises domestic consumption. In effect, the IMF acts as a substitute for a more complete contract between investors and the borrowing country. Tirole (2003) also discusses the complementarity between *ex post* conditionality and *ex ante* pre-qualification. He notes the parallel between IMF crisis lending and banking regulation and safety nets, as analyzed by Dewatripont and Tirole (1994) in their integrated treatment of prudential regulation. In the case of banking regulation pre-qualification takes the form of proper risk management and capital adequacy requirements.

Finally, there is a literature, with contributions from both economists and political scientists, on the potential role of the IMF in mitigating domestic policy failures (Vreeland, 1999, Drazen, 2002, and Mayer and Mourmouras, 2002, 2004, 2005, among others). The premise of these papers is that economic policies are determined not by a welfare maximizing government but by a domestic political economy equilibrium, and that the presence of the IMF—both through the assistance it offers, and through IMF conditionality—may change the equilibrium. Specifically, the presence of the Fund might strengthen the hand of a reformers in the face of domestic political opposition. This could happen because it changes the welfare of a reformist government, or because it ties the government's hands and hence strengthens its bargaining power, or because it affects the welfare of opposition groups directly.

The model presented in this paper straddles the two last strands of the literature.¹⁶ As in Tirole (2003) and some of the related literature, conditionality endows the IMF with a better technology, relative to the private sector, for extracting policy effort from crisis countries. In addition, however, there is a domestic political economy failure that needs to be taken into account in evaluating the welfare effects of IMF crisis lending. The model presented in this paper is meant to address chiefly the balance between *ex ante* and *ex post* conditionality, and the role of both types of conditionality in addressing moral hazard.

IV. THEORY

A. Setup

We consider a small open emerging market country that borrows from abroad. There are three periods: $t = 0, 1, 2$.

In period 0 the domestic private sector finances an investment by borrowing abroad.

¹⁶ It could also be extended, with relatively little change, to encompass the second strand in the literature described above, by introducing the possibility of self-fulfilling runs, but this would not change the main conclusions.

Simultaneously the domestic government implements a “crisis-prevention effort” which determines the country’s vulnerability to a crisis in period 1. The investment pays off in period 2. Period 1 sees the arrival of some news on the future productivity of the investment. Depending on the news it is possible or not for the domestic private sector to roll over its external debt. We will make assumptions such that if the news are bad the external debt is not rolled over and the investment is liquidated. (A possibility for the government to improve the situation by exercising a “crisis-resolution” effort in period 1 will be introduced later.)

Having sketched the structure of the model let us proceed with a more detailed presentation of our assumptions. There is one homogeneous good, which is invested and consumed. The domestic private sector is modeled as a representative entrepreneur who invests k in period 0 in the hope of receiving an output $y = \theta k$ in period 2. The representative domestic entrepreneur has no wealth to finance the investment, and must borrow k from foreign lenders at interest rate r . Foreign lenders grant one-period loans only, so $k(1+r)$ must be rolled over in period 1 with a new loan. If foreign lenders do not roll over, $y = 0$. We denote by r' the interest rate at which debt is rolled over between period 1 and period 2. Both r and r' will be endogenous to the equilibrium of the debt market. The international debt market is perfectly competitive and foreign investors request a zero expected return on their lending.

If foreign investors rolling over in period 1 and the news are good, $y = \theta k$. If the news are bad but investors nonetheless roll over, then the investment will give a zero return ($y = 0$) with probability $\pi > 0$. The probability of bad news as of period 0 is denoted by p . If period-2 output is higher than the private sector’s debt, $y \geq k(1+r)(1+r')$, the loans are fully repaid and the representative entrepreneur consumes output net of the debt repayment. By contrast if $y < k(1+r)(1+r')$ the private sector defaults, foreign creditors collect the output y and the representative resident consumes nothing.

We now make some assumptions that ensure that investors will roll over if and only if the news are good. First, we assume $(1-\pi)\theta < 1$. This says that conditional on bad news the representative entrepreneur is insolvent in period 1 (the expected gross return on unit of capital is less than what it costs to repay that unit). In this case, foreign creditors will not want to roll over their loans in period 1 (conditional on all creditors rolling over, an atomistic foreign creditor is better off asking for repayment, $1+r$). Furthermore, assume that if no investor rolls over, her or she will receive a liquidation value per unit of capital, which is assumed to be very small but strictly positive. Hence, conditional on a generalized run (no rollovers), each individual investor prefers joining the run to rolling over, since the latter will lead to zero output and repayment.

By contrast, in the event of good news foreign lenders are ready to roll over their loans at a zero interest rate provided that $\theta > 1+r$. We assume parameter values such that this condition is satisfied in equilibrium. There is thus a perfect correspondence between low

productivity and a crisis (which is both a financial crisis and a capital account crisis since foreign creditors take the proceed of liquidation out of the country).

In period 0 the government implements a “crisis-prevention effort” which determines the country’ vulnerability to a crisis in period 1. The crisis-prevention effort is denoted by e_0 . It is a continuous variable that takes values in the interval $[\underline{e}, \bar{e}]$. The probability of bad news decreases with the crisis-prevention effort. It is denoted by $p(e_0)$, where function $p(\cdot)$ is decreasing.

Domestic welfare is given by,

$$U_t = E_t(c) - f(k) - g(e_0)k$$

where c is the period-2 consumption of the representative resident, $f(k)$ is a non-pecuniary cost of operating the capital, and $g(e_0)k$ is the cost of the effort. The marginal cost of operating capital is increasing with the level of capital (function $f(\cdot)$ is increasing and convex).

The level of domestic policy effort is set by the government in period 0. We assume that the government discount the future at a higher rate than the representative resident (e.g., because it is run by a policymaker who is not sure to stay in power). The government maximizes:

$$V = \beta(z)E_0(c) - f(k) - g(e_0)k$$

where z is positive variable that measures the degree of domestic policy distortion and $\beta(\cdot)$ is a decreasing function. If there is no domestic policy distortion the government’s objective coincides with domestic welfare ($\beta(0) = 1$).

In sum, the sequence of events and decisions is as follows: at $t = 0$ e_0 and k are set simultaneously (respectively by the domestic government and by the domestic private sector);¹⁷ at $t = 1$ foreign creditors liquidate the investment in the event of bad news, and roll over their loans if news are good; at $t = 2$ production and consumption take place.

B. Equilibrium under *laissez-faire*

Ignoring the (very small) liquidation value that investors receive in the bad news case,

¹⁷ We could also assume that the government or the private sector is a Stackelberg leader. The timing of the actions in period 0 does not matter for the results.

interest rate parity implies $(1 - p(e_0))(1 + r) = 1$. Using the fact that expected consumption is equal to expected output net of investment and that $y = 0$ in a crisis, the government's objective function can then be written:

$$\begin{aligned} V &= \beta(z)[(1 - p(e_0))\theta k - k] - f(k) - g(e_0)k \\ &= k[\beta(z)(\theta - 1) - L_z^f(e_0)] - f(k), \end{aligned}$$

where the net cost of the effort per unit of capital is given by

$$L_z^f(e_0) = \beta(z)p(e_0)\theta + g(e_0).$$

The second term in this expression denotes the direct cost of effort, while the first term, which is declining in e_0 , denote the expected utility loss of a government associated with a crisis.

Maximizing V over e_0 is equivalent to minimizing $L_z^f(e_0)$. Note that this problem is independent of k , which is why the timing of the government's and of the private sector's actions does not matter. Thus the laissez-faire level of crisis-prevention effort is given by,

$$e_0^{lf} = \arg \min L_z^f(e_0)$$

For example assume

$$\begin{aligned} p(e) &= 1 - e, \\ g(e) &= e^2 / 2\alpha. \end{aligned}$$

Then,

$$e_0^{lf} = \alpha\beta(z)\theta.$$

The crisis-prevention effort is decreasing with the domestic policy distortion z . More generally, this result holds provided that $g(\cdot)$ and $p(\cdot)$ are weakly convex. Then first-order condition for the government's problem is:

$$\beta(z)p'(e_0^{lf})\theta + g'(e_0^{lf}) = 0.$$

The left hand side is increasing with both e_0^{lf} and z . Thus, increasing z lowers e_0^{lf} .

Conditional on this crisis-prevention effort, private lenders lend in period 0 at the interest rate that sets their expected return to zero, given that they are repaid with probability $p(e_0^{lf})$,

$$r^{lf} = \frac{1}{1 - p(e_0^{lf})} - 1,$$

(where the liquidation value received by investors is again ignored for simplicity). The lenders then roll over their loans at zero interest rate in period 1 if there is no crisis, and liquidate the investment if there is a crisis.

The domestic private sector sets k so as to maximize:

$$U_0^{lf} = k \left[\theta - 1 - L_{z=0}^{lf}(e_0^{lf}) \right] - f(k),$$

implying the first-order condition

$$f'(k^{lf}) = \theta - 1 - L_{z=0}^{lf}(e_0^{lf}).$$

Using the first-order conditions of the problem it is straightforward to show that the domestic political distortion has various negative economic effects.

Proposition 1. *Under laissez-faire, increasing the political economy distortion z reduces the crisis-prevention effort and increases the probability of a crisis,*

$$\frac{\partial e_0^{lf}}{\partial z} < 0, \frac{\partial p}{\partial z} > 0,$$

Increasing z also raises the interest rate at which the domestic private sector borrows abroad and reduces the volume of capital inflows below the first-best level,

$$\frac{\partial r^{lf}}{\partial z} > 0, \frac{\partial k^{lf}}{\partial z} < 0.$$

C. Equilibrium with IMF crisis lending

We now introduce the following assumption: conditional on bad news the government can make a “crisis-resolution effort” in period 1, with the effect of raising productivity to θ with certainty. We assume, for technical convenience, that the crisis-resolution effort is discrete. The dummy variable for the effort will be denoted by e_1 (equal to 1 if the effort is made, and to 0 otherwise).

Domestic welfare is now given by:

$$U_t = E_t (c - f(k) - g(e_0)k - e_1 h(e_0)k),$$

where $h(e_0)k$ is the cost of the crisis-resolution effort in terms of consumption. We assume

that good pre-crisis policies not only reduce the probability of a crisis but also reduce the cost of resolving the crisis, if it occurs ($h(\cdot)$ is decreasing).

Assuming that investors roll over, the output benefit of exercising the crisis resolution effort (compared to the alternative of doing nothing and hoping for the best) is

$[\theta - (1 - \pi)\theta]k = \pi\theta k$. We assume that the crisis-resolution effort is always efficient in the sense that this output benefit exceeds the cost of the effort regardless of the quality of pre-crisis policies:

$$h(\underline{e}) < \pi\theta.$$

However, this does not mean that the government will necessarily want to undertake the effort, because it appropriates only a share of the output benefit: at most,

$[(\theta - 1) - (1 - \pi)(\theta - 1)]k = \pi(\theta - 1)k$ (the rest goes to the investors—this is the classic debt overhang problem).¹⁸ In the following, we assume that this share is never large enough to make the crisis resolution effort worthwhile for the government:

$$h(\bar{e}) > \pi(\theta - 1).$$

Together, these assumptions determine a time consistency problem. The government would like investors to roll over in order to avoid liquidation. If the government undertakes the crisis resolution effort, rolling over would in fact make sense for investors, since they could expect repayment with certainty. But once investors roll over, the government has an incentive to renege on any such promise. Absent a device for committing the government, private creditors hence do not roll over their claims in equilibrium (just like in the equilibrium of the previous section, in which no crisis resolution technology existed).

This is where the IMF comes in. Unlike private creditors, we assume that the IMF has the ability to elicit the crisis-resolution effort from the government. This assumption is important since it justifies the IMF's existence in terms of a market failure and determines the scope of its intervention. Unlike much of the literature on IMF crisis lending, we hence assume that the comparative advantage of the IMF is not size *per se*, but the fact that it can lend in period

¹⁸ We assume for simplicity that the political distortion z plays no role in period 1, i.e. the discount factor $\beta(z)$ applies only for discounting period 1 and 2 relative to period 0 and not for discounting period 1 relative to period 2. (To rationalize this, one could say that period 1 and 2 (crisis resolution and its aftermath) are close together in time, or that political distortions are likely to play a bigger role in distorting crisis prevention effort than distorting crisis resolution effort.) Allowing for $\beta(z)$ in period 1 would strengthen the main point of this section, namely, that the government will not exercise crisis resolution effort even when it is efficient to do so.

l conditional on the domestic crisis-resolution effort, whereas private creditors cannot.¹⁹ This advantage of the IMF in imposing conditionality could be due to the IMF's expertise in monitoring country policies (perhaps as a result of spillovers from its surveillance functions) or due to the fact that it is viewed as having greater political legitimacy than private creditors.

The IMF's ability to lend conditional on the crisis resolution effort—which we interpret as traditional *ex post* conditionality—implies that it can lend at a zero interest rate. The country accepts the IMF's offer provided that the government's net gain from avoiding the liquidation is larger than the cost of the effort:²⁰

$$\theta - (1 + r) \geq h(e_0).$$

Conditionality hence makes it possible for the IMF to intervene without compromising the resources it received from its members (the traditional justification for the development of IMF conditionality). The model also offers an interpretation of why the IMF can lend to crisis countries at a much lower interest rate than the private sector, without losing money over time. Because of IMF conditionality, that lending is essentially risk-free.

If the IMF is expected to rescue the country in the event of a crisis private creditors lend at a zero interest rate so that the condition above becomes:

$$\theta - 1 > h(e_0).$$

Note that this condition might be violated for low levels of the crisis-prevention effort. Thus in equilibrium the IMF might not grant crisis lending to countries with bad pre-crisis policies because traditional *ex post* conditionality does not work in those countries. This could be interpreted as a form of *ex ante* conditionality, one that guarantees that effective *ex post* conditionality is possible. Indeed, in real life, the IMF often emphasizes that a country's pre-

¹⁹ Of course, the IMF needs to be large enough to undertake the lending. The difference with respect to the literature is that in our model, there is a role for IMF crisis lending regardless of whether private sector lenders are large and/or coordinated or small and dispersed. In other words, the market failure that generates a role for the IMF is not lack of coordination among private lenders, but rather the inability of the private sector to undertake tranching, conditional lending. As a historical matter, there have been rare attempts by banks to play this role, but they have not been successful (see, for example, Rieffel, 2003, on conditional lending by a group of banks to Peru during Peru's 1976-78 balance of payments crisis).

²⁰ Note that the debt overhang problem is still present, in the sense that the government appropriates only $\theta - (1 + r)$, rather than the full θ . But if the condition is satisfied, it is nonetheless in the government's interest to accept the IMF's conditional lending offer and exercise the crisis resolution effort, even when it would not have wanted to exercise this effort following a private sector rollover. The reason is that the alternative to accepting the IMF's offer is receiving nothing, while in the case of the private sector rollover the government could still hope to receive $\theta - (1 + r)$ with probability $1 - \pi$.

crisis policy “track record” may matter for the decision to lend, because it makes the country’s post-crisis policy promises more or less credible. However, this is quite different from a stronger and more explicit form of *ex ante* conditionality—one that involves a commitment to make countries’ access to IMF loans depend on crisis-prevention effort—to which we will return later in this paper.

The results of this section can be summarized in the following proposition:

Proposition 2. *Assume that the IMF can lend to crisis countries conditional on a crisis-resolution effort, whereas private creditors cannot. Then the IMF conditionally lends to all crisis countries that do not have an excessively low level of crisis-prevention effort.*

D. Moral hazard in the presence of IMF crisis lending

We now study the effect of (*ex post* conditional) IMF crisis lending on the government’s crisis prevention effort e_0 , and welfare. As emphasized in earlier work (Jeanne and Zettelmeyer, 2005) and as we will again show below, the two are not necessarily the same. In particular, we show that the presence of IMF lending may or may not reduce crisis prevention effort; but even when it does, this will imply a welfare reduction only in the presence of a sufficiently large political economy distortion, z .

Crisis prevention effort

For simplicity we will assume that all countries satisfy the last condition in the previous section, and so accept an IMF program in a crisis. The government's objective function is now,

$$V = \beta(z)[(1 - p(e_0))\theta k + p(e_0)(\theta k - h(e_0)k) - k] - f(k) - g(e_0)k.$$

Compared to the laissez-faire case, there is a new term in the objective function, $p(e_0)(\theta k - h(e_0)k)$. This reflects the fact that even if there is a crisis, productivity remains high because the representative consumer pays a cost $h(e_0)k$ in period 1 (this cost and the associated benefit is in terms of domestic consumption and so is discounted by β by the government).

V can be rewritten as:

$$V = k[\beta(z)(\theta - 1) - L_z^{imf}(e_0)] - f(k),$$

where

$$L_z^{imf}(e_0) \equiv \beta(z)p(e_0)h(e_0) + g(e_0).$$

Note the difference between this expression and that for the laissez-faire counterpart L_z^{lf} . The cost of a crisis is no longer the cost of liquidating the investment θ but the cost of the crisis-resolution effort $h(e_0)$, which is lower. The level of policy quality is given by:

$$e_0^{imf} = \arg \min L_z^{imf}(e_0).$$

One can show that if $p(\cdot)$, $g(\cdot)$ and $h(\cdot)$ are weakly convex, the level of crisis-prevention effort decreases with the domestic policy distortion, like in the case of laissez-faire,

$$\frac{\partial e_0^{imf}}{\partial z} < 0.$$

The first-order condition of the government's problem is:

$$\beta(z)p(e_0^{imf})h'(e_0^{imf}) + \beta(z)p'(e_0^{imf})h(e_0^{imf}) + g'(e_0^{imf}) = 0.$$

Again, the left-hand side is increasing with e_0 and with z , implying that e_0^{imf} is decreasing with z . To see the impact of the IMF on the effort level, we need to compare e_0^{imf} with e_0^{lf} , which is done by comparing the condition above to the analogous first-order condition under laissez-faire.

First, assume that the cost of the crisis-resolution effort does not depend on the quality of pre-crisis policies ($h' = 0$). Then the first-order condition is the same as under laissez-faire with θ replaced by $h(e_0^{imf}) < \theta$. Thus the marginal benefit of e_0 is lower with the IMF, implying $e_0^{imf} < e_0^{lf}$. This is sometimes referred to as the “country moral hazard” effect of IMF lending: because the IMF reduces the cost of the crisis, the country undertakes a smaller crisis-prevention effort.

Second, assume that the quality of pre-crisis policies matter for the size of the post-crisis effort ($h' < 0$). Then the existence of IMF programs increases the marginal benefit of e_0 , leading to an improvement in the quality of domestic policies. This is an “effort substitution” effect: countries implement better policies *ex ante* to reduce the cost of conditionality *ex post* in a crisis. This effect is captured by the first term in the first-order condition. As a result, it may be the case that $e_0^{imf} > e_0^{lf}$.

To illustrate, let us augment the linear-quadratic specification of the previous section with $h(e) = \theta(1 - e)$. Then the crisis-prevention effort with the IMF is given by,

$$\begin{aligned}
e_0^{imf} &= \alpha\beta(z)\theta \frac{2}{1+2\alpha\beta(z)\theta}, \\
&= e_0^{lf} \frac{2}{1+2e_0^{lf}},
\end{aligned}$$

which is higher than under laissez-faire if $e_0^{lf} < 1/2$.

Proposition 3. *The impact of the IMF on the crisis-prevention effort is ambiguous in equilibrium. On the one hand, IMF lending reduces the cost of a crisis and so reduces the incentives to good policies. On the other hand, the country internalizes the fact that the ex post crisis resolution effort depends on the level of crisis-prevention effort. If the second effect dominates, IMF lending could induce more crisis prevention.*

Welfare

Clearly, the IMF increases domestic welfare conditional on the optimal crisis-prevention effort (since $L_0^{imf}(e) < L_0^{lf}(e)$). Whether the IMF increases or decreases welfare for endogenous effort depends on the degree of the political economy distortion, as we now show.

Consider first the case in which there is no political economy distortion ($z = 0$), so that $\beta(0) = 1$. The government now maximizes the welfare of the representative consumer. In the presence of IMF crisis lending, this is

$$U^{imf}(e_0) = [(1 - p(e_0))\theta k + p(e_0)(\theta k - h(e_0)k) - k] - f(k) - g(e_0)k,$$

compared to a laissez faire level

$$U^{lf}(e_0) = [(1 - p(e_0))\theta k - k] - f(k) - g(e_0)k.$$

Since $p(e_0)(\theta k - h(e_0)k) > 0$ for any e_0 , one has $U^{imf}(e_0) > U^{lf}(e_0)$ implying $\max U^{imf} > \max U^{lf}$. In other words, if $z = 0$, the presence of IMF crisis lending always improves welfare, even though it may well lead to lower crisis prevention effort.²¹ Hence, calling lower crisis prevention effort “moral hazard” in this context is really a misnomer,

²¹ This result has been referred to as the “Mussa Theorem,” after the IMF’s former chief economist, Michael Mussa (see Mussa, 1999, 2004; and Jeanne and Zettelmeyer, 2005, for a formal statement). In Mussa’s original formulation, emphasis is put on the fact the IMF cannot be a source of moral hazard *provided it is always repaid*. The latter is assumed in the setup of our model.

since the presence of the IMF does not create (or magnify) any distortion. The lower crisis prevention effort is merely an efficient response to a less risky environment. So are lower interest rates (compared to *laissez faire*, the private sector lends at a zero rate, since crises no longer occur) and higher capital flows (k is higher compared to the *laissez faire* state, since borrowing is cheaper), that are often viewed as indicative of “creditor moral hazard.”

However, the availability of IMF crisis lending could in fact decrease welfare in the presence of a domestic political distortion. To illustrate, consider the linear specification $p(e) = 1 - e$, $g(e) = \alpha e$ and $h(e) = \gamma$. Because of the linearity of these functions, the equilibrium crisis prevention effort e is then equal to either $\bar{e} = 1$ or $\underline{e} = 0$. More precisely,

$$\begin{aligned} e_0^{lf} &= 1 \text{ iff } \alpha < \beta(z)\theta, \\ e_0^{imf} &= 1 \text{ iff } \alpha < \beta(z)\gamma. \end{aligned}$$

Assume that $\beta\gamma < \alpha < \beta\theta$, so that the IMF decreases the quality of domestic policies from 1 to zero. Then the social loss L is given by,

$$\begin{aligned} L_0^{imf}(e_0^{imf}) &= \gamma, \\ L_0^{lf}(e_0^{lf}) &= \alpha, \end{aligned}$$

respectively with and without the IMF (the cost of the crisis-resolution effort in the former case, and the cost of $e_0 = 1$ in the latter case). The IMF reduces domestic welfare relative to *laissez faire* if $\alpha < \gamma$. Note that this is consistent with the condition $\beta\gamma < \alpha$ only if β is smaller than $\alpha/\gamma < 1$. Thus the IMF can reduce domestic welfare only if the domestic political distortion is severe enough.

Our results are summarized in the following Proposition.

Proposition 4. *With traditional (ex post) conditionality, IMF crisis lending improves the domestic welfare of countries with low levels of domestic political distortion but may decrease the welfare of countries with high levels of distortion.*

E. The case for *ex ante* conditionality

Proposition 4 immediately suggests a particular brand of selectivity, or “*ex ante* conditionality,” namely, excluding from IMF lending all countries with an excessive level of domestic distortion. While this would be an improvement over the status quo (in which the IMF only applies conditionality *ex post*) we now show that the IMF can in fact do even better, by applying conditionality to the country’s crisis-prevention effort.

More precisely, *ex ante* conditionality is defined as follows. The IMF announces that it will lend in period 1 only if the country has made a crisis-prevention effort above some level \hat{e}_0 . This constraint is binding if

$$\hat{e}_0 > e_0^{imf},$$

that is, if the required effort is higher than the level that the country would choose in the absence of *ex ante* conditionality. The country accepts *ex ante* conditionality if this does not lower the objective function of the authorities, i.e.,

$$L_z^{imf}(\hat{e}_0) \leq L_z^{lf}(e_0^{lf}).$$

If this participation constraint were violated the government would find that the benefit of future IMF loans is not worth the cost of satisfying the *ex ante* conditionality.

Then it is possible to show the following result.

Proposition 5. *If there is a positive level of domestic political distortion ($z > 0$), *ex ante* conditionality is welfare-enhancing, i.e., there exist levels of *ex ante* effort*

$$\hat{e}_0 > e_0^{imf}$$

*such that the country accepts to set $e_0 = \hat{e}_0$ as a condition to be eligible to an IMF loan, and domestic welfare is improved relative to both laissez-faire and relative to IMF lending without *ex ante* conditionality. *Ex ante* conditionality reduces the probability of a crisis and the cost of *ex post* conditionality.*

Proof. The last statement follows directly from the first statement (given that $p(\cdot)$ and $h(\cdot)$ are decreasing). To prove the first statement, let us denote by e_0^* the level of effort when the IMF lends and there is no political economy distortion (this is also the first-best level of effort). Then we know that the political economy distortion reduces the effort level below the first-best level, i.e.

$$e_0^{imf} < e_0^*,$$

if $z > 0$. Conditional on the existence of the IMF it is Pareto-optimal to increase e_0 above e_0^{imf} and as close as possible to e_0^* subject to the government's participation constraint,

$$L_z^{imf}(\hat{e}_0) \leq L_z^{lf}(e_0^{lf}).$$

The government's loss under *ex ante* conditionality cannot exceed its loss under laissez-faire for the government to accept the conditionality. It is possible to find some values of $\hat{e}_0 > e_0^{imf}$

that satisfy the authorities participation constraint. To see that, note that since $L^{imf}(e)$ is strictly smaller than $L^f(e)$ for all values of e this is also true of their minimum values,

$$L_z^{imf}(e_0^{imf}) < L_z^f(e_0^f).$$

By continuity of $L_z^{imf}(\cdot)$ this is also true for some $\hat{e}_0 > e_0^{imf}$. It may not be possible to achieve the first-best *ex ante* conditionality $\hat{e}_0 = e_0^*$ because of the government's participation constraint. This occurs if the participation constraint determines an upper bound \bar{e}_0 that is smaller than e_0^* . The optimal *ex ante* conditionality is given by,

$$\hat{e}_0 = \min(\bar{e}_0, e_0^*).$$

Clearly the IMF with *ex ante* conditionality dominates the IMF without *ex ante* conditionality, but does it dominate laissez-faire? It does so because the laissez-faire level of effort satisfies the government's participation constraint,

$$\bar{e}_0 > e_0^f,$$

which itself results from $L_z^{imf}(e_0^f) < L_z^f(e_0^f)$ (to obtain the IMF insurance the government is ready to produce the level of effort that it would produce anyway without the IMF). If the level of prevention effort is excessive under laissez-faire, $e_0^* < e_0^f$, then the first best can be achieved by setting $\hat{e}_0 = e_0^*$ (the IMF induces less effort than under laissez-faire, but more than without *ex ante* conditionality). If the level of prevention effort is too low under laissez-faire, $e_0^* > e_0^f$, then *ex ante* conditionality can increase the effort above the laissez-faire level to $\min(e_0^*, \bar{e}_0)$. In both cases, the optimal *ex ante* conditionality dominates laissez-faire.

Q.E.D.

Ex ante conditionality gives the IMF an additional tool to influence domestic policies. If there is a domestic distortion ($z > 0$), it is always optimal to use this tool. Given the existence of this tool it is never optimal to abolish the IMF or even to exclude some countries from IMF lending on account of their severe *ex ante* distortions. There is no country for which the IMF with optimal *ex ante* conditionality can be worse than laissez-faire because the laissez-faire level of crisis prevention effort belongs to the set of efforts that can be induced by *ex ante* conditionality.

Finally, note that this result is subject to some caveats, which could be further explored in an extension of the model. In introducing the concept of *ex ante* conditionality, we have implicitly assumed (1) that the IMF can commit to the *ex ante* conditions, so that they are

fully credible, and (2) that crisis prevention effort is perfectly observable. What if these assumptions are violated?

- If *ex ante* conditionality is not fully credible, then countries are likely to undertake less prevention than required by the IMF, on the grounds that a welfare-maximizing IMF will be tempted to rescue them anyway in the event of a crisis. If this is the case, crisis prevention will be suboptimally low, but it will never be less than in a regime in which there is only *ex post* conditionality. The conclusion that the regime with *ex ante* conditionality dominates the regime without hence seems robust along this dimension (credibility).
- If prevention effort is not fully observable, *ex ante* conditionality would have to be conditioned on a noisy signal of the true crisis prevention effort (either because some variables are not observable, or because of some uncertainty over the variables that are truly relevant). This would lead both to “Type I errors” (lend to countries that undertook too little effort) and “Type II errors” (deny lending to countries even though they undertook the required effort). As far as the Type I errors are concerned, *ex ante* conditionality can never do worse than the regime with *ex post* conditionality only. However, it might do worse on the grounds that it makes too many Type II errors, i.e., excludes too many “deserving” countries from lending. For any given level of *observed* effort \hat{e}_0 required by *ex ante* conditionality, there should be a degree of noisiness in the signal such that *ex ante* conditionality lowers welfare relative to the regime without any *ex ante* conditionality. At the same time, one would conjecture that this can be addressed by making the *ex ante* policy sufficiently “permissive” depending on the noisiness of the signal, i.e. by decreasing \hat{e}_0 . Only in the limit (that is, for completely uninformative signals) will $\hat{e}_0 = 0$, i.e. will the optimal *ex ante* policy coincide with the regime without any *ex ante* conditionality.

Based on these arguments (which remain to be shown formally), Proposition 5 is likely to be true even in situations with limited credibility and noisy signals.

V. CONCLUSION

This paper has attempted to clarify the financial role of the IMF as it presently exists, characterize the conditions under which this role may distort incentives and give rise to moral hazard, and suggest a reform—namely a greater role of *ex ante* conditionality in IMF lending operations—which would eliminate this distortion. The main insights are as follows.

First, traditional (*ex post*) conditionality can be rationalized as the solution to a commitment problem. In a situation in which a country experiences a sudden stop which involves some deterioration in the country’s solvency, crisis resolution will require some policy effort, or “adjustment” in the IMF’s terminology. It will also require liquidity, e.g. a rollover by

existing creditors, or new investment. Creditors would in fact roll over, and confidence would return, provided that the government undertakes the policy effort. But once that happens, the government will have an incentive to renege on its adjustment promise. Anticipating that, there is no rollover. IMF conditionality is a device that solves this problem, by committing the government to carry out the effort. The justification for the IMF (in this context) is its institutional capacity to make that commitment stick, through a process of tranching crisis lending and conditionality discussed in Section II. By doing so, the Fund helps to avoid or shorten crises and—subject to a caveat, see below—improves welfare.

Second, IMF lending with *ex post* conditionality can be a source of moral hazard, but only under specific conditions:

- Consider first its effect on crisis prevention effort on the side of the government. In general, this is ambiguous. On the one hand, IMF lending reduces the cost of a crisis and so reduces prevention incentives. However, countries also understand that the cost of carrying out adjustment in the context of an IMF supported program will be lower the higher the crisis-prevention effort. If this “effort substitution effect” dominates, IMF lending could induce more crisis prevention.
- Next, suppose that the presence of IMF lending does indeed reduce crisis prevention effort. Does this mean that the IMF is a source of moral hazard? Not necessarily, because the reduction in effort could be an efficient response—one that occurs at no one’s expense—to a safer international environment. This will be the case, specifically, if IMF lending does not carry a subsidy, and if debtor governments maximize welfare.
- If, however, there are significant discrepancies between the interests of debtor governments and those of society as a whole, then IMF crisis lending could be welfare reducing. In those cases, the government will underinvest in crisis prevention relative to the social optimum, because it discounts the costs of crisis resolution too much (compared to the social burden).

Third, the paper shows how any moral hazard associated with IMF crisis lending can be avoided. One obvious approach would be to exclude countries with excessive political distortions (i.e., poor governance) from IMF lending. This would ensure that all IMF lending is welfare improving. However, there is a better approach, namely, to apply conditionality to the country’s crisis *prevention effort*, i.e. to the quality of economic policies and institutions. *Ex ante* conditionality of this kind might induce some poor governance countries to exercise the required prevention effort, and thus be an improvement over *ex ante* conditions focused on the political distortions themselves.

While the basic case for *ex ante* conditionality is straightforward, applying it successfully and consistently raises some difficult problems (see Ostry and Zettelmeyer, 2005, for a more

detailed discussion). The first is what *ex ante* conditions should look like. Adequate crisis prevention in one area will depend on the strength of policies in other areas, on the characteristics of the economy, and on the economic cycle. Hence, it seems unlikely that prequalification could be purely rules based; it would require some element of discretion. One way of exercising this discretion might be in the context of the IMF's regular surveillance process.

The second problem is related to time consistency. Once a member country has run into trouble, the optimal action going forward will be to allow it to borrow whether or not it has undertaken adequate prevention efforts *ex ante*. Denying countries a loan (or at least a high-access loan) which have not met the *ex ante* conditions would require a high capacity to commit on the side of the IMF—higher perhaps than what is needed to make conventional IMF programs work, in which a similar time consistency problem arises when denying new loan tranches to important borrowers who have failed to meet a performance criterion. As argued in Ostry and Zettelmeyer (2005), a governance structure that embodies enhanced operational independence and strengthened medium-run accountability would provide an important vehicle for addressing the time-consistency problem.

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