

Introduction

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Macroeconomic debt crises have been a part of the economic scene ever since the emergence of modern credit markets. Sovereign defaults go further back in history.¹ From time to time, a certain consensus has arisen among influential economists, policymakers and economic agents that crises are “a thing of the past,” at least in some countries which appear to have gained immunity for some reason or other. This complacency has been repeatedly disappointed – and was probably a major factor in its own disappointment: it is in the nature of those economic storms that they gather strength more easily when they are less expected (Kindleberger, 1978). Various economies, particularly but not only those labeled “emerging,” have experienced a considerable number of crises, especially in the last 30 years (Reinhart and Rogoff, 2009). The recent Great Recession in the world economy and the still open Euro Zone crisis have shown that highly developed central economies can also be vulnerable to debt-related macroeconomic disturbances of the first order of magnitude.

Some decades ago, Hicks (1967) remarked that macroeconomics (or monetary theory) “... belongs to monetary history in a way that economic theory does not always belong to economic history... Monetary theories arise out of monetary disturbances...” The argument applies especially to the analysis of macro crises, given their high social costs and theoretical interest. In fact, the study of critical events has a long history, starting much before the coining of the term “macroeconomics,” as illustrated by the classic works of the nineteenth century, from Thornton (1802) to, say, Bagehot (1873), passing through Marx (1867–94). We still have much to learn, though.

The reflection on macroeconomic crises requires theoretical frameworks that do not rule out as a matter of principle the very phenomena being studied. Crises put into doubt the relevance of models that assume that self-equilibrating mechanisms work automatically in the economy and that economic decisions are based always and everywhere on a correct perception of the properties

of the environment, even if possibly subject to random “exogenous” shocks extracted from a known distribution.

Real-world macroeconomic crises typically trigger widespread and “fundamental” re-evaluations of the economy’s prospects, and an intense search for lessons to be drawn for theories and policies. This implicitly presumes that critical events supply material for redefining prior perceptions: the post-crisis macro model (which will be used to interpret pre-crisis behaviors in retrospect) is likely to differ substantially from the previously prevalent representations of the economy. The activity appears paradoxical if carried out under the precept that agents must be assumed unconditionally to form rational expectations and that, consequently, there remains nothing for them to learn about the functioning of the economy (Stiglitz, 2011; Leijonhufvud, 2009; Heymann, 2007, 2008). The analysis of macro crises can certainly make good use of rational expectations models to represent some aspects of the events in question. At its core, however, trying to understand crises means developing preliminary schemes to picture situations where agents (and very likely, also economists) are hit by a realization that the economy did not work as they had thought it would.

Beyond that, crises pose severe, and sometimes dramatic, policy problems, at the national and international levels. There is a challenging task ahead in searching to diagnose macroeconomic vulnerabilities, designing preventive measures, finding ways to manage critical disturbances if they do develop, and improving the chances of a good “life after debt,” as our title goes. The works collected in the volume aim at contributing to that activity.

A family of events

Economies in crisis: a heterogeneous collection

Crises are often bunched in time and place. We usually speak of the Latin American episodes of the 1980s, or the Asian crises in the following decade. These commonalities may reflect shared structural features, which make economies collectively sensitive to some classes of international impulses and various “contagion effects,” or direct interdependences through trade or financial channels; behavioral similarities may also play a relevant role (for example, in the response to their crises of the 1980s, countries of the Southern Cone of Latin America adopted macro and reform policies which, although clearly not identical, showed analogous features). However, specific cases have their own idiosyncrasies. The set of episodes that can be readily categorized as debt crises show diverse characteristics in a variety of dimensions.

An often-made critical distinction is between crises which begin in the public sector – with the inability of governments to repay what they owe and

to roll over their outstanding debts – and those that begin in the private sector. Argentina and Greece belong to the former category; the 2008 crisis belongs to the latter. But the distinction is not always clear: a private sector crisis can easily morph into a public sector problem, for example, when there is socialization of private debts, as happened both in the US and East Asian crises.²

There is, however, one important distinction between crises brought on by the inability of the private and the public sector to repay debts. In the former case, there is a clear legal framework of what should happen when a firm cannot (or is not willing to) pay what it owes. (There are, of course, complex problems that arise when there are *systemic* crises, with large numbers of firms going bankrupt.)³ But in the case of sovereign default, matters are more ambiguous. There is no clear legal framework, and it is not easy to ascertain whether a country *could* repay if it wanted to, for example, by raising taxes sufficiently.

Another important distinction often made is between crises which are a matter of *liquidity* and those which are a matter of solvency. In the former case, the presumption is that the borrower could *eventually* repay what is owed – the borrower is simply not able to repay the amounts owed *now*, and can’t find anyone to lend him the money. But the distinction is not so clear: if it were evident that the borrower is solvent, then presumably someone would be willing to make the loan. Typically, the debtor cannot get access to funds because *no one* has confidence that it can/will repay. Of course, the borrower may believe he is “solvent,” and is only facing a temporary problem. But the borrower faces a liquidity problem because no potential lender shares that optimism.

Of course, *ex post*, it turns out that in some of the cases where this pessimism prevailed, the borrower does recover. The provision of liquidity by a “lender of last resort” (or the provision of funds to a country by the IMF) can “work,” in the sense that the loans are repaid and the borrower goes on to experience economic growth. Brazil (1998) provides a case in point. But there are many cases to the contrary: Russia *did* default, and even when the lender of last resort (the IMF) gets repaid, it may be largely at the expense of other creditors, who *de facto* become junior to the IMF debt.

There is a tendency to look at the factors that seemed central to the last crisis as central to determining any country’s vulnerability to future crises. In the aftermath of the Latin American crises of the 1980s, the focus was on public sector indebtedness; but excessive government spending played little role in the next crisis, the Mexican “Tequila” crisis of 1994–95, and no role at all in the East Asian crises of 1997–98: the governments had run surpluses. Mexico’s low savings rate was sometimes blamed for that country’s crisis, but the East Asian countries had high savings rates.

After East Asia, the focus shifted to the relative size of a country’s short-term indebtedness that is denominated in foreign exchange; but the North Atlantic financial crisis of 2008 showed that that variable was not so critical.

Many critics of East Asia placed the blame on those countries' lack of transparency. While transparency is clearly important – if one had all the relevant information, clearly one wouldn't lend to someone who would not be able to repay – there have been crises in the most transparent countries, those in Scandinavia.⁴

The quest for finding *the* variables that would determine, or at least predict, vulnerability to a crisis has been largely futile (Furman and Stiglitz, 1998). Part of the reason is the rich heterogeneity of circumstances of different countries.

Economies large and small, central and peripheral, rich and less rich

Episodes of debt-related crisis in the last few decades have involved some of the largest world economies (the US and Japan, among them) and others of a substantially smaller size. Debt crises would seem more frequent in middle-income economies, but over the decades a number of episodes have originated in wealthy countries. (Because very poor countries often have very limited access to credit and have very underdeveloped financial sectors, such crises are less likely to occur there.)

Financial systems with different sizes, configurations, sophistication of assets

A macroeconomic debt crisis obviously cannot develop without the fuel of a substantial mass of financial obligations. That being given, crises have been observed in economies with quite different degrees of financial depth (or financialization). The stock of financial assets/liabilities in the US before the recent crisis was several times larger than the annual value of GDP, and famously included a sizable volume of highly complicated derivatives, which were meant in principle to improve the allocation of risks and reduce systemic fragility, but may have ended up doing the opposite.

However, in other instances, “innovative” financial products did not feature prominently.⁵ Crises have occurred in financial systems operated mostly on the basis of traditional bank lending and simple bonds. (Indeed, traditional Minsky credit cycles are associated with plain vanilla banking.)

The denomination of the debt

In countries like the US and Japan, the national currency served as the usual unit of denomination of a credit. In contrast, the Argentine crisis of the early 2000s occurred in an economy with relatively low ratios of liabilities to GDP before the collapse, but where most of the debts that went into default consisted of simple, dollar-denominated instruments.

Typically, governments that issue debt in their own currency cannot face a conventional sovereign debt crisis: formal repayment can be accomplished simply by turning on the printing presses.⁶

So too, governments that have borrowed in their own currency can reduce the real value of what they owe through inflation (if they have long-term debt.)⁷ But, while seigniorage financing in moderate volumes may be an effective instrument of debt reduction, so long as inflation remains mild, strong doses are likely to prove disruptive. A government that is perceived to be engaged in inflationary policies may not be able to get access to *new* funds, and the sudden stop of an inflow of credit can itself precipitate a crisis.

Varieties of monetary, exchange regimes and policies

Debt crises occur in countries with a range of exchange rate systems. It used to be thought that the best exchange rate regimes were the polar cases – either rigidly fixed or freely floating, and that managed exchange rate regimes were particularly vulnerable. On this basis, the IMF recommended that countries adopt one of the polar forms. But we have seen crises in countries with “pure” floating regimes (US, Japan), as well as those with currency boards with rigid convertibility (as rigid as can be – since in practice even “strictly fixed” exchange rates do change) at a constant rate (for example, Argentina 1991–2001). They occur too in circumstances where there has been integration into a regional monetary area (for example, Greece). Crises can occur under an autonomous national monetary management, and also in the complete absence of a country-specific monetary policy. Debt troubles may emerge in very different inflationary environments. To mention examples of a single country, the Argentine collapse of 2001/2002 was preceded by a period of nominal deflation, while the crisis of the early 1980s developed in a context of high inflation (over 80 percent a year).

Capital inflows, not always

The accumulation of ultimately unsustainable foreign debts (by governments and/or private sectors) as the counterpart of current account deficits was a feature of a variety of crises, especially in emerging economies. But asset market bubbles and domestic financial boom–bust cycles also arose in economies (Japan, the US in the 1920s) which ran international surpluses and had positive net lending flows to the rest of the world.

Government or twin deficits, sometimes

In some instances, difficulties in servicing the public debt, or outright government default, are at the epicenter of the macroeconomic quake. Lax fiscal policies in the boom can also indirectly stimulate an unsustainable spending and borrowing expansion of the private sector in open economies with access to foreign credit. “Twin deficits” have been a salient element of crises, for example, in Greece recently, and in several Latin American episodes. However, there are other cases where the origin of a crisis can be identified directly

in private sector over-indebtedness, with the government running measured surpluses (as, for example, with the cases of Ireland in the 2000s, or Chile in the buildup of its crisis in the 1980s). The connection between public and private budget constraints works in both phases of the cycle. A “bubbly” growth in private spending can transitorily boost fiscal revenues. But this may mask what would appear to have been in retrospect the buildup of large contingent liabilities for the public sector, if after a crash the government engages in bailout operations to rescue troubled groups of private debtors.

Family characteristics: broken promises and frustrated wealth expectations

Macroeconomic *debt* crises, with all their heterogeneity, have a common defining feature in the (actual or feared) non-fulfillment of large masses of financial obligations. Bankruptcy and default are incompatible with perfect foresight.⁸ A default perfectly and unanimously anticipated from its origin will not happen (because no one will advance resources against an empty promise).

Thus, debt crises can only be studied in models in which there is uncertainty – in which at least at the time loans are made, the lenders think there is at least some chance of being repaid. Of course, for all but a few borrowers, lenders recognize that there is a chance of non-repayment, and thus demand an interest rate that is in excess of the safe rate of interest (and greater than the rate paid by the US government for a loan of comparable maturity). In principle, the non-execution of a payment commitment written as if it should be realized unconditionally, could possibly be viewed as implementing an implicit contingency clause in the contract. Non-payment would then represent what everyone should, and does, expect according to the contract under the observed circumstances. Luck determined a bad outcome from a distribution of external conditions which, by assumption, was optimally contemplated by the parties when they agreed on the contract. What went wrong was due to blind chance: it may be deplored, but should cause no regrets to anyone.

The argument just mentioned points to the ambiguity of the notion of default. The existence of interest premiums implies that, somehow, the prospect of non-payment of the debts in certain states of the world has been contemplated as part of the “normal course of events.” Also, in assessing the profits and losses of the parties in a contract, it should be considered that a lender is hurt when a stream of promised payments is interrupted, but the damage could be (and, on average, in a world with a modicum of rationality, would be) more than offset by the profits from holding high-yield claims before default occurred. In this view, debt restructurings are both anticipated (in the sense that creditors know that these restructurings will happen under certain contingencies) and are welfare increasing, since implicitly, what appears as a pure debt contract contains within it an element of equity, of risk sharing.

Such restructurings need not lead to crises. Indeed, the large declines in incomes often observed in debt crises (in this perspective) are not because of the debt crisis so much as because of the adverse shocks that led to the crisis; the debt restructuring can be an important element in helping countries absorb such adverse shocks.

But when there is a large amount of debt, adverse shocks can lead to a crisis for a slightly different reason: in a world with credit rationing, the adverse shock, if large enough, can lead to a sudden cessation of the flow of credit from abroad, with severe macroeconomic consequences (Gersovitz et al., 1986).

We should note that for developing countries (and increasingly for developed countries) the adverse shocks are often not something that happens *internally*, but a change in the flow of funds abroad, as a result, for instance, of a change in monetary policy in the United States or a change in risk perceptions.

However, for the most part crises do not correspond to the image of events which, though unpleasant, can be taken serenely as part of a well-defined “natural randomness of things.” Crises negate rational expectations. It is not just that a bad outcome that they realized *might* happen has happened. Typically, crises lead to changes in views of the world. They are memorable incidents that remain in the minds of people who live through them, and often serve as historical landmarks long after their time. For large groups of people, a crisis does not call for moving ahead along a particular branch of a predetermined decision tree. Rather, agents living in a crisis perceive potentially life-changing transformations in their environments, calling them to reconsider attitudes, beliefs and behavior patterns. Policymakers are likely to be in the same predicament: the crisis proved them wrong (those in power, at least) and now they, and society as a whole, must come to a new understanding of the world, and in doing so find their way out of a mess.⁹

The Queen of England famously asked about the financial crisis in the UK “It’s awful... Why did nobody see it coming?” The answer was not that the economy had been hit by a well-identified shock whose likelihood of occurrence was known to be given by certain probability distribution. Rather, some years later (December 2012, in a visit to the Bank of England), the Queen answered her own question: “People got a little lax... perhaps it’s difficult to foresee [a crisis].”¹⁰ By the very nature of debt crises, the difficulty that many people find in anticipating their appearance is an intrinsic part of the process that generates them.

Crises substantially modify the scenarios where people carry out their economic activities. They represent a point of discontinuity: Most importantly, from a macroeconomic perspective, large groups perceive themselves, and the economy as a whole, poorer than once thought. These are “awful” events, where the estimates of a country’s wealth get revised downwards. And this leads to marked changes in behavior.¹¹

Solvency, or debt sustainability, are intrinsically prospective and subjective notions: the relevant “fundamentals” can only be determined by forming some fallible conjectures (cf. Keynes, 1936, esp. chapter 12; 1937). In a crisis, big classes of borrowers are seen to lack the earning capacity required to service their obligations.¹² Their currently anticipated flows of future incomes (in terms of the relevant units of denomination¹³) fall short of the expected levels that supported the creation of the debts. The consequences reverberate across the economy. In the aggregate, the process amounts to a collective recalculation of the economy’s prospective growth trend (see Aguiar and Gopinath, 2007; Boz et al., 2008; Guzmán, 2013; Heymann et al., 2001). In the boom phase, big segments of agents (and, probably, analysts) acted as if they perceived that the economy was operating on a solid trend; now the same performance is viewed as an unviable temporary bubble.

These changes of mood are a marking feature of debt cycles. In the title of the great book *Manias, Panics and Crashes*, Kindleberger (1978) vividly sketches a picture of crises as dramas where actors are moved successively by emotions of high euphoria and deep fear. Indeed, in the course of big macro fluctuations, relevant agents sometimes seem to behave as if they thought that nothing may go wrong, only to fall shortly afterwards into panicky flight or gloomy depression.

However, crises do not appear to be simple consequences of “irrational exuberance” (cf. Greenspan, 1996; Schiller, 2000), as a sort of macroeconomic bipolar disorder. Pre-crisis booms tend to show conformist attitudes by sophisticated agents, who do not appear to be thinking or acting under the influence of psychological “high spirits.” At their time, booms that ended in crises could be rationalized in ways that left sober agents satisfied to play along for quite a while. While, as Kindleberger points out, at the time these exuberant actors believe that they are not part of a collective mania – and even go to great efforts to distinguish the current situation from earlier bubbles where such irrationality was in evidence – in fact it is hard to deny that the social contagion of beliefs have played an important role in the credit bubbles that typically precede debt crises.¹⁴

Behaviors that lead to crises need not embody eccentric expectations or opinions contradicting the established beliefs of the times. Rather, they often appear as variants of prevalent views and attitudes. The anticipation that price stabilization and structural reforms along accepted lines would drastically raise productivity levels supported a positive interpretation of current account deficits in Argentina in the 1990s (see Galiani et al., 2003). In the path to the recent crisis technical improvements and benefits derived from the changing patterns of the international division of labor were expected to expand productive opportunities in the US and validate the increase in leveraged expenditures: the “new economy” would be able to manage its debts, helped by the

availability of innovative financial instruments that would allow it to diversify risks. Would not a country like Greece, having adopted European institutions and the common currency, enter a process of convergence towards European income levels, where the Balassa–Samuelson effect would result in an equilibrium real appreciation, and where the use of foreign credit could be seen as a natural consequence of anticipations of future prosperity?

Of course, contrary opinions were also expressed. However, the burden of the proof seemed to be on the dissenting arguments and, as a matter of fact, they did not carry a decisive power of conviction, sufficient to modify behaviors. Indeed, proponents of the conventional wisdom under which the economy was not at risk could not really fathom the arguments to the contrary.¹⁵ The rationalizing arguments looked qualitatively plausible. In those conditions, performance indicators such as rising debt ratios (later to be called perhaps a credit mania) may have been interpreted in a positive light, as signs that savers and financiers shared optimistic attitudes and were willing to participate in the expansion by financing higher spending levels.

In Hemingway’s novel *The Sun Also Rises* (1926), a character is asked how he went bankrupt. The short answer was: “Two ways. Gradually, then suddenly.” The history of crises shows substantial variations in the timeframe of expectations and decisions as the process evolves. In the phase of debt buildups, the disposition to lend and to borrow suggests that people trust their ability to make forecasts over not-too-short periods. Prosperity itself helps to strengthen those views, as it tends to be interpreted as an indication of an underlying strength in the economy’s growth potential. The possibility that Minsky fragilities may be developing is not taken at first as a relevant cause to worry. The boom that precedes the bust lulls market participants into the belief that macroeconomic risk is low, and therefore that investors can take on more debt and leverage. The change in mood tends to happen slowly at the beginning. In terms of “categorical thinking” (Mullainathan, 2002), where agents do not modify their beliefs continuously, but use a classification in discrete scenarios to guide their behavior, the evidence that may start coming in that borrowers are not generating the cash flows to service debts is likely to be interpreted as circumstantial, and not requiring a change in the operative perception of an economy on track.

If news about rising problems keeps accumulating (in the case of an episode driven by private sector debt, signs like growing arrears in repayments, indications that the increase in asset prices may have gone too far, maybe a leveling of aggregate demand) the speed of reactions can quicken substantially. What once used to be named financial deepening gets increasingly called a debt bubble.

Crises are “big events.” Bankruptcies or defaults mark discontinuities. Besides the loss in perceived (or pseudo-) wealth, there is a change in real wealth as a

result of bankruptcy costs, a change in distribution, and a change in control. They open a new history, without implying an immediate resolution of past issues. When the eventuality of a crisis emerges, people can perceive that the economy is approaching a bifurcation: either avoid the worst and somehow regain balance, or go into a tailspin. This is likely to be a phase of increased policy activity, and rising public demand for “reassuring signs.” Naturally, at that point people will watch more and more anxiously the moment-by-moment pieces of information that may indicate whether the economy is close to tipping one way or another.¹⁶ This leads to a shortening of planning and decision horizons, and induces volatility of expectations. Self-reinforcing avalanches in financial markets become more likely.¹⁷ Solvency and liquidity problems get more mixed up than in tranquil times: the (provisional) proof of solvency is paying punctually, now. The supply of credit now contracts, and real activity is likely to fall. In most cases, the ability of monetary authorities to loosen monetary policy, sufficient to offset the credit contraction very limited.¹⁸

It may happen that economies come close to a full-fledged crisis, but manage to avoid it, and recover (for example, Brazil in 2002). The more remembered episodes are those where the outcome goes the other way. In some instances, the manifestation of the crisis may have as milestones particular dates or events, like major devaluations, declarations of government default, or failures of large banks or corporations. The European experience of the last years shows cases where, although there is not a climactic breakdown, the economy gets stuck in a prolonged state of malaise as the effects of excessive debts linger on, without a clear-cut resolution; this also would apply to Japan’s “balance sheet recession” (Koo, 2003; Greenwald and Stiglitz, 1993, explain why recovery from a balance sheet recession may be very slow.).

The eruption of a crisis removes some uncertainties (the collapse has happened), and creates others. Losses have to be processed throughout the economy: their magnitude and distributive incidence remain to be determined, and their multiple rounds of effects to be worked out.

In those conditions, further disturbances of credit are to be expected. Diverse channels of financial propagation have been extensively discussed in the recent literature.¹⁹ The various mechanisms may work with different intensity according to the case, and particularly the configuration of the financial system. However, the different effects point in a similar direction, of a tightening of credit constraints even of high-productivity borrowers due to a variety of effects: a weakening of bank balance sheets, worsening expectations, perceptions of increased risk, a fall in the price of assets used as collateral, and an increased fragility of banks. Each of these can turn into a self-feeding spiral; for instance, the increased fragility of banks may lead to an even stronger contraction in lending, weakening the economy further. Thus, instead of helping

to smooth the impact of the shock, credit markets operate as amplifiers, with positive feedbacks aggravating solvency and liquidity problems.

Moreover, financial restrictions contribute to induce a segmentation of agents between those who maintain their earning capacity and hold assets which remain liquid, and those who face strict constraints. Large numbers of agents are limited in their possibilities to spend on goods and services. For the currently less restricted sets of people, the situation is likely to motivate apprehension about the future: this would induce “voluntary” cuts in expenditures, and stronger flexibility/liquidity preference. While these changes lead to an increase in the savings rate, the simultaneous decrease in consumption and credit availability leads to a simultaneous decrease in investment. This is a typical scenario for a traditional savings–investment inconsistency, and raises the possibility of large-scale effective demand failures (Leijonhufvud, 1973).

An economy does not undergo a substantial drop in its level of activity proportionally, or gracefully. A strong shock on wealth, incomes and spending must imply considerable sectorial reallocations and distributive shifts. Market adjustments in wages, prices, and interest rates may in fact be disequilibrating (Stiglitz, 2013).²⁰ Longer-run trends that tend to induce changes in the structure of production can contribute to keep low the aggregate level of output, if mobility between occupations is limited (cf. Delli Gatti et al., 2012). In a large-scale crisis, some productive activities (especially those that were particularly involved in the bubble) reduce their production levels sharply; some types of human skills experience a strong diminution in value; and because of credit constraints, individuals may not be able to finance the investments required to enable them to acquire the skills to move to alternative occupations. Finding a new place in the labor market when the old abilities have little or no market value can be difficult and time-consuming, apart from personally painful: a willingness to accept a salary cut may not suffice to regain work.²¹ This effect can contribute to a jump in the unemployment rate.

Remarks on policies

A macroeconomic crisis is a (possibly understandable) policy failure, by action or omission. Economic policies cannot avoid being concerned about crises, in the different stages of their evolution. According to the old saying, French generals in the 1930s prepared themselves thoroughly to fight and win the previous war. The design of economic policies should avoid getting into the same predicament of seeking to avoid the behaviors that led to the *last* crisis. Crises do not repeat themselves, as we have seen: innovation (real and financial) implies that the same (or closely similar) economic configurations and behaviors will not be encountered in the future.

While, in some sense, each crisis is *sui generis*, the previous discussion has made clear that there are some common elements. Crises, and especially debt

crises, are often marked by credit and asset bubbles. In the run-up to the 2008 crisis, policymakers in the US were wont to brush off concerns about bubbles (partially in the belief that markets are “rational” and therefore that bubble simply don’t exist) by saying that you can’t tell a bubble until after it breaks. But while one can’t be *sure* that there is a bubble until after it breaks, all policy-making is done under uncertainty. One could have been fairly sure, for instance, as the price of housing relative to median income soared to unprecedented levels that there was a bubble. Equally to the point, there are asymmetric costs and benefits of taking actions: the costs of taking actions to have dampened, and perhaps prevent, the bubble were an order of magnitude smaller than the benefits that would have been derived from such actions.

In short, policies should prepare themselves to adopt preventive measures if signs of danger emerge and, when these do not prove effective, to face the management of disruptions of different intensity. These are huge issues, with large-scale economic and political (distributive) implications. We limit ourselves to some brief remarks.

Prevention

Crisis prevention means inducing behaviors that avoid large-scale economic mistakes. There are three sources of market failures: (a) Large macroeconomic externalities. Market participants do not take into account the effects of their actions on others, leading to phenomena such as excessive borrowing and excessive reliance on foreign-denominated debt. (see Korinek, 2010, 2011).²² The “too-big-to-fail” banks in the US did not take into account how their actions could lead to systemic risk and a crisis. (b) Agency problems, so that decision makers may not even take into account the consequences of their actions for their own firm. Part of the reason for Greenspan’s failure to anticipate the excessive risk undertaken by banks is that he ignored these agency problems; if he had only looked at the incentive structures facing bank managers, he would have anticipated that they would undertake highly risky action. (c) Poor judgment – beliefs that are inconsistent with “reality.” Many of those in the financial market denied the possibility that there was a bubble.

Policymakers can (and should) have different objectives than private actors. They are paid to think about externalities and agency problems. Their job is to focus on the systemic consequences that might arise if there is a kind of collective bias in market beliefs. Thus, if regulators and policymakers do what they are supposed to do, it is not necessarily because they are smarter than markets. It is because what they strive to do is different from what private firms strive to do (which is to maximize profits in ways that do not get them into jail).

Policymakers must assess the sustainability of the economic path that is being generated by private expectations and behaviors. This intrinsically forward-looking exercise can hardly be reduced to the application of mechanical rules,

and may itself be a source of errors. (Certainly America’s policymakers failed, but it was partly because they bought into the idea that they couldn’t and shouldn’t second guess the market.)

The game is one with high stakes and considerable uncertainty. However, policymakers are engaged in playing it whether they act or abstain. Benign neglect when a bubble develops will not prevent the consequences. There are real questions about the adequate mix of *ex ante* policies and post-crisis interventions: the first must be based on conjectures, but “mopping up after the crash” catches the economy already in difficulties, can be very expensive, and, if anticipated, may distort private incentives (Jeanne and Korinek, 2012). In any case, the notion that policies can passively wait until a bubble bursts and rely on variants of the “Greenspan put” overestimates the capacity to stop a macro disruption in mid-course, while it minimizes the social costs of a crisis, and the distributional impact of bailouts (Stiglitz, 2010b).

Preventive policies put themselves in the way of expansions that may, or may not, ultimately prove unsustainable. The choice of the timing or intensity of policy actions risks errors of both types: too much too soon, or too little too late. The mix of instruments, particularly between monetary and fiscal policies, can also be a matter of discussion. Policies of crisis prevention can affect real growth immediately; their benefits are delayed, and may remain hypothetical (the non-event that a potential crisis does not occur). The opposite happens with non-action. Immediate political incentives may be biased in the direction of the latter: nobody wants to be a party pooper, especially when the bubble is generating huge profits for key actors in the private sector, who are often willing to share a fraction of those rents with political actors, to induce them not to interfere. The analysis above about the sources of market failures provides some guidance for preventive policies.

“Good bye financial repression, hello financial crash,” said Diaz Alejandro (1985) in his analysis of the Latin American financial reforms of the late 1970s. The regulatory cycles of the last decades have not reached a stationary point. Governments have tried to act as if the financial sector could take care of itself, only to step up and assume large losses when banks were at peril (through the socialization of private debts or the purchases of dubious assets in the midst of an emergency). The history of the last forty years, since the beginning of the liberalization movement in the late 1970s, is the history of one bailout after another; and while the bailouts typically have the name of a country associated with them, they are really bailouts of the lenders, and, in particular, the international banks.

The international financial crisis showed that arrangements (such as universal banking, credit default swaps, or even diversification) believed to promote risk-spreading may end up in effect amplifying systemic risks. Standard capital requirements can act pro-cyclically, rather than moderating financial swings.

Size and connectivity of financial agents are double-edged features (see, for example, Nier et al., 2008; Gai and Kapadia, 2010; Battiston et al., 2012a, 2012b; Gallegati et al., 2008; Haldane, 2009; Haldane and May, 2011). The reconsideration of regulatory frameworks has to deal with the intricate links between the architecture of the financial system, the exposure of the system to risks (and the correlation of the shocks) and its vulnerability. In a sector where the race between the measures of the regulators and the maneuvers of avoidance by the regulated is especially intense, policy provisions (like liability rules or restrictions on bonuses) which may modify incentives of financial managers also seem relevant parts of the package (cf. Leijonhufvud, 2010).

The hazards and sources of financial fragility are related to the types of assets issued and traded. Ultra-sophisticated instruments, as has been seen from the performance of derivative markets in the 2000s, are apt to turn into factors of confusion rather than tools to improve the allocation of risks. This is especially the case when there is a lack of transparency (for example, in over the counter derivatives). Symmetrically, vulnerabilities may also derive from a poor or unbalanced menu of assets. As a salient instance, the prevalence of contracts in foreign currencies was a major element in crises in “emerging” economies over the years. Those units of denomination are ill adapted to such economies, since domestic incomes are likely to have a highly variable purchasing power in terms of the currencies in which money is borrowed. Crisis prevention would then include policies to induce “de-dollarization,” and encourage the use of the domestic currency in writing debts, particularly macroeconomic frameworks tending to reduce income and price volatilities. The search for improvements in contractual arrangements has also emerged prominently at international levels, especially in relation to sovereign debts. The matter is treated in several contributions to this volume (see Miller and Zhang, 2014; Barr et al., 2014; Schneider, 2014; also Basu and Stiglitz, 2014).

While there is still no unanimity about the set of appropriate preventive measures – measures for which the expected benefits exceed the costs – there is a broad consensus around several measures: (a) more transparency; (b) reducing incentives for excessive risk taking, for example, associated with too big to fail, too interconnected to fail, or too correlated to fail banking structures; (c) reducing opportunities for excessive risk taking in “core” banks, for example, by restricting proprietary trading (the Volcker rule), by ring-fencing (partially restoring divisions between investment and commercial banking), and by not allowing government insured institutions to write derivatives; (d) circumscribing the shadow banking system, much of which exists simply to circumvent regulations imposed on the regular banking system to promote economic stability; (e) macroprudential regulations, designed to ensure that the financial system acts in a counter-cyclical rather than pro-cyclical manner, including provisioning requirements, and speed bumps.

Debt represents fixed obligations, and *other things being equal* (which they typically are not), with a fixed set of debt obligations, the greater economic volatility, the more likely it is that there will be a debt crisis. Hence, an important aspect of crisis prevention is limiting exposure to risks and ensuring that whatever shocks that buffet an economy are dampened rather than amplified. The nature of the economic regime obviously affects both exposure to shocks and the extent of amplification (and persistence) of shocks. The East Asian crisis as well as many other crises have widely been blamed on capital and financial market liberalization, which exposed the countries to more external shocks. Financial deepening (high levels of margin), it has been suggested, may give rise to amplification. While economies *should* respond to a greater exposure to, say, external shocks by undertaking lower levels of debt, the adjustments in debt levels often have not been sufficiently deep, partly perhaps because of the market failures to which we referred earlier, and partly because the “reforms” that led to greater exposure to risk simultaneously led to greater financial deepening.²³

Macro management of debt crises

Can prevention fully succeed in eliminating debt crises, or close threats? Possibly not, at least in economies with substantial volumes of financial obligations. Macro policies in situations of strong disturbances to credit markets will be conditioned by the characteristics of the perturbation and the means available to the government.

We can distinguish two sets of government policies: Those that deal *directly* with the debt problem, and those that deal with the macroeconomic consequences that we have discussed earlier. Of course, the two are related: allowing the economy to sink into recession or depression will exacerbate debt problems. Even if a country did not have a debt problem before the recession, it will eventually have one if the downturn is prolonged.

Debt, as Stiglitz emphasizes in his paper in this volume, is simply money that some people owe to others. In much of the standard macro-theory, distribution doesn't matter; and even if the standard micro-theory, the distribution of wealth (or changes in the distribution of wealth) shouldn't affect the ability of the economy to achieve full employment. But, of course, each individual does care about the size of the slice of the economic pie that he gets. The easiest resolution of debt crises, entailing, for instance, the simple cancellation or restructuring of debt, are typically not on the table, at least at the beginning of the crisis, though, eventually, creditors often do accept significant debt restructurings. (Debt restructurings involving a rolling over of debt and a lengthening of the maturity structure are often attempted, in the hope that the country or firm is simply facing a liquidity crisis rather than a solvency crisis. As we commented earlier, the distinction between the two is

often not clear; and often a simple extension of the maturity structure doesn't work: sometime later there is a debt write-down.)

When a single firm has trouble paying what it owes, there is a simple procedure for debt restructuring; but when there are many firms that owe money to each other, there is no such easy working out of the situation: the value of each firm depends on what it receives from others, who may also not be paying their debts. There is a complex simultaneity problem; Miller and Stiglitz (1999, 2010) argue that this should be dealt with through a special bankruptcy procedure that they call a "super Chapter 11."

Bankruptcy entails shareholders losing some or all of their claims on the assets of the firm and some or all of their control to creditors. Bankruptcy law provides for an orderly way by which claims are resolved and, at least in Chapter 11 of the US bankruptcy code, creditors are given a fresh start. But there is no corresponding legal framework for the resolution of sovereign debts. As several papers in this volume argue, using GDP bonds as part of sovereign debt restructuring can be thought of as providing an analogous mechanism for sovereigns, although their usefulness may be limited by low market valuations when they are issued.²⁴

As we noted earlier, debt crises are often associated with sudden changes in the expectations of market participants, in ways that lead to the destruction of perceived wealth and thus to abrupt reductions in aggregate effective demand. These changes in aggregate effective demand can be so large that adjustments in wages, prices, and interest rates cannot easily offset them. The problems are exacerbated if financial institutions and other creditors decide by reasons of caution, or are forced by their own illiquidity, to contract their lending. The economy plunges into recession or depression, exacerbating the debt crisis; whether it originally was a private or public debt crisis, it soon becomes a national debt crisis.

If governments have the required fiscal space, they can (at least partially) step into the breach, for example, by direct stimulation of the economy, by bailing out the banks and restoring their lending capacity, and/or by facilitating debt restructuring, to make the apparent losses of the creditor smaller and, therefore, more acceptable. But, in order to perform those functions, the government must be able to raise funds in appropriate amounts and terms,²⁵ a particularly difficult requirement if public finances are already under stress.²⁶ That is why *ex ante* precautionary measures such as the accumulation of actual or contingent resources (in forms like foreign reserves, access to credit or taxing capacity, as the case may be) that can be accessed quickly in emergencies is so important.

At the early stages in a crisis, traditional arguments for lender of last resort operations become relevant when many private debtors are perceived to be in jeopardy, and there are risks of a destructive avalanche of self-reinforcing

credit contraction in the absence of intervention. Avoiding a debt deflation process is then a priority. Direct actions on credit markets, where the urgent problems appear to be, seem a natural first line of defense.

The ability of policies to sustain the supply of credit depends on the assets that the public wants to hold. In some economies, the domestic money and government bonds are perceived as safe refuges by potential lenders, and their demand actually rises in a private sector crisis. This is not a general case. When the public sectors are less trusted, and the demand is for some "outside" asset (central currencies, or gold in its times), an "external drain" can combine with "internal drain" (as was feared by Bagehot in the England of the 1870s) and lead to a financial and currency twin crisis (cf. Kaminsky and Reinhart, 1999). The resulting movements in exchange rates can further exacerbate the debt crisis, especially when there is a currency mismatch between assets and liabilities.

Government lending operations in a crisis imply taking perhaps considerable credit risks. What may appear as conventional monetary policies morph into "quasi-fiscal" operations with long-lasting effects on the liabilities of the public sector. In some instances (for example, Latin America in the 1980s) these consequences can contribute to turn a debt crisis into a high inflation trend.

But even when the government does not engage in lending operations, there can be severe budgetary consequences, as has been evident in the 2008 crisis. The economic contractions reduce revenues, and the attempts by government to stimulate the economy, even when partially successful, represent a drain on the fisc.

Distributive repercussions are present in any event, since the interventions shift the allocation of losses from insolvencies, besides hopefully moderating their aggregate volume. In the midst of an economic turmoil, it is good if policymakers are able to discriminate between assisting bank stockholders, managers, workers and organizations, or depositors. The Swedish experience of the 1990s is interesting in this regard (see Jonung, 2009). A key criticism of the US rescue of the banks in the 2008 crisis was that too much of the money went to bailout shareholders and bondholders and to support the incomes of the managers.

Those measures often prove insufficient, however. Debt purchases by the public sector satisfy the thirst for safety and liquidity on the part of the owners of those assets, but do not involve those groups without financial holdings. When the weight of bad debts is too big, and/or their contractionary effects have been allowed to go too far, those illiquid groups are likely to increase their numbers (in particular, through the addition of the unemployed who have exhausted their savings), and to remain shut away from credit markets. In a segmented economy, liquid agents do not find creditworthy individual borrowers, while many people would be willing to borrow at high rates in order to sustain consumption, or to keep open an enterprise, but do not have

financing options, even when, on average, they may be expected to regain a capacity to generate incomes when the economy recovers. Lenders may be risk-averse (see, for example, Greenwald and Stiglitz, 2003), so that the risk compensation they demand may exceed the willingness of borrowers to pay a risk premium; and this may be especially the case if there are large disparities in beliefs about the likelihood of a quick recovery on the part of borrowers and lenders (Stiglitz, 1972, 2013). In the 2008 crisis, the restoration of the balance sheet of the banks did not lead a resumption of lending, especially to small and medium-sized enterprises.

In crises originated in the private sector, macro policies have a role mobilizing resources to contain the disruption, on the basis of their perceived ability to obtain future revenues. In public debt crises, the primary necessity is to restore that ability, and/or reduce government's obligations, real or financial. Here, it is the private sector that is going to be asked, or made, to contribute in order to equilibrate public finances. If prosperous taxpayers or recipients of government transfers and services are in a position to be called to provide the funding, the fiscal adjustment need not cause strong macroeconomic perturbations, considering that it may dissipate uncertainties regarding fiscal policies and their distributive incidence. However, in scenarios where the government attempts a large-scale adjustment in a weak economy (as in Argentina in 2001), the consequence may well be a cumulative process of reduced real activity, lower government revenues and further demands for belt tightening. This may result in a period of stalemate, where creditors of the state renew their lending only at still higher interest rates, the government struggles under constant pressure to pacify lenders for some time, and the economy stagnates at a low activity level, while few can believe that the debt will be honored, especially given the large interest burden (cf. Calvo, 1988). But, without a *deus ex machina*, the final outcome is likely to be a bang – a debt crisis with some form of debt restructuring. Fiscal adjustments designed to avoid the day of reckoning can be self-destructive.

Crises may be so strong that they require large-scale debt reductions in order to allow a recovery to take place. There is life after debt, although not necessarily an easy one.

Debt reduction and life after debt

Errors, miscalculations and failures of business projects occur all the time in normally functioning economies. Debt servicing difficulties are handled routinely by private renegotiations or by formal bankruptcy procedures through the legal system, without causing more than low-intensity “background noises” for the system as a whole. In a private debt crisis of macroeconomic importance, the current problems and the future prospects of individual debt repayment are intricately coupled together. This implies that a case-by-case,

decentralized approach to dealing with a mass of problematic debts would result in a cumbersome process, during which the ownership and the access to resources remains doubtful, and where there is apt to be much heterogeneity in the criteria used in different rulings (until, possibly, they are somehow unified by a high-level judicial decision), with an uncertain aggregate outcome. Reciprocally, a “decision from above” (like the annulment of the gold clause in US bonds in the 1930s, or the “pesification” of dollarized assets and liabilities of the Argentine banks in 2002) could contribute to a recovery by reducing debts at once (at least provisionally, since these decisions are still subject to legal review), and freeing resources for spending and production.

At the same time, measures of that type represent a dramatic intervention in existing agreements, and they bring about wealth redistributions. Those who lose out will argue for the sanctity of contracts, the risks associated with such “abrogation of contracts,” and that the actions are unnecessary for macro-economic purposes. Advocates of such restructurings contend that all legal frameworks contain an explicit or implicit provision that contracts are not enforceable in certain unanticipated extreme events – and crises are examples of such extreme events; and that countries that seem mired in distress often do recover dramatically after such debt restructurings, even when they are outside the pre-existing legal frameworks. More generally, many of the other actions governments and private parties take are outside pre-existing legal frameworks: had those been adhered to, arguably the US bailout and foreclosure crisis would have taken on a very shape.

Something similar would apply to sovereign debt restructurings, though here, legal frameworks are deficient and attempts to develop an international “Sovereign Debt Restructuring Mechanism” have, so far, failed. In some instances (for example, the US following World War II), debt reduction may take place gradually, possibly with the help of mild inflations and measures to constrain interest rates (Reinhart and Sbrancia, 2011). Hyperinflation has operated in some episodes as a brutal mechanism for reducing the real value of debts, but this requires the pre-existence of bonds with domestic currency denomination, as in the defeated Central Powers after World War I. But often an unmanageable debt overhang leads into an explicit interruption of payments. Government defaults are traumatic events, which tend to occur when an economy has reached a state of distress, and non-payment appear more or less unavoidable. Perhaps for that reason, the measured economic costs of government defaults appear, on average, not too large, or long-lived.²⁷

Debt restructurings involve numerous players: national governments and their constituencies and bondholders, domestic and international; but also foreign governments and international organizations, with different degrees of interest and influence in the proceedings according to the case. The observed outcomes of these complicated games cover a wide range of operations with

different characteristics, going from rapid “friendly” bond swaps with small haircuts to protracted negotiations with large debt reductions. From the point of view of the debtor country, there is some evidence that the costs of default increase with the magnitude of the “haircut” involved in a restructuring (Cruces and Trebesch, 2011).²⁸ But sustainability is a crucial consideration: restarting from a precarious position because of an insufficiently deep debt restructuring would raise the eventuality of a new crisis; a prospect that should be frightening also to creditors. Debt reductions are part of the emergency kit of economic policies.

Economies do recover after crises, and sometimes quite rapidly, if the debt overhang is dealt with. However, regaining peak levels of income typically takes a considerable number of years, and it is common for aggregate output not to return back to the trend line that would result from extrapolating peak values with pre-crisis rates of increase (Cerra and Saxena, 2008; also Reinhart and Rogoff, 2014). But, of course, this is true for any deep recession – there is, at best, very limited “mean reversion.”²⁹ The accumulated gaps indicate the substantial wealth losses with respect to what may have been expected during the boom. Once the economy has rebounded, the dramatic urgencies of the crisis give way to the more mundane, but non-trivial problems of turning a recovery into sustained growth.

Contents of this volume

The analysis of debt crises poses questions at different levels, from the characteristics of individual behavior in large social ups and downs to the functioning of the international system when a country or groups of countries go through economic turbulence. In this book we concentrate on some aspects of the processes involved, emphasizing the relevance of international comparisons and the interest in exploring policies and instruments to deal with crises and to resolve debt defaults.

The first paper of the volume, by Joseph Stiglitz, presents an overview of analytical issues concerning the behaviors and mechanisms that generate macroeconomic crises and the associated policies. It sets the scene by placing the theory of crises within the context of standard economic theory. It focuses on three central questions: Given that the state variables that describe the economy (for example, the capital stock, the level of human capital, the amount of natural capital) change slowly, why is it that the state of the economy – levels of output and employment – can change very rapidly? Why is it that the natural equilibrating mechanisms don’t seem to work, that is, why is it that adjustments in wages, prices, and interest rates often don’t restore the economy quickly to full employment, and often move the economy further away, and why is it that debt so often precipitates crises? As we noted, debt

simply represents claims on existing resources, and in standard theory, there should exist a full employment equilibrium regardless of the distribution of endowments (claims). But evidently, the distribution of claims *does* matter. The general insights provided by this theoretical analysis are then applied to provide an interpretation of the euro crisis. Stiglitz argues that there are fundamental structural flaws in the design of the Euro Zone (though the policy responses, including excessive austerity, have exacerbated the magnitude of the downturn); on the basis of this analysis, he proposes a set of structural reforms.

Martin Guzman stresses in his comment the problems of models of full information rational expectations in accounting for the actual occurrence of debt crises, especially in middle-income highly volatile economies (Guzman, 2013). Those models cannot match quantitatively the observed frequencies of default; moreover, their assumed evolution of expectations is inconsistent with survey data in those economies. The comments also point out that crises are associated with substantial changes in the structure of the economies that modify the value of variables such as human capital. Therefore, an analysis of the reconfigurations of economies associated with debt crises would require a recalculation of the value of stocks.

The second part of the book includes papers that review international experiences of macroeconomic crises, particularly in Latin America, in order to draw analytical implications.

José Antonio Ocampo analyzes the Latin American “lost decade” of the 1980s from the perspective of a comparison with the performance of the region in the Great Depression of the 1930s. He notes that the episode of the 1980s was especially severe, even taking into account the historical volatility of the Latin American economies, and remarks that this was a crisis of the developing world, while that of the 1930s was global in scope. Ocampo stresses the strong changes in the behavior of the supply of credit to the region, associated with a broader redefinition of the international capital market that took shape since the 1960s, a process marked by the increased activity of large banks in international financing. Measures of domestic financial liberalization throughout the region (especially in the Southern Cone) facilitated the intermediation of international funds to domestic borrowers, with governments also taking active roles. The author remarks that, in the expansive phase, the demand for credit was stimulated by low interest rates on foreign loans and high commodity prices.

That scenario was drastically modified when in 1979 the US raised its interest rate steeply to attack inflation. This affected not only the conditions of new borrowing but also that of many outstanding debts, contracted at variable interest rates. Simultaneously, commodity prices fell sharply. The paper indicates that the response of trade flows and real output in the region after the

international shock was quite different in the 1930s and the 1980s. In the first case, while the purchasing power of exports fell abruptly, recovering only partially after some years, the trade surplus showed a relatively mild cycle, and in less than a decade had returned to pre-crisis levels (as proportion of exports). By contrast, in the more recent episode, the exports did not contract, while the trade surplus shifted upwards and remained at much higher levels. In the Great Depression, GDP dropped substantially at first, but also recovered rapidly. In the 1980s, the fall was less intense, but so was the recovery: ten years after the peak, per capita GDP had not returned to its original levels.

Ocampo singles out as a critical element of these different performances the dissimilar ways in which the foreign debt overhang was dealt with in each case. In the 1930s, most countries defaulted on their outstanding bonds; the reduced debt burdens allowed a rebound of imports, which opened the room for stronger levels of domestic demand. By contrast, in the 1980s, the debt in difficulties was held mainly by international banks. These banks established a committee which, Ocampo remarks, may have facilitated negotiations but at the same time, operated as a cartel of creditors with the backing of their governments (the US in particular), facing a set of uncoordinated debtors. With this bargaining setup, debtor countries were thrown into long and costly adjustment until, eventually, banks had made provisions against losses, the problem was recognized as one of solvency, and the debt was restructured with write-offs.

Thus, the paper stresses the relevance of the management of the debt crises in both instances, and that of the international environment. The more elaborate financial architecture of the 1980s did not contribute to a resolution of the crisis, but promoted recessionary conditions and policies. Ocampo concludes that the international system should put in place an institutional framework that includes a debt workout mechanism.

Pablo Sanguinetti argues in his comment that the sequence of reforms (where financial liberalizations took precedence) may have contributed to the vulnerability of Latin American economies in the 1980s; he also suggests that the memory of previous defaults could have influenced the form of foreign financing to the region and promote the concentration of the lending through banks. He remarks that the recreation of bond markets in the 1990s took place after the Brady plan, which incorporated guarantees in the form of US treasuries on the principals of the new debt issues. Sanguinetti concurs on the desirability of mechanisms for debt relief coordinated between governments and multilateral organizations.

The paper by Roberto Frenkel revisits the case of Latin America in the 1980s and compares its features with those of the Euro Zone crisis. Frenkel finds that both processes corresponded to the cycles analyzed by Minsky (1975), where optimistic expectations induce agents to lend and to borrow, leading to an expansion

where balance sheets become increasingly fragile; the reversion occurs when some negative signal leads players to undo asset holding positions and express strong liquidity preferences; pessimism may become self-reinforcing.

Frenkel identifies several common characteristics in the Latin American and Euro Zone episodes. As central triggers of the booms he identifies macroeconomic policies that favor foreign borrowing (financial liberalization and fixed or quasi-fixed exchange rates in Latin America, the introduction of the common currency in the euro periphery), together with lax financial regulation. The author also finds that the economies followed similar stylized dynamics, as lower domestic interest rates stimulated the growth of internal demand, together with real appreciations, until a moment where doubts emerged, current account deficits became harder to finance, capital inflows stopped, or got reversed, and the financial system came under attack. In Latin America, this was combined with currency crises. Devaluation removed the real over-appreciation, but increased the burden of foreign currency liabilities. This mechanism was absent in the Euro Zone, although deflationary pressures also complicated the repayment of debts.

Another analogy between the episodes that the paper stresses is the tightening of fiscal policies in the downward phase of the cycle. In the Latin American case, Frenkel refers to IMF conditionality, while pointing that the European Union adopted similar criteria with its peripheral members in difficulty, perhaps because of a misplaced belief that efforts for fiscal consolidation would have an expansionary effect. Frenkel notes that adjustments in the midst of crises have resulted in falling output, high risk premiums and worsening debt ratios.

Regarding prevention, he argues for strengthening financial regulations and recommends measures in three areas: the adoption of exchange regimes which allow flexibility in policymaking and facilitate international competitiveness; management of capital flows; and actions to bolster external robustness including the accumulation of foreign reserves.

Roberto Bebczuk focuses his comment on the argument that crises derive from a combination of three policies: pegged exchange rates, unrestricted capital mobility and financial deregulation (what he names IT: the "implausible trinity"). (He suggests that the empirical evidence does not in fact show high degrees of international capital mobility, as indicated by the association between national savings and investment and low cross-country consumption correlations.) Bebczuk indicates that, given the potential instabilities of financial markets, IT can be a dangerous policy; however, doing away with IT would not eliminate the risk of crises with weak institutions and deficit-prone public sectors. Regarding the pro-cyclicality of fiscal policies during downswings, he argues that, rather than a policy decision, it results from the lack of access to resources by governments that did not economize in the expansive phase.

The contribution of Stephany Griffith-Jones concentrates on the European crisis, with references to Latin America in the 1980s. She states that one of the key lessons from the Latin American experience is that austerity policies without timely debt reduction lead to drastic recessions and transfers costs from creditors to debtors and from private creditors to public actors, since official lending tends to finance debt servicing. Griffith-Jones says that these lessons were not taken into account in Europe, with the exception of the restructuring of the Greek debt, which many consider insufficient and somewhat late. However, she observes a growing acknowledgment of the real costs of adjustment, for example in the recognition by the IMF (2012b) that the downward fiscal multipliers seem much larger than had been expected.

Griffith-Jones argues for a European-wide action to promote growth recovery, and discusses several possible mechanisms. One would be to mobilize structural funds of the EU, the disbursement of which, the author indicates, has been limited by the difficulty of governments to provide co-financing. In order to achieve leverage, Griffith-Jones proposes to use part of the EU budget as risk buffer for project financing, where the European Investment Bank (EIB) could play a key role. Using the HEIMDAL model (cf. Hansen and Bjorsted, 2012), she estimates the potential effect of those injections in the aggregate output and employment of the European countries.

The argument also underlines a need for more expansive fiscal policies across the EU. This could be achieved in part by reductions in debt servicing for countries in financial troubles. Griffith-Jones discusses ECB interventions through large purchases of sovereign debts. She finds that such actions would be especially useful if the reluctance of investors to hold the bonds of some countries originates from unfounded fears, but notes that, if the debt problems are not solved, ultimate insolvencies could imply massive transfers of losses to the ECB. The paper also suggests exploring ways to allow postponement of debt service until economies start growing. Countries with policy space, like Germany and (to a certain extent) the UK, Griffith-Jones argues should have slower fiscal consolidation and higher wage increases. She argues that the UK has faced substantial output costs from its early fiscal adjustment in a weak economy, as opposed to what would have happened had it waited until a recovery had taken shape.

Hernán Seoane also stresses in his comment that the Latin American experiences show a high cost of austerity policies that are not accompanied by a restructuring of excessive debts, a fact which seems to have been ignored in the recent European case. Regarding the modeling and quantification of the effects of fiscal policies, he argues that it is useful to consider explicitly the varying nature of macroeconomic volatility, and particularly the fact that it tends to increase in periods of crises. Seoane notes, in addition, that fiscal multipliers seem to be stronger in recessions than expansions (cf. Auerbach

and Gorodnichenko, 2010); this implies that the impacts of contractionary measures in times of distress may in fact be quite large.

The papers in Part III of the book approach sovereign debt restructurings from two angles. Rohan Pitchford and Mark Wright consider a game-theoretic setup where a debtor negotiates with several groups of creditors, in a weak contractual environment, characterized by limited commitment, enforcement and verifiability. Their main interest is to explain delays in closing restructuring agreements.

In a first setting, without CACs (Collective Action Clauses) in the bond contracts, sovereigns cannot make credible promises not to offer better deals to holdouts than the ones obtained by the earlier conceding creditors, while holdouts are able to impose costs on the debtor. This creates a strategic motivation for some bondholders to delay an agreement. In the end, if creditors are identical *ex ante*, the gain that the first entrants in the restructuring realize by being paid rapidly is just offset by the higher payment that the holdouts are able to extract; the first rounds of bargaining, between the debtor and the creditors who decide to participate early is conducted “in the shadow” of future expected concessions to the holdouts. The delay would be longer the larger the number of creditor players.

The argument can be modified to account for heterogeneities among creditors: if “vultures” (late negotiators) are represented as agents with stronger bargaining power, their presence increases delay; the same happens if they are assumed to be comparatively patient birds. In the setup where the provisions of the debt in default included CACs, the strategic incentive for holding out vanishes, because the payment that all creditors will receive from the restructuring process is fixed once a critical mass has accepted a deal. However, the authors point out, creditors would find a free riding motive for staying out of the bargaining, since those creditors who participate in the restructuring negotiations incur costs.

In his comment, Federico Weinschelbaum notes that the game in the model starts at the renegotiation phase, taking default as given. He suggests extending the analysis to the pre-crisis stage, as behavior would be influenced by the anticipated costs of default, which depend on the bargaining delay.

In the other paper of Part II, Benu Schneider discusses alternative institutional setups for the renegotiation of country debts, with reference to the debates surrounding the proposal of Sovereign Debt Restructuring Mechanism (SDRM) in the early 2000s. In this respect, she notes that, while no agreement emerged about the need for an international bankruptcy regime, the discussions around the SDRM stimulated changes in new bond contracts, especially regarding the increasing use of CAC (see also IMF, 2012). However, she points that the ongoing debt troubles in Europe and the continued litigation on the Argentine obligations (more than ten years since default, and after two rounds

of bond swaps that normalized over 90 percent of the debt in question) have stimulated the perception that the current (non-)system is costly to various stakeholders and, consequently, there is a renewed interest in developing improved frameworks for orderly restructuring.

Schneider finds several problems in existing arrangements, associated with a history of past debt renegotiations with delays and substantial chances of multiple restructurings for some countries, suggesting that the debt reduction in the original deals were too small. Among the shortcomings of current contractual mechanisms, she includes weaknesses in aggregation across bond issues, and ambiguities in the meaning of *pari passu* clauses requiring equitable treatment among creditors (which, in the Argentine case, were interpreted by US Courts as mandating full payment to holdouts); she also points to equity issues (for example, between official and private creditors) and uncertainties about triggers of credit default swaps.

The analogy between domestic bankruptcy for firms and debt restructuring for national states, states Schneider, cannot be pushed too far: issues concerning the delegation of sovereignty are bound to present intrinsic difficulties. Also noticeable is the diversity of interests and perceptions of the variety of institutions and groups which are relevant in those debates (see also Setser, 2010). The heterogeneity may also reflect intra-country tensions (for example, between banks and taxpayers), and even conflicting considerations by the same actor. Emerging economies, for instance, may see themselves as borrowers seeking access to funds, debtors who may become unable to pay, or IMF members wishing to preserve the availability of official financing (or who have grown distrustful of its conditionality, as the case may be). The IMF is cast in dual roles as creditor and arbiter and it is not clear what are in practice, and should be in principle, its objectives and criteria when weighing the welfare and interests of debtor countries, private lenders and its own shareholders.

Schneider discusses alternative arrangements to facilitate debt renegotiations that would allow countries a “fresh start” to recover after a crisis and contribute to a fair outcome after unavoidable defaults while maintaining repayment incentives in ways that do not discourage lending (cf. Stiglitz, 2010a). The options that she considers range from improvements in contractual design to formal statutory regimes. In the first dimension, she argues for standardizing *pari passu* provisions to strengthen the position of participating creditors relative to holdouts; she also considers aggregation clauses (which would apply provisions like collective action clauses across bond issues, instead of limiting them to single instruments³⁰); also discussed (with some reservations) is the possibility of including standstills clauses (temporary payment suspensions) for use in emergencies. While stakeholders do not seem likely to agree on a fully institutionalized mechanism, Schneider notes that bilateral (debtor-creditor) deals may be easier and more efficient if there is some outside

facilitator. In the context of Europe the paper suggests possible amendments to the Stability Mechanism (ESM), particularly to protect debtors under an ESM from claims by creditors who stay out of the restructuring process (see also Brookings Institution, 2013).

In his comment, Fernando Navajas returns to the Argentine case as an illustration of the uncertainties of the debt restructuring process and the limitations of the non-statutory approach. He suggests that changes in the written terms of debt contracts should not be viewed as substitutes for institutional reforms aimed at improving the mechanisms of debt renegotiation, and notes that initiatives in that direction tend to get blocked by creditor interests.

Part IV of the volume contains papers on policies and instruments to deal with crises. Included in the discussion is a theme that comes back from the previous part, the design of the debt contracts.

Marcus Miller and Lei Zhang analyze issues related to the Euro Zone crisis. The first refers to the ECB policy of “Outright Monetary Transactions” (OMT; also known as “Draghi put”, after the ECB President) aimed at sustaining the markets for sovereign bonds, through direct purchases if necessary. The authors note, along with De Grauwe and Ji (2012), that the interest rate spreads on the bonds of countries in the Euro Zone periphery during 2010–11 were considerably higher than those observed for other economies with similar debt/GDP ratios. They interpret this behavior as suggesting the possible existence of negative expectations capable of self-fulfillment by driving countries to bad equilibriums, as modeled in Calvo (1988). In these scenarios, anticipations of default may be self-validating because, with high interest rates, the public sector will not generate the primary surpluses required to service the debt, but there is also common knowledge that the government would be solvent if the interest rate on its debt is low, nearer the risk-free rate, so that there is a feasible equilibrium with anticipated and actual full payment. In that case, indications that interest on the debt will be low would act as coordinating devices, and actually lead prospective lenders into the market. Miller and Zhang consider that the announcement of the OMT operated in that way, inducing reductions in the yields for countries like Italy and Spain even without intervention by the ECB.

Nevertheless, Miller and Zhang note that countries around Europe seem to have been trapped in a costly signaling game, trying to woo capital markets by taking measures of fiscal austerity, with negative consequences for growth. The authors suggest that, instead of insisting on fiscal consolidation in depressed economies, attention should focus on relieving contractionary pressures on highly indebted countries by coordinated regional actions to manage the size and timing of demanded repayments. They also remark that instruments that link debt payments to the growth performance of the economy would help in facilitating repayment in a context of economic recovery but (together with

Griffith-Jones and Sharma, 2009), they indicate that the market may give too low values to such obligations. They suggest, in the European context, that GDP-contingent securities may be taken at the beginning by an official agency, until the time when growth prospects of the debtor countries are reestablished. That agency would hold both simple and growth-linked bonds, and issue supranational "Eurobonds," guaranteed by the European treasuries; countries that borrow from that institution would be subject to strict conditionality.

The comment by Alfredo Schclarek points out that a crucial condition for putting in place a cooperative international mechanism to deal with debt problems like those of Europe would be to make the governments of the countries that would provide the backing, and their constituencies, perceive that it is in their own collective interest to participate. He also notes the importance of defining the lending policy of the proposed agency, and the criteria that would be used in cases where restructuring may still be required. In discussing the forms that conditionality may take, Schclarek finds that no consensus has emerged in Europe about the implementation of growth-restoring policies; rather debtor countries have been induced to apply costly adjustments.

The paper by Barr, Bush and Pienkowski studies the potential of explicitly contingent obligations, and specifically GDP-linked bonds, to mitigate inefficiencies and uncertainties that arise with conventional instruments of sovereign debt. The analysis is based on a model of debt with endogenous default (cf. also Ghosh et al., 2011). The economy is subject to two shocks: one on the debt-GDP ratio (interpreted as events when the government takes on previously off-balance sheet liabilities), while the other induces a transitory shift in the growth rate of GDP. In the calibrations, the distribution of GDP shocks is taken from actual data, with large skewness and kurtosis (cf. Schularick and Taylor, 2012). Government bonds have a one-period maturity. The interest rate is determined by an arbitrage condition; with risk-neutral lenders, the expected return equals an exogenous risk-free rate.

Fiscal policies are described by a reaction function that increases the primary balance (as proportion of GDP) with the value of interest payments due (with a response parameter exceeding unity) but with a limit that marks the maximum possible "fiscal effort." If contractual debt services exceed that bound, the government defaults and the debt is cut by a given (fixed) fraction. The interest rate is calculated at each debt level according to the probability that, considering the distribution of shocks, the debt in the next period exceeds a critical level, where default occurs with certainty. In this setting, the introduction of GDP-linked bonds (represented in the paper as constituting the whole amount of the debt) removes the effect of growth shocks on government liabilities. Consequently, the volatility of the debt is reduced; this implies in turn lower probabilities of default and smaller interest spreads at all debt levels. The debt limit is increased.

However, the authors note, those results do not take into account the interest differential that lenders would require to buy contingent bonds. They propose another exercise where lenders are represented as agents with constant relative risk aversion preferences, whose wealth consists of a portfolio of GDP-linked and risk-free bonds. In the numerical results, debt limits remain substantially higher with contingent bonds than with formally unconditional debts. The calculated risk premiums on GDP-linked bonds are quite low; the authors mention that the actual levels of compensation required may be much larger (see the literature on asset return puzzles, for example, Weitzman, 2007). The paper indicates that, in any case, with risk spreads on GDP-linked bonds of around 3.5 percent (which the model associates with an extremely high coefficient of risk aversion), the debt ceiling would still be larger than with conventional instruments. The exercise is extended to a case with endogenous GDP, negatively related to the primary surplus as an indicator of fiscal adjustment. The paper concludes that contingent debts seem to have interesting properties, which can enhance the ability of countries to avoid crises, although costs and obstacles not included in the model should be assessed.

Enrique Kawamura comments that it would be useful to explore the determination of "fiscal fatigue," represented in the paper by an exogenous ceiling for primary surpluses. He also suggests studying variants of the government's reaction function. He notes that the specification of GDP-linked bonds in cases like that of Argentina contemplated payments varying non-linearly with GDP, starting from a minimum growth rate. Kawamura finds that the analysis of the ways in which agents (lenders, in particular) evaluate and respond to risks, and their effects on asset prices, would be a topic deserving future research; he notes that relaxing the rational expectations assumption would be especially useful in the context of economic crises.

The paper by Daniel Heymann and Axel Leijonhufvud closes the volume with a discussion of various dimensions of the decision problems faced by policy makers in the development and resolution of macroeconomic debt crises. They note that the defining characteristic of those crises is that formally unconditional obligations will not be fulfilled; numerous promises and socially validated expectations are likely to be broken. The initial policy responses may mobilize more or less standard macroeconomic instruments. However, when massive defaults threaten, policies must explicitly or implicitly face unpalatable choices about the allocation of losses. These decisions have to be taken in a highly uncertain environment since a crisis manifests a widespread frustration of expectations, and it may leave a durable impact on the configuration and performance of the economy.

The authors stress that macroeconomic policies adapted to a specific case are predicated on evaluations of the nature and intensity of shocks and the conditions that determine the economy's responses. Extraordinary

macroeconomic disturbances may call for strong, urgent, policy reactions; a history of stable, predictable behavior in normal times will enhance the capacity of policy makers to act in an emergency, particularly by sustaining the demand for money and public debt. In a private debt crisis, solvent governments are likely to respond first through large doses of monetary policies. These measures can prevent the development of default avalanches; however, they may have undesirable distributive consequences, and their effectiveness would depend on the degree of credit market segmentation which has taken place. Heymann and Leijonhufvud note that, when private sector expectations are very pessimistic about the repayment capacity of prospective debtors, policies that raise the price of low-risk bonds will not provide much stimulus to demand. The spending gap can be addressed by fiscal policies, as long as the government has access to cheap financing. But, they remark, for this to work, insolvencies must not have spread too far. If they have, there will be a redefinition of large masses of rights and obligations. This will happen whatever the stance taken by policymakers; but at the very least policymakers should be aware of this and of the potential consequences of what they do on the outcomes. This is likely to entail difficult tradeoffs between hands-off approaches and direct action through bailouts or interventions that redefine the terms of contracts.

In discussing sovereign debt crises, Heymann and Leijonhufvud remark that defaults tend to happen in extreme situations, and not without strenuous efforts to avoid them. Even so, ample room for disagreements between debtor and creditors are likely to remain. Since the prospect of relapse into payment difficulties would be particularly worrisome, sustainability should be a central consideration in debt restructuring.

The paper briefly discusses the analytical implications of macroeconomic crises. The authors observe that the study of crises has a somewhat paradoxical aspect: the expectations driving the process, and which eventually become disappointed, are often based on economic theories prevalent at the times. The theory of crises must then contemplate how economic analysis itself might go wrong.

Jorge Carrera emphasizes in his comments the international dimensions of crises, particularly in the recent period, when the disturbance started at the center of the global system. He remarks that international interdependences may be stabilizing or destabilizing but, currently, the international financial multipliers seem the main channels that propagate negative impulses. Regarding unsustainable sovereign debts, Carrera notes that schemes that allow for early restructurings (rather than prolonging the agony through transitory official financing) should be important elements of the international architecture. He also points out that most systemically important financial institutions (SIFIS) have global dimensions and activities, while the regulations

that apply to them, if any, are established at the national level, with the consequent lack of coordination and risk of regulatory arbitrage. This situation, says Carrera, leaves very powerful global banks facing institutions that lack sufficient strength to regulate them; consequently, more attention should be given to international regulation, overcoming the minimalist criteria of the Basel rules.

The comment also identifies as important questions to be addressed the regulatory treatment of financial innovations (should they be subject to some kind of "clinical tests" before being offered to the public?) and the appropriate use of capital controls. On domestic policies in recessions, Carrera argues for income and redistribution policies (including avoidance of labor market reforms masking as wage cuts) as complements of fiscal measures; he refers to the Japanese experience of the 1990s as a case that shows the importance of opportune debt reductions, as their absence seems to have prolonged the period of stagnation. The comment underlines the distributive aspects of boom-bust cycles, emphasizing that crises entail broken promises in the form of defaults on formal debts, but also denials of socially legitimate and perhaps institutionalized claims concerning social and welfare conditions.

The papers and comments in this volume are diverse in their focus, analytical approaches and expository styles. Given our subject, that is how it should be. Like the proverbial elephant, social events such as debt crises cannot be described by observing them from a single angle. At the same time, the different contributions share the recognition that macroeconomic crises are a harmful sort of systemic failure and, therefore, call for sustained efforts to improve methods of diagnosis and devise better means of prevention and treatment. This view implies leaving aside complacent attitudes towards those disruptions, and stresses the practical relevance of addressing without prejudice long outstanding questions about the scope and the limitations of economic self-regulating mechanisms, in order to identify features or behaviors that may generate fragilities, and look for effective remedies. The appropriate policies would depend on the nature and the intensity of the disturbance. Matching with some precision circumstances with the desirable actions remains an open task. However, it seems clear that large debt overhangs have to be addressed somehow: policies based on mere contractionary adjustment are likely to aggravate the insolvency problems that motivated them in the first place. And dealing explicitly with overhangs involves facing the inevitable distributional implications of any way of action.

This volume, and the conference from which it originated, were conceived in a "learning mode." Crises are traumatic reminders to many economic agents that the actual economic scenario may differ considerably from what they had in mind when drawing their plans. Analysts have the job of trying

to understand the workings of an enormous, intricate system that evolves through the collective outcome of the willful behavior of people like themselves. The "end of history" is not near, either for actual societies or for the activity of macroeconomic analysis: we hope that this volume has contributed to the work waiting ahead.

Notes

- 1 See, for example, the analysis of the Spanish debt during the reign of Philip II (1556–98) in Drellichman and Voth (2013); in addition to discussing instances of payment suspension and debt renegotiation, this paper highlights the use by that government of risk-sharing instruments in the form of contingent contracts (such as obligations payable upon arrival of the silver fleet).
- 2 See, for example, Stiglitz (2002).
- 3 See Stiglitz (2000, 2001), Battiston et al. (2007), Miller and Stiglitz (1999, 2010c, 2010d).
- 4 At the time of the East Asia crisis, many American officials held their own country up as an example of transparency. Nonetheless, the US subsequently brought on the most severe crisis in eighty years. Many would argue, however, that the US financial markets are far from a model of transparency, and it was partly because they were so non-transparent that there was a crisis. See Stiglitz (2010b).
- 5 The US 2008 crisis involved both new financial products and bad conventional lending, though the extent of excessive mortgage lending may have been affected by the non-standard (but hardly high-tech) mortgage products.
- 6 It is worth noting that the individual countries in Europe, such as Greece, can be thought of as borrowing in a "foreign" currency, in the sense that the country cannot simply print money to repay its debt.
- 7 If they have only short-term debt, interest rates will rise concomitantly with the increase in inflation, and there will thus be little benefit. More generally, debtors benefit from inflation only if (a) debt is not indexed; and (b) inflation is greater than anticipated. By the same token, inflation at rates lower than what was anticipated increases the burden of debt. While many economists have accordingly recognized the dangers of deflation, problems arise even when there is inflation, so long as the inflation is less than anticipated.
- 8 In this regard, credit crises bear no resemblance with first generation models of runs. In the classic argument of Krugman (1979) a sudden fall in international reserves marks the anticipated end of a currency peg which everyone knows from the start will end at that particular date. The massive purchase of foreign exchange simply reflects a predictable adjustment of money demand given that at that moment price increases (driven by the persistent creation of domestic credit by the central bank) will accelerate, once the domestic currency is left to float. There are no disturbances to outstanding contracts: nominal yields on loans will have incorporated with precision the shift from fixed to floating rates. It seems difficult to identify a crisis in that scenario.
- 9 Alan Greenspan's famous remark, in testimony before Congress on the crisis, that there was a "flaw" in his reasoning illustrates the point: "I made a mistake in presuming

that the self-interest of organizations, specifically banks and others, were such as that they were best capable of protecting their own shareholders and their equity in the firms." House Committee on Oversight and Government Reform, hearings on "The Financial Crisis and the Role of Federal Regulators," October 23, 2008.

- 10 See <http://www.theguardian.com/uk/2012/dec/13/queen-financial-crisis-question>. The news report went on to mention that: "Is there another coming? The Duke of Edinburgh joked, before warning them [BOE staff]: Don't do it again."
- 11 Even if the country's underlying physical assets remain the same, there is a reduction in the value of those assets, because the present discounted value of future revenues to be derived from them is lower. Some of this wealth may be based on *inconsistent* beliefs – some individuals believe that they are wealthier than they are because they believe housing prices will continue to rise, but others believe that they are wealthy because they have made a bet that housing prices will go down, and they feel confident that their view of the world will prevail. In the end, one of these two views will prevail. At that moment, there can be a large destruction of what Stiglitz (2013) refers to as pseudo-wealth.
- 12 The statement leaves out cases of opportunistic (or strategic) default. In fact, crises are typical theaters for confidence games. Unscrupulous traders sell junk bonds to unsuspecting pensioners, investors who should have known better place their assets in the hands of financial sharks, ending in escapes to nowhere or resounding bankruptcies; these are familiar images. Sometimes, the intent to deceive seems to have been there from the start (as with the adventurer Gregor McGregor, who invented the imaginary Central American country of Poyais, the papers of which were actively traded in the early 1820's, before the 1825 panic); in other instances, the mix between fraud and mistakes may look more nuanced, and possibly variable over the career of the individuals or the course of their schemes. In any case, macro crises generally evoke the feeling that people have been swindled, and that the crux of the matter is theft of resources. However, a macroeconomically relevant generation of bad debts seems unlikely to occur only or mainly as a result of actual fraud. Fisher (1933) discussed the point: "When it is too late, the dupes discover scandals... But probably these frauds could never have become so great without the original starters of real opportunities to invest lucratively. There is always a very real basis for the 'new era' psychology before it runs away with all its victims." Still, as Kindleberger (1978) argues, fraud has played an important role in many crashes. In 2008, deception, bordering on fraud, played an important role in the housing crisis, and the rating agencies, investment banks, and others in the financial sector have been accused of fraudulent behavior, and in many cases, have paid large fines and out of court settlements.
- 13 In economies where a large number of contracts are written in foreign currencies, in particular, the solvency of debtors will be influenced by the path of the real exchange rate, in addition to the domestic purchasing power of earnings.
- 14 Again, there are models where herding behavior may be evidenced as part of rational expectations. But in most crises, such models do not adequately explain the development of expectations. This is certainly the case for the 2008 crisis.
- 15 Thus, Stiglitz (2010b) describes how at Davos, in 2008, after the housing bubble broke, but before the global economy went into freefall, the economic leaders had said: "Who could have seen this coming?" In fact, in earlier meetings at Davos, several economists had described, with considerable precision, the events as they unfolded. There is a large literature in behavioral economics describing how individuals discount information that is contrary to their beliefs. See Hoff and Stiglitz (2010) and the references cited there.

- 16 The perceived proximity of a critical point may be measured vividly by the frequency (in times per month, per week, or per day) with which people who are not financial operators check the movements in variables like the exchange rate, central bank reserves, the volume of bank deposits, the interest rate on government debt, or the stock price index.
- 17 There has been an extensive analysis of bankruptcy avalanches. See Gale and Allen (2001), Greenwald and Stiglitz (2003) and Battiston et al. (2007).
- 18 Of course, in many instances, such as in the Great Depression, monetary authorities have been insensitive to the credit contraction. In 2008, they were, but were unable to counter the effects, even with a massive expansion of their own balance sheet.
- 19 See, for example, Allen and Gale (2007), Brunnermeier and Pedersen (2009); Shin, 2010; Eggertsson and Krugman (2012); Geanakoplos (2010); Gorton (2012); Gorton and Ordonez (2012); Kiyotaki and Moore (1997); Korinek (2011), Stiglitz (2010c, 2010d), Battiston et al. (2012a, 2012b), Gallegati et al. (2008).
- 20 The zero- lower bound on nominal interest rates has been much discussed, but if it were the main restriction to a recovery, there would be an easy remedy: use tax policies to correct such intertemporal prices. In fact, lower interest rates may actually lower aggregate demand, for example, as a result of distributional effects.
- 21 There is a stereotypical image in Argentina at times of crisis or in periods of weak growth: that of the architect/engineer who drives a taxi. It would be expected that such "career changes" do not happen before a long, unsuccessful search. Also, if the driver must own his own cab the transition requires the availability of a certain amount of resources. Similarly, the re-entry of construction workers who were displaced when housing bubbles burst is not likely to be a smooth process, with even more severe macroeconomic consequences because of the sheer numbers. Often, new jobs are created in locations that are different from those where old jobs are being destroyed. Moving too requires capital individuals may not have, especially in economies like the US where housing rental markets are thin and especially when the value of real estate in areas in decline has diminished.
- 22 These macroeconomic externalities are manifestations of a more general set of market failures (pecuniary externalities) which arise when there is imperfect and asymmetric information and/or incomplete markets. See Greenwald and Stiglitz (1986).
- 23 See Stiglitz (2011).
- 24 Indeed, one of the functions of an international system of sovereign bankruptcy may be to price these risk-sharing instruments appropriately for the purpose of their utilization in debt restructuring operations (see Miller and Zhang, 2014, for an argument related to the European case).
- 25 Debt restructuring does not require government resources; but governments, by offering certain "sweeteners" can facilitate voluntary restructuring. Even bank recapitalization does not necessarily require government resources. The government can simultaneously make a capital investment in the bank and borrow the requisite capital from the bank. Of course, there are risk consequences of such an operation. And if financial markets focus on only one side of the government's balance sheet (its liabilities, not its assets), they will look with disfavor on such an operation. Our point here is simply that the government need not have put aside funds prior to the crisis to fund a bank restructuring.
- 26 Expansionary fiscal policies include those which transfer current resources to the illiquid financed by selling bonds to the liquid. Such transfers can be thought of as a substitute for the missing intermediation channel between one set of agents and the

other, and may stop the propagation of effective demand failures (Leijonhufvud, 1973). But maintaining private spending capacities in the current period can be insufficient to bring debtors back to solvency and to ensure that the economy remains at full employment.

- 27 See, for example, Borensztein and Panizza (2008); Cruces and Trebesh (2011); Levy Yeyati and Panizza (2011); Sandleris (2012); Sturzenegger and Zettelmeyer (2012).
- 28 We should emphasize that there are serious econometric problems: countries undertaking deep haircuts typically face higher levels of debt and more severe macroeconomic problems; moreover, the conditions that led to the untoward financial situation may persist after the debt restructuring. To ascertain whether or not deeper restructurings are associated with higher costs requires taking adequate account of all of these factors. Stiglitz (2010a) has argued, to the contrary, that financial markets are forward looking, and that to the extent that that is true, deeper debt restructurings make the risk associated with *additional* lending less, and thus may be associated with higher growth.
- 29 Once again, there are difficult econometric issues. Deep and prolonged downturns inevitably lead to financial/debt crises. Thus, statements such as that financial crises are typically longer lived than non-financial crisis may be true, but simply reflect the fact that when there is a large (real) shock to the economy, it results in a financial crisis; not surprisingly, large shocks have large and longer lasting effects.
- 30 Note that without some kind of an aggregation clause, any vulture fund that bought a majority of any single issue of bonds could block a restructuring.

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