The Anatomy of Financial and Economic Crisis

by Duncan K. Foley*

1 The market giveth and the market taketh away

Economic life at the national and increasingly at the international level has become organized along the lines Adam Smith foresaw and Karl Marx criticized. We produce our daily bread (and our daily clothing, shelter, medical care, transportation, information and pretty much everything else we consume) through a complex division of labor largely organized through the exchange of products on markets (which Marx called the "commodity form" of production). Capitalist commodity production is based on money and money capital, and so we also depend on an equally complex set of financial institutions and transactions to finance the production and circulation of goods and services. Thus our economic security and well-being are intimately connected with the functioning and malfunctioning of markets, as the current financial-economic crisis reminds us so forcibly.

As the economic advocates of laissez-faire market organization of production who dominate the economic profession in the U.S. and increasingly in the world (though thankfully not at Barnard College) tirelessly remind us, this capitalist commodity system of organization of production through markets has many good things to offer. Markets, when they are competitive

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and reasonably transparent, can aggregate information from many dispersed individuals to guide production and investment toward the approximate satisfaction of human needs. The capitalist form of productive organization puts primary control of technological innovation in the hands of successful entrepreneurs, thus encouraging a technologically dynamic and progressive pattern of economic development. We also know from long historical experience that this system has some less attractive features. It tends to distribute the fruits of economic effort very unequally. It also creates a great deal of individual risk and insecurity through the turbulence and instability of market fluctuations.

Economists have spent a great deal of effort understanding the limitations of markets (though they tend as a rule to place the discussion of the advantages of market organization at the beginning and of the disadvantages at the end of the curriculum). Ideally markets work best when the economic decisions of individuals are independent of each other. When the decisions of individuals have consequences for other individuals, or depend on each other in ways that are not completely captured by the market transactions themselves, various market pathologies result. Economists call these extra-market dependencies *externalities*.

We experience externalities all the time in real life, though we may not always use economic terminology to label them. Traffic congestion, for example, is a vivid constant reminder of external effects, which we can hardly fail to experience as part of modern life. I am just minding my own business, for example, going to work, but at the same time I am getting in your way and slowing down your effort to mind your own business. Some externalities come to our attention indirectly, such as the impact of the burning of fossil fuels on global climate change. In fact, when we examine almost any economic interaction closely, we find that externalities are involved. In some cases they may be relatively small in relation to the market-mediated aspects of commodity transactions, but in other cases they are extremely important, and have impacts on human welfare on the same scale as the gains from commodity production itself.

When individual economic behavior affects others in ways not encompassed by the market interactions, markets can reach stable equilibrium but will fail to allocate resources efficiently. If there is a real economic cost in the form of global climate change to burning fossil fuels, individual decisions guided by prices that do not reflect these costs will be inefficient (burning too much carbon-emitting fuel, for example). In these cases some social-political

intervention is necessary to correct the externality. This may take the form of an extension of the commodity relations to include the externality (for example, creating property rights in climate through a cap-and-trade system of restriction of carbon dioxide emissions), or might take the form of regulation or restriction of commodity transactions (direct regulation of emissions, or imposition of a tax on emissions).

Market interactions become even more complex and vulnerable to malfunction when there is a feedback from the decisions of other individuals onto the decisions of any particular individual. For example, individual stock traders might act completely independently in buying and selling stocks, each forming his or her own opinion as to the long-run profitability of the companies by looking at "fundamental information". In this case the market would act according to ideal theory as an aggregator of the information all the various individual traders bring to it. But if traders, as they surely often do in reality, take into account the decisions of others, through, for example, looking at what is happening to average stock prices in making their decisions about buying and selling, a potentially de-stabilizing feedback enters into the picture. If rising stock prices predispose individual traders to buy stocks at higher prices, a self-reinforcing "bubble" in prices can result. (There can also be negative bubbles in which stock prices are driven down by self-fulfilling prophecies of decline.) In these situations externalities can compromise the stability of markets as well as leading to misallocation of resources. The external interactions may make drastically different levels of prices consistent with market equilibrium. These different levels of market equilibrium may have very different consequences for important human issues, such as levels of production, employment, risk and the like.

The dramatic events of the last year in the world economy and financial system can be understood in terms of the externality problem. This crisis is, in fact, nothing particularly new in the history of capitalist economics. Capitalist economies repeatedly experience financial crises of more or less serious degree, and often, though not always, these financial crises spill over into the production system and disrupt employment and output. In the course of this discussion I will look more closely at the specific types of external interactions that lie behind the financial and economic crises we are experiencing. A better understanding of these market pathologies can illuminate the policy issues involved in coping with crisis.

Before embarking on this examination, however, I'd like to underline the larger point, which is that the advantages of capitalist-commodity organi-

zation of production through markets are inextricably combined with its pathologies and dysfunctions. Any particular pathology can be addressed by some combination of institutional reform or regulation, but the idea of completely purifying the market of externalities is a will-o-the-wisp.

2 Equilibrium with externalities

We can roughly visualize a market with externalities as the intersection of two geometric loci, as in Figure 1–4.

Suppose a "representative" individual agent, which might be a financial institution or a household, controls some variable x (lending standards or spending), and we represent the social average level of the choice as $z = \langle x \rangle$. (Physicists use the notation $\langle x \rangle$ to represent an average of some variable over a system.) Then the utility of the representative agent is $u[x, z] = u[x, \langle x \rangle]$. The individual Smithian self-regarding agent takes the social average as given, and maximizes her utility by choosing $x[z]$ as a function of z. Economists call this the agent's "Cournot-Nash" *best response function*.[1] The best-response will maximize the utility function over x given z, and hence will satisfy $\partial u[x[z], z]/\partial x = 0$. Because we assume the agents are identical, the equilibria of this system are points where $x[z] = \langle x[z] \rangle = z$. As Figure 1 shows, the equilibria can be visualized as the intersection of the $x[z]$ function with the $x = z$ locus.

What if the representative agent were not Smithian, but saw herself as a deciding for the society as a whole? In this case she would "internalize the externality", assuming that when she changed her own x, everyone else would do so as well. Like a social planner she would choose x to maximize $u[x, x]$, not taking the level of $z = \langle x \rangle$ as given, but assuming she could control it by controlling her own decision. Or, another way to look at this type of behavior is that the representative agent would decide not selfishly, but as if she were deciding for the whole society, taking the whole society's interest into account. This "Pareto-optimal" or *efficient* level of x would satisfy $\partial u[x, x]/\partial x + \partial u[x, x]/\partial z = 0$. In terms of the graph, the efficient

[1] In setting up the problem this way, we are implicitly assuming that the representative agent is a "free-rider" because she ignores the impact of her own decision on the social average. This assumption is often defended on the ground that when the number of agents in the system is very large, the impact of any one agent's decision on the outcome is negligible.

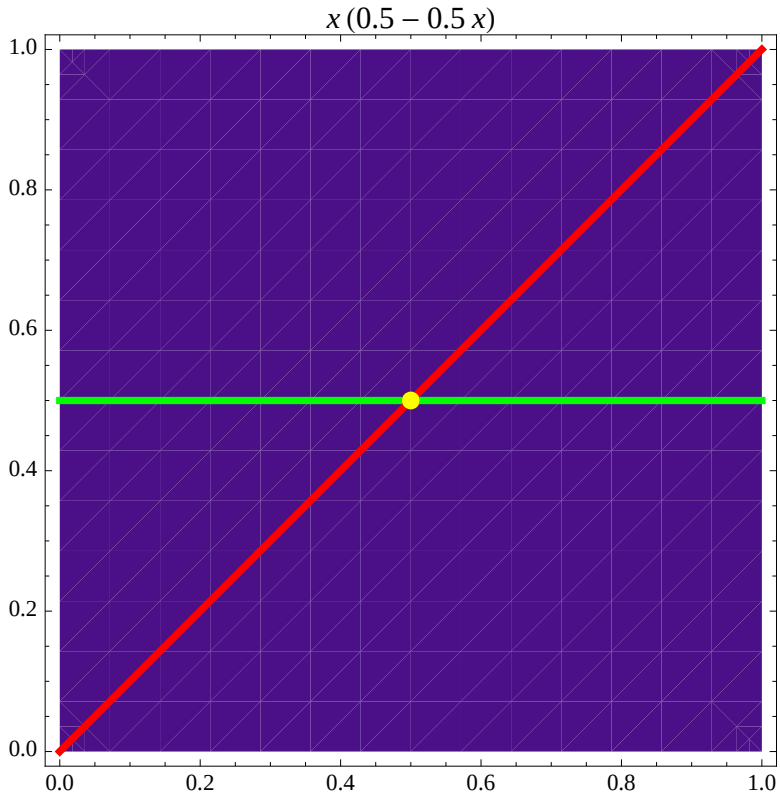

Figure 1: When there is no externality, equilibrium at the intersection of the representative agent's best response (the horizontal green line) and the $x = z$ locus (the red line) is Pareto-optimal.

allocation is where the $x = z$ locus is tangent to the indifference curves of the representative agent.

When $\partial u/\partial z = 0$, the social average has no influence on the individual; there is no externality, and the social equilibrium arising from everyone consulting only their own self-interest is efficient. This is the *invisible-hand game* in Samuel Bowles' terminology.

When $\partial u/\partial z \neq 0$, however, the social equilibrium is not efficient, as we know from economic textbook examples. When $\partial u/\partial z > 0$ there is a *positive externality* and the social equilibrium leads to a level of z that is lower than optimal; with a *negative externality* the equilibrium level of z is too high, as Figure 2 illustrates.

Externalities can also affect the *number* and *stability* of the social equilibria. In Figure 3 the nonlinear best-response schedule $x[z]$ crosses the $x = z$ locus three times. It is natural to view the outer equilibria where $x[z]$ crosses $x = z$ from above as stable, since a perturbation of z upward from equilibrium gives individual incentives to *reduce* x, and conversely for perturbations of z downward. If we interpret x as the willingness of financial institutions to lend freely, for example, we can see how a rise in interest rates or a fall in housing prices leading to increased default rates on mortgages might shift the $x[z]$ schedule downward, as in Figure 4, in which the "good" equilibrium of high financial efficiency disappears, and the system is forced to the "bad" equilibrium of credit crisis.

The sudden collapse of lending in the credit system and the very rapid decline in spending levels in the world and U.S. economies suggest the loss of "good" equilibria due to gradual changes in underlying factors (such as interest rate policies, housing prices, and the willingness of financial institutions and households to take risks) which lead to a catastrophic change in system-wide behavior.

The immediate policy goal in a situation of sudden collapse is usually to try to restore the status quo ante equilibrium by moving the best-response schedule (for example, by lowering interest rates, flooding the system with liquidity, or raising spending through deficit-financed government spending). Two problems can make this difficult. First, the new low-level equilibrium is stable, and thus inherently resists changes in policy. Second, the old high-level equilibrium may simply not exist, due to changes in underlying contextual factors. The best case is where the good equilibrium still exists but has drifted to a lower position. In this case policy may have a good chance to preserve the equilibrium and improve its social performance. The worst case

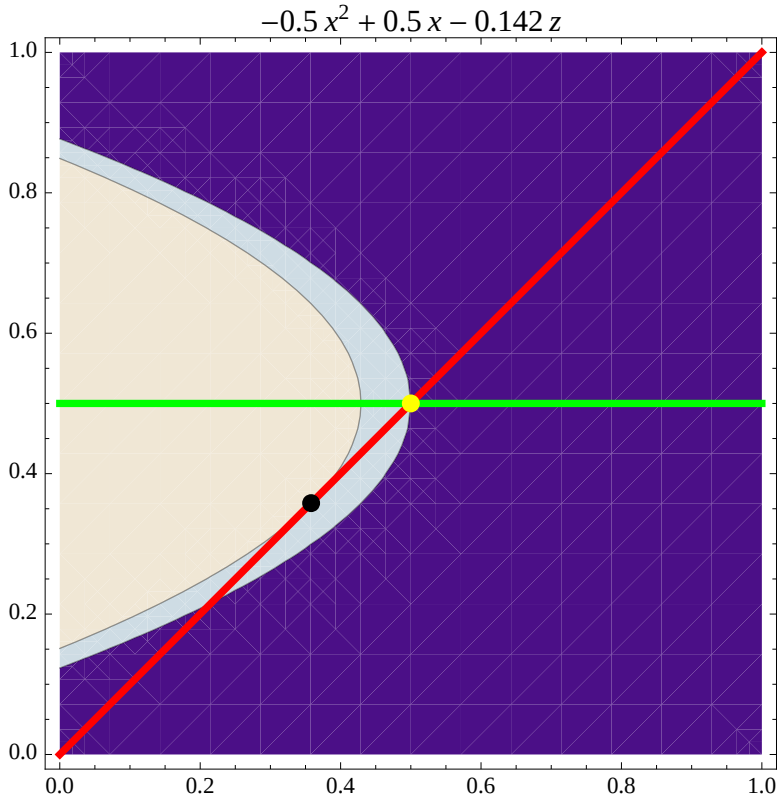

Figure 2: With a negative externality, the equilibrium (at the intersection of the best-response and $x = z$ schedules) is not Pareto-optimal; the equilibrium level of z is higher than the efficient level (where the $x = z$ locus is tangent to an indifference curve).

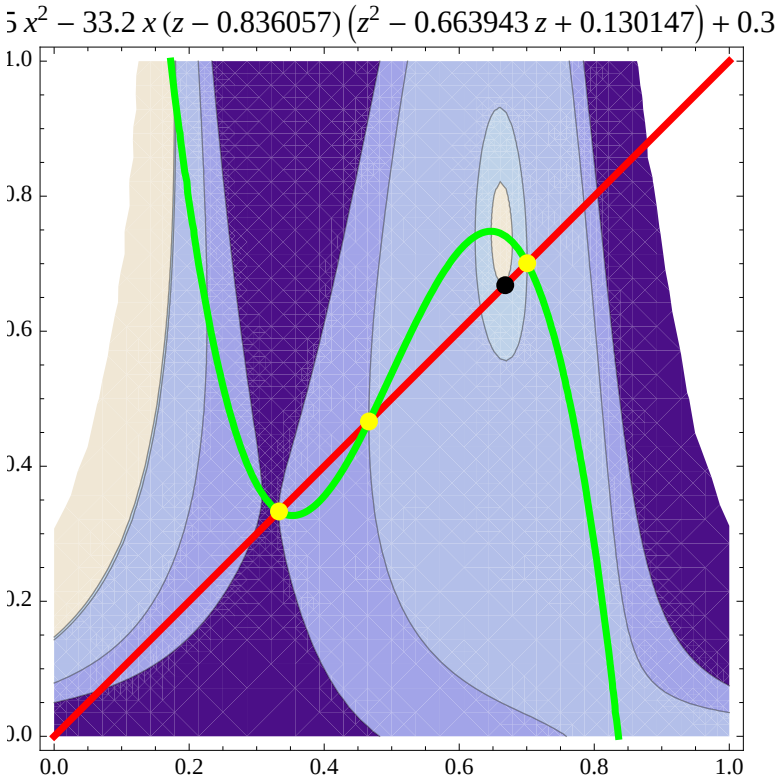

Figure 3: With a nonlinear best-response function for the representative agent, there can be multiple equilibria, in this case three. The outer equilibria are stable and the inner one is unstable. None of the equilibria is Pareto-optimal.

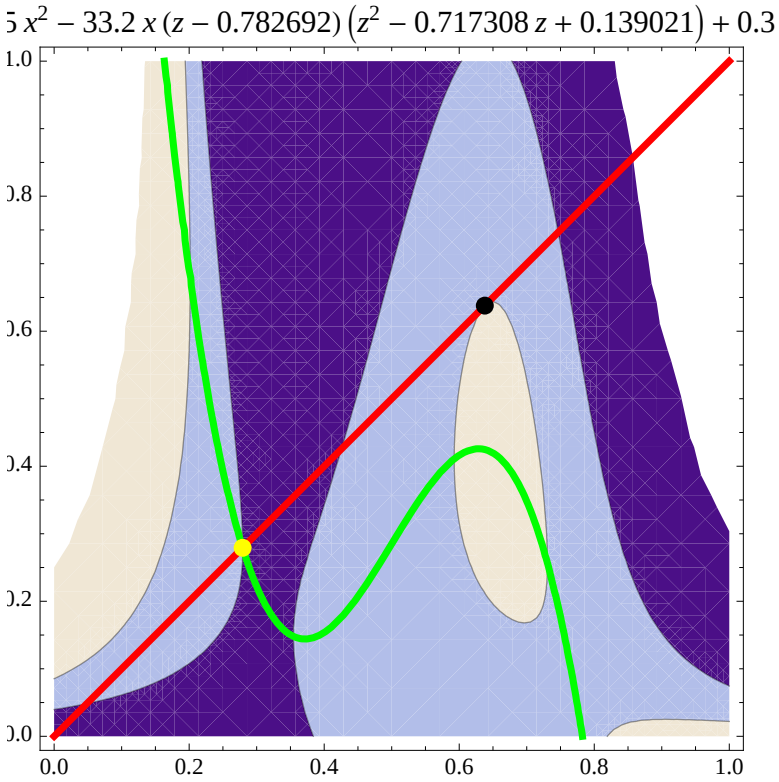

Figure 4: The economic environment may change so as to lower the best-response function. In this case the result is the disappearance of the high-level stable equilibrium so that the system is forced to the low-level stable equilibrium.

is where the good equilibrium has completely disappeared. In this case policy has to re-shape the context in which individual financial institutions, firms and households make their best-response decisions with the aim of restoring the high-level equilibrium.

3 The financial confidence game

The defining feature of the modern debt contract is that it is impossible for the lender to compel the borrower to pay what the borrower promises. (Bodily punishment as a sanction for nonpayment is available only to lenders such as the mob who operate outside the law, and the debtors' prison has thankfully been abolished.) Bankruptcy law does prevent selective default on debt: a borrower cannot pick and choose which creditors' demands to meet out of limited cash flow. This feature of debt contracts builds into the financial system the potential for an unstable chain reaction of bankruptcies. Because financial institutions are both borrowers and lenders on a huge scale, the failure of one borrower to meet its obligations can compromise the ability of its creditors to meet their obligations. This is a fundamental externality of credit markets: borrowers in considering bankruptcy do not take into account the impact of their decision on the solvency of their creditors, and hence on the credit system as a whole.

Given this peculiarity of the debt contract, there are two ways to lend money. One is to require the borrower to put up some valuable asset (such as a house, or a car, or stock) as collateral against the debt. The owner of such a "collateralized debt obligation" then can seize the collateral in case of the borrower's default and in theory realize the value of the debt promise by selling the collateral asset. Among financial institutions themselves, however, collateral debt contracts have the great disadvantage that the assets pledged as collateral against one loan cannot be used for any other purpose. Thus a financial system that operated solely using collateralized obligations would require an enormous amount of capital, that is, assets actually owned directly by the financial institutions, in order to supply the necessary collateral.

In every phase of capitalist development, financial institutions have devised means of avoiding the costs of collateral in lending among themselves. Large, well-known financial institutions begin to lend among themselves without collateral security, depending on the reputation and stability of the borrower as a guarantee of the debt rather than requiring borrowers to pose

collateral. Typically this unsecured lending is restricted to a circle of institutions regarded as "names" in the credit markets. Outsiders either must post collateral or get the guarantee of such names on their debt obligations in order to acquire unsecured loans. The system of unsecured loans greatly economizes the capital required to operate the financial system, but creates another layer of feedback in the system. When all the other financial institutions are lending freely among each other without collateral, it is much more profitable for any given institution to follow suit; but if a significant fraction of the institutions lose confidence in the system and begin to demand collateral, the entire edifice of intertwined lending among the large institutions can implode. Other borrowers, such as productive firms and households, who depend on the unsecured borrowing system to finance their expenditures, are cut off from finance in such an implosion.

In 2007 Northern Rock, a British mortgage banking institution, experienced this type of problem. It had evolved a business model based on short-term unsecured borrowing in the commercial paper market (through which mutual funds and pension funds make short-term loans directly to borrowers without the intervention of a bank) in order to finance the initiation of long-term mortgages from household borrowers. Because the cost of short-term funds in the commercial paper market was low, Northern Rock could compete very effectively in offering low rates and other advantages to potential borrowers. In 2007, however, the willingness of lenders to buy unsecured commercial paper dried up on several occasions. During these periods, Northern Rock, faced with the need to roll over its short-term debt position, became illiquid, and required direct lending from the U.K. government to avoid bankruptcy. After several worsening episodes of this type, the British government nationalized the company.

Hyman Minsky, an American economist who also served as a bank director, devoted much of his professional attention to the problem of financial instability, or as he called it, "financial fragility". Minsky's thesis was that in periods of robust capitalist growth, financial institutions became more and more willing to make unsecured loans. This willingness increased the availability of finance, which encouraged further growth in business and household spending, but also increased the vulnerability of the financial system to an implosion if there was a faltering in the willingness of the financial institutions to expand unsecured borrowing. Minsky's analysis is based on the distinction among "hedged" financial units, whose cash flow is large enough to pay their debt service obligations with something left over, "speculative" finan-

cial units, whose cash flow is large enough to pay the interest on their debts, but need to borrow to finance the payment of principal and the acquisition of new assets, and "Ponzi" financial units, who must borrow in order to pay the interest on their existing debts. (Minsky adopted the name "Ponzi" for this financial regime from the notorious Boston swindler-financier Charles Ponzi, who offered high "guaranteed" rates of return to his clients which actually were paid from the inflow of new money into his business.)

Households, businesses, and other borrowers do not, of course, only use borrowed funds to finance investment or to shift consumption from one part of their life-cycle to another. They also use borrowed funds to speculate in assets such as real estate. Thus the expansion of credit as a result of increased financial fragility can finance speculative bubbles in asset prices. This is another externality built into the financial capitalist system.

Since the 1980s the United States government has aggressively pursued an international policy of promoting free capital movements. This policy, enforced in many cases as "conditionalities" of International Monetary Fund loans to distressed national borrowers, requires national governments and central banks to remove regulatory obstacles to the free purchase and sale of capital assets across national boundaries. While a few large economies, notably India and China, were able to resist these pressures, many other important economies, including Russia, Brazil, Argentina, Indonesia, South Korea and Mexico, adopted this system of financial liberalization. Each of these countries experienced a similar type of financial crisis as a result. In the initial stages the liberalizing economy experiences a large inflow of foreign capital, which supplies a lot of funds to its financial system. Typically this inflow of funds results in a rise in the economy's exchange rate (which is "floating" or market-determined under the liberal regime), which makes it difficult for its industries to export and leads to a deindustrialization of the economy, combined with a consumption binge as imported foreign goods become cheaper. In these episodes, the external capital flows finance not only a consumption binge but a bubble in local assets such as real estate. When this bubble pops the financial system of the country experiences a severe crisis, with a chain reaction of bankruptcies and defaults, and the real economy experiences a severe downturn with negative rates of growth of GDP and sharply rising unemployment. In the case of the economies I just mentioned, the crisis culminates in a sharp fall in the value of the national currency in relation to the rest of the world. These experiences seem to indicate that the regime of international financial liberalization based

on freely floating exchange rates determined in speculative markets greatly amplifies the financial fragility inherent in financial capitalism.

In 2008 the United States financial system experienced its worst crisis since the 1930s. The broad patterns of this crisis were strikingly similar to those experienced by other smaller economies over the years of international financial liberalization. The U.S. experienced a large, continuing capital inflow especially from oil-producing countries and China, which tended to hasten the deindustrialization of the U.S. economy, making traditional manufacturing sectors like automobiles less competitive. This inflow also financed a huge consumption binge, in which U.S. national saving plunged to record low levels, and to a large degree financed the bubble in U.S. housing prices. When this bubble began to burst, partly due to the delayed response of the Federal Reserve by raising interest rates to reduce the incentives to buy homes at inflated prices with mortgages, it caught the financial system in a classic posture of financial fragility and vulnerability to crisis.

Every financial crisis is different in its details. In 2008 the weakest link in the U.S. (and, as we have learned, the developed world's) financial network was the widespread purchase of mortgage-backed securities by large financial institutions. The decline in housing prices predictably set off a rise in defaults on mortgages, lowering the value of these assets, and threatening the institutions with insolvency. The situation of the big financial institutions which had loaded their balance sheets with these securities was made more perilous by their reliance on mathematical models rather than market transactions to value the exotic and opaque bundles of assets they owned. The resulting financial crisis remains with us.

It would be a mistake, however, to suppose that this financial crisis was solely caused by the mistaken investment decisions of the large financial institutions in buying mortgage-backed securities, or in the ill-judgement or corruption involved in making these mortgages in the first place. A certain degree of corruption, manipulation, and opportunism is built-in to financial capitalism. When the whole economy prospers, grows, and prices in general continue to rise, much of the potential system-wide damage is avoided. A financial crisis, on the other hand, not only reveals the borderline and criminal transactions that have taken place, but also compromises the quality of transactions that would have passed muster in "normal" times.

It seems to me (especially with the clarity of hindsight) more reasonable to suppose that the financial system was in so fragile a state that any one of a number of disturbances could have precipitated this crisis. If the rise

in mortgage defaults as a consequence of falling housing prices had somehow not devalued mortgage-backed securities, then some other factor, such as defaults on credit-card debt, or even on commercial loans, would have been the trigger for crisis.

The reason that the 2008 financial crisis had its epoch-making consequences was that it was so severe and generalized that banks and other "named" financial institutions stopped being willing to lend freely to each other without collateral. As a result the flow of credit on which the real economy depends to finance production, including purchases of inputs and payment of wages to workers, largely ceased. In other historical episodes of financial stringency credit has become expensive and harder to qualify for, which has led to more or less severe downturns in business spending and more or less serious recessions. But generally the core inter-institutional lending at the heart of the system survived these episodes. In 2008 this core lending did not survive, and in fact it appears that many of the financial institutions themselves will not survive. The damage to the financing of real production will be correspondingly more devastating and the business downturn longer-lasting.

When an equilibrium such as the practice of collateral-free lending among financial institutions breaks down, typically a new stable equilibrium emerges at a much lower level of lending and much less efficient use of scarce capital funds. Efforts of policy-makers to restore the "old" equilibrium face two formidable obstacles. One is that key factors, such as rapid growth of the world economy that supported the old equilibrium may no longer exist, so that the old equilibrium itself may just have evaporated. A second is that the low-level equilibrium of low borrowing and extremely tight credit availability may be stable, so that individual incentives of financial institutions tend to restore it, making policy ineffective or self-defeating.

In my view this is the reason the financial "bail-out" policies pursued by both the Bush and Obama administrations are highly uncertain to work and risk incurring large amounts of Federal debt to transfer money to private firms and managers without actually solving the underlying problem.

What is particularly disturbing about this sequence of events is that the crisis arose from the internal evolution of the institutions of finance and credit themselves, not from any external stress put on them by outside factors. As policy-makers struggle with the wreckage of the private financial system, they must also consider what fundamental changes will be necessary to minimize future fragility of the system.

4 Global stagnation

As John Maynard Keynes emphasized in his revolutionary work in the 1930s on macroeconomic stability, market-based capitalism faces another fundamental destabilizing externality because of the inherently monetary character of market transactions. David Ricardo based his analysis of capitalist growth on the assumption that "money is a veil", that there is no motive to sell except to buy, and hence that Jean Baptiste Say's "Law" that supply creates its own demand holds, except perhaps in the very short run. Under these assumptions all commodities are equally liquid, and the only constraint on household and firm spending is their long-run real resources. In this Ricardian world a temporary decline in incomes will have little impact on spending.

Keynes insisted by contrast that in real-world monetary economies many households and firms are "liquidity-constrained", that is, unable to finance spending beyond their immediate cash inflows by borrowing. In this more realistic world, spending itself has an important externality. Each household or firm that spends money not only accomplishes its own ends (consumption or production), but also relieves the liquidity constraint of other spending units. This is a potentially important externality for the market capitalist system. When liquidity constraints are pervasive, the total level of spending in the system (which Keynes called "effective demand") will tend to be too low, with the consequence of low or negative growth of output and incomes, and the emergence of widespread unemployment of labor and capital. Like the low-level financial equilibrium I described above, the resulting low level spending equilibrium may be stable and difficult for policy to change.

In times of vigorous capitalist economic growth, and when the financial system is operating smoothly, the proportion of firms and households that are liquidity-constrained will be relatively small. The Federal Reserve can manage to balance the system at a high equilibrium in the face of external fluctuations by relatively small adjustments in the supply of money to the system. This is the regime, more or less, in which the U.S. and world economies have been operating since the late 1970s. While this regime deviates in important ways from the Ricardo-Say assumptions, it is close enough that policy-makers and economists can plausibly base their analyses on Ricardian principles. The Keynesian spending externality, however, is lurking below the surface of this "classical" world; the veil of money is potentially an entrapping web.

By an ironic turn of intellectual history, "mainstream" macroeconomics in the U.S., and increasingly in other parts of the world eager to imitate the success of U.S. economics, has little to say about financial instability or liquidity constrained economies. Under the influence of the critique of Keynesian economics (which departed in important respects from the "economics of Keynes" himself) put forward by Robert Lucas and Thomas Sargent in the nineteen-seventies, the study of theories that rule out financial instability and liquidity constraints in their assumptions has come to dominate contemporary macroeconomic research and teaching. Furthermore, the tendency of economic journal editors and departments to exclude points of view at variance with current dominant fashion has prevented dissenting analyses from participating in the intellectual debate over macroeconomics or diluting the orthodox content of macroeconomic education. The result of these developments is that mainstream economists find themselves deprived of the concepts and intellectual resources necessary to diagnose and effectively address the current crisis. Their models tell them that the kind of disruption of market-directed economies we are observing can never happen, or will be reliably and rapidly reversed by spontaneous decentralized reactions to it. This kind of conventional economics offers us little improvement as a basis for macroeconomic policy over the "Treasury view" that hamstrung British and American policy in the nineteen-thirties.

The globalization boom of the nineteen-nineties and two-thousands led to the generation of enormous profit flows in some developing economies, particularly China, and in energy-exporting economies such as Russia, Saudi Arabia and Iran. None of these economies, however, are thoroughly capitalist in their structure or behavior, and all of them came to depend more on a high level of world spending (effective demand) than on the generation of their own internal spending equilibrium through re-investment of these profit incomes. This globalization had a distinctive, and, as we now see, unstable pattern in terms of world spending. Global profits were generated from the exploitation of labor in China and other emerging economies, and realized largely in high energy prices. Global effective demand depended, however, on the financial system borrowing these profits and re-lending them in developed countries, particularly the United States. But U.S. industry during this period showed no great appetite for funds to finance domestic investment. Over time, the maintenance of adequate levels of global effective demand came to depend on the spending of middle and lower-middle income U.S. households financed by one-shot increases in the availability of credit. Once again with the benefit

of hindsight it is not hard to see that this arrangement was unsustainable.

One symptom of this underlying world imbalance in spending patterns was the increasing difficulty the Federal Reserve experienced in finding a sustainable monetary policy that met the needs both of the global economy and of the U.S. economy. The Federal Reserve found itself manipulating interest rates in an increasingly extreme alternation of excessive ease (which promoted bubbles in stock and real estate prices) and ineffectual restraint (in which it found its ability to influence long-term interest rates compromised by the enormous flows of funds in the global economy).

As in the case of the broken financial system, this sequence of events raises some troubling fundamental questions. The global effective demand imbalances, like financial fragility, arose as the systematic effects of the pattern of world economic development. If we are not to re-create the situation that led to the current disaster, we must either alter the patterns of world economic development in a more sustainable direction, or alter the institutions that regulate global effective demand to be more balanced and responsive, or, preferably, both.

It is worth a moment reflecting that Keynes himself foresaw these problems. At the 1944 Bretton Woods meetings devoted to negotiating a world financial-economic framework for the post-World War II era, Keynes proposed the creation of a world central bank, which could flexibly supply liquidity to the world economy in the same fashion as national central banks such as the Federal Reserve can regulate the liquidity of national monetary systems. Keynes' proposal foundered on a political issue, the unwillingness of the U.S. to give up its financial sovereignty to an international central bank governed in some kind of "multi-polar" fashion. Are we any better positioned to resolve these issues today than we were 65 years ago?

The trouble is that the "flat-earth" globalization we have been pursuing over the last twenty-five years in the world economy rests primarily on investments to cut costs by moving productive activities to lower-wage regions of the world rather than increasing productivity. These cost-cutting investments can promise very large private returns, but it is doubtful that the social returns are commensurate. While the private investor who relocates production to reduce costs reaps the full increase in profitability, a side-effect of this investment is the economic obsolescence of abandoned productive facilities and capacities in high-wage regions. Furthermore, the incentives to invest under flat-earth policies have not proved to be particularly strong; the "world savings glut" Ben Bernanke and others have identified is a sign that

growth in real investment spending has tended to fall short of the enormous growth of profits that globalization has fostered. This structural imbalance induced the flood of capital into the U.S. economy that overwhelmed its capacity to find profitable investment outlets, and ultimately destabilized our financial system.

5 All the king's horses and all the king's men...

So what is to be done? There are several dimensions to this question. What can we do to hasten recovery of the functioning of the world financial system? What can we do to limit the depth and duration of the world depression that is upon us? In a longer-term perspective, what can we do to fashion a global economic-financial system that is more robust and less vulnerable to catastrophic crisis? These questions are all interlinked, and connected to even larger ones, which we face, crisis or no, including the management of the relation between the world environment and the world economy, reducing the vast gulf in income between rich and poor nations, and adapting to an unprecedented age distribution of the world population as population stabilizes in total numbers.

From some perspectives financial disaster ought to be the easiest aspect of the crisis to deal with, since the financial system is at its heart a network of promises and expectations. Legal, legislative, and judicial processes can alter the framework of promise-making, promise-breaking, and promise-enforcement without large real resource costs. The consequences of intervention in this system are large, but they have to do with the distribution of wealth, not with the creation or destruction of wealth. This is one reason to doubt the necessity for the financial bail-out policies I discussed earlier. The classic method for addressing financial dislocation is reorganization through the Federal Deposit Insurance Corporation (or some extension of it devised for particular emergencies, such as the Resolution Trust Corporation set up to deal with the savings and loan crisis). Rather than trying to keep insolvent institutions afloat through a constant infusion of government money, reorganizations preserve the assets of the institutions and recapitalize them by wiping out the interests of stockholders and risky bond holders altogether, rendering the institutions solvent and salable to new management.

The framework I outlined earlier showing the interaction of markets and externalities is helpful in thinking about these problems. For the sake of

concreteness, suppose that in the pre-crisis period there are two equilibria in the financial markets, a "good" equilibrium in which the big financial institutions lend freely to each other and to firms and households, and a "bad" equilibrium in which lending is restricted to a much lower volume of fully collateralized transactions. Each of these equilibria is stable against small disturbances and tends to re-assert itself, but it is possible that a large disturbance will shift the system from the good equilibrium to the bad equilibrium, with dire results for the financial system itself and the real economy. A financial crisis takes the form of a disturbance of the good equilibrium. The first recourse of policy-makers when faced with a financial crisis is to try to restore the good equilibrium, or at least prevent the disturbance from tipping the system to the bad equilibrium. Concretely this type of policy means ensuring the liquidity of the participants in the system by massive lending from the central bank, and the orderly liquidation of institutions that are revealed to be insolvent even under the assumptions of the good equilibrium. This kind of policy works when the good equilibrium remains attainable, and the system is disturbed from it by some kind of "external" shock, such as a big change in energy prices, or a war. But our present financial crisis seems to have developed out of the logic of the system itself, not as a reaction to an external shock. This suggests that the problem is not that the financial system has moved away from the good equilibrium but that the good equilibrium has *disappeared* due to the evolution of the behavior of the system. If this is indeed what has happened, as appears increasingly to be the case, traditional policy measures may be ineffectual and even counter-productive.

The problem is that as the whole system plunges toward the remaining bad equilibrium state, it dooms a large proportion of the institutions that would have remained solvent anywhere near the good equilibrium. If the financial system is going to operate for some time near the bad equilibrium, some type of liquidation or bankruptcy or nationalization of these institutions is unavoidable. Money lent by the Fed or the Treasury to these institutions cannot be recovered, and continued attempts to keep them doing business hampers the adjustment of the system to the new environment. We are familiar with the recourses necessary in this type of situation from many past financial crises in individual countries and in sectors of the U.S. financial system such as the savings and loan debacle. Some government entity takes over the assets and liabilities of the failed institutions and manages them outside the normal processes of financial business, using judicial and administrative measures to allocate the remaining wealth to the claimants, and guarantee-

ing the claims of the most vulnerable creditors, such as depositors. Once this massive process of removal of the troubled promises of the past from the system has taken place, financial institutions seeking private profit can at least operate at the smaller scale of the bad equilibrium, which, though it is far from the high-flying performance of the pre-crisis era, at least does represent a viable, ongoing, and functioning financial process. This is the kernel of good sense in the much-vilified advice of Herbert Hoover's Secretary of the Treasury, Andrew Mellon, to "liquidate" labor, capital, and finance. The trick is to do this in a way that shortens the time to the restored functioning of the system and minimizes the unnecessary damage the financial wreckage imposes on production and employment.

The great obstacle to the execution of such a policy is the power of the financial oligarchy which prospered so mightily in material terms, and even more mightily in political terms in the era of global liberalization. This dominant class, to use Marxist terminology, has an enormous amount to lose and will predictably fight in every way it can to preserve its special privileged in the U.S. and world political economy. The crisis creates a situation in which the interests of this financial super-elite are in direct conflict with the interests of the great majority of the population, including industrial capitalists, in hastening the recovery of employment and production. So far the financial elite have prevailed despite sharp political divisions over "bail-out" measures, with the predictable effect of lengthening and worsening the real economic distress that afflicts the world economy.

As I have explained, the global Depression in output and employment that has disrupted so many people's lives and imposed so much real hardship and damage can also be seen as a collapse from a good to a bad equilibrium in world effective demand. The same logic applies: attempts to restore the pre-crisis equilibrium are futile if that equilibrium no longer exists as a viable option. There is good reason to think that this is the case, because the pre-crisis equilibrium of demand in the global economy depended so much on the expansion of the financial-credit system that is now in collapse. As I argued, the deeper vulnerability of this configuration of the world economy was the asymmetric role assigned to the U.S. as the regulator of global effective demand. Keynesian attempts to reflate U.S. effective demand through deficit-financed fiscal measures are likely to have limited impact under the system of floating exchange rates, free capital movements, and "free" but subsidized trade the U.S. has so enthusiastically pushed on the rest of the world over the last twenty-five years. Even unimaginably large "stimulus"

measures represent a very small part of the world gap in effective demand; much of whatever increased spending these measures induce will leak out to the rest of the world in imports, particularly because foreign central banks will not permit the devaluation of the dollar that would be required to reinforce the stimulus measures domestically.

The philosophy of "flat-earth" globalization pursues the realization of a world division of labor in which every tiny piece of every productive process is out-sourced or reallocated to the very lowest-cost producers. If we look at this process from the point of view of national or regional economies, its logical consequence is a high degree of specialization of each region in a small part of the spectrum of social production. Every economy depends on the whole world economy, and is vulnerable, as we are experiencing now, to its disruptions. The study of complex systems of many kinds suggests that this pattern of economic development is not robust. This means that it is vulnerable to the catastrophic spread of small failures. The reasons for this lack of robustness are not hard to understand. Cost-minimizing allocation of global production leads to a situation in which there is only one supplier at each critical stage of production, and in which the failure of that one supplier to function for whatever reason, whether a natural or a human-created financial disaster, disrupts all the other links in the productive chain. Regional and national economies share this vulnerability due to the disappearance of redundancy and backup systems. A country whose connection to the rest of the world is for any reason interrupted finds itself unable to supply basic needs to its people.

Flat-earth globalization creates its own characteristic incentives for investment. The main driver of investment is the temptation to move productive activities in search of lower costs. A large part of the economics profession has promoted this pattern as "export-led growth", without questioning much where the demand for the resulting exports might come from. The social returns to globalizing investment may be quite low, when the effect is to destroy the usefulness of existing productive facilities and human skills in return for a small reduction in private costs of production. To revive global and U.S. aggregate demand I believe that the incentives for investment, both public and private, will have to be re-oriented to more traditional patterns of diversification and deepening of national and regional economies. Until the credibility and long-run profitability of such investments is established, it is unlikely that attempts to reflate global effective demand by one or another form of credit expansion (including government borrowing to finance deficit

spending) will foster a sustained world economic expansion.

Such a change in the orientation of global investment implies some fundamental changes in world financial and economic policies and institutions. The fostering of a system of prosperous, robust, diversified national and regional economies will require a return to a system of fixed exchange rates in order to limit the disruptive effect of financial stabilization on individual economies and on the profitability of investment. Stabilizing exchange rates in turn will require at least the occasional use of direct controls on short-term capital movements (as is envisioned in the International Monetary Fund charter). Carrying out coherent regional development planning implies government control over key prices, including interest rates, exchange rates, energy prices, and wages and profits through incomes policies, and in some cases even direct intervention in trade through the imposition of tariffs.

Economists have elaborated the ways in which these policies impose "real social costs", and in the static, idealized world of traditional economic modeling there is little rationale for these measures. Enthusiasm for flat-earth globalization has been driven by the chimerical hope that maximizing absolute economic efficiency will somehow provide the resources to deal with global poverty. As we have seen, the reality is that globalization reproduces the global divide between rich and poor, even as it maximizes indices of economic efficiency, such as profit rates and gross products. We also now are learning the hard way that the single-minded pursuit of economic efficiency imposes higher and higher degrees of economic insecurity. (At the purely financial level this tradeoff appears as the choice between risk and return.) To achieve more economic security, for example, by creating a world system of robust, redundant, and diversified regional economies, we are going to have to give up some theoretical economic efficiency.

Human beings notoriously do not like change, and rarely, if ever, change fundamental institutions just because a better idea comes along. Change when it comes tends more often to succeed because the old ways of doing things simply are not working any more. If this crisis provides an opportunity to restructure the global economy and address some of its real and serious problems, including climate change, energy availability, and inequality, it will be because we come to realize that recovery is possible only through a change of institutions. We today have to take the responsibility to future generations to think through what kind of social and economic world we want them to inherit.