Lessons from the Financial Crisis and their Implications for Global Economic Policy

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The 2008 global financial crisis was the most traumatic global economic event in three quarters of a century. It followed on a series of crises experienced around the world, including the East Asia crisis, the Mexican crisis, the Russian crisis, and the Latin American crisis. Crises seem to be a part of modern capitalism. Put simply: it is apparent that the post-World War II capitalist system is neither efficient nor stable—and it is increasingly apparent that it is also not equitable, marked as it is with growing inequality. The latter is not a surprise—economic theory never claimed that the distribution of incomes generated by the market would be socially acceptable; but the presumption among Western elites, and many citizens, was that the free market system was efficient and stable. They cited a large body of literature, from Adam Smith on, showing the efficiency of the market.

In fact, while Adam Smith's "invisible hand" conjecture—that individuals in the pursuit of their self-interest were led, as if by an invisible hand, to the well-being of society—was remarkable, and its eventual proof by Arrow and Debreu[1] in the middle of the twentieth century perhaps the most impressive intellectual achievement in economics of that era, what Arrow and Debreu had actually demonstrated was that the result only held under very restrictive conditions, not satisfied in any real world economy. In particular, it assumed that there were perfect risk and capital markets, and no imperfections and asymmetries of information. Subsequent work[2] showed that when those conditions were not satisfied, the economy was, in general, not Pareto efficient, and demonstrated that at the macro-economic level, the pecuniary externalities that mattered upon which Greenwald and Stiglitz had focused were of critical macro-economic importance.[3] Even earlier, economists had called into question the stability of a decentralized market system in the absence of futures markets extending out to infinity.[4]

[1] Arrow (1951), Debreu (1954).
[2] Greeenwald and Stiglitz (1986).
[3] See, for instance, Jeanne and Korinek (2010), Korinek (2010, 2012), and Korinek and Simsek (2016).
[4] Hahn (1966) and Shell and Stiglitz (1967). In fact, the standard models on which economists relied (the dynamic stochastic general equilibrium models, simply *assumed* that the economic system was stable, and

In the 1970s, as the economics profession tried to grapple with the disparity between micro-economics and macro-economics, and to put macro-economics on seemingly sounder micro-foundations, a significant part of the macro-economics profession attempted to do so by constructing it largely on the foundations of the competitive equilibrium model.[5] This was particularly true of Real Business Cycle Theory. The timing was unfortunate: this was occurring just as that model was being widely discredited by advances in information economics, game theory, and behavioral economics. Unfortunately, developments of that model, in the form of the standard DSGE model, came to predominate in policy circles, paying little attention to the many ways that the model seemed to depart from the realities of the economy. To me, the major lessons of the global financial crisis were that this model was discredited, and there is an urgent need to create models and policies based on more realistic analyses of the economy. Had policymakers taken on board the developments in other strands of macro- and monetary economics—already going on before the crisis, but advancing significantly since then—they would have done more to prevent the crisis and would have been in a better position in responding to it. [6]

I illustrate this theme by looking at a series of policy positions that were central to macro-management in the years before the crisis. This essay is divided into three sections: In the first, I focus on domestic macro-management; in the second, I focus on macro-management in open economies; and in the third I turn to questions of global governance.

I. Macro-management of complex modern economies

There were two key failures—the conduct of monetary policy and our system of regulations. But in the aftermath of the crisis, we realized that there were other weaknesses in our economic system—in

somehow found itself instantaneously on its long run equilibrium path after any perturbation. It never even asked whether decentralized price setting would lead to this equilibrium. There was ample theoretical reasons to believe that it would not, and empirical evidence that it did not. See Stiglitz (2016).

[5] See Greenwald and Stiglitz (1987) for a discussion of these alternative approaches to reconciling macro-economics and micro-economics.

[6] For a more extensive critique of the predominating DSGE model, see Korinek (2017), Hendry and Muelbauer (2018) and the other articles in the special issue of the *Oxford Review of Economic Policy,* including Stiglitz (2018). Elsewhere, I have provided a more extensive critique of the standard model, and explained how that model not only did not give economists the tools either to prevent the crises or to develop an adequate response, but actually contributed to the formation of the crisis. See, in particular, Stiglitz (2010a, 2011, 2013). The proceedings of two major IMF conferences on the lessons of the crisis for policy are available as Akerlof *et al* (2014) and Blanchard *et al* (2012). See, in particular, Stiglitz (2014). The Initiative for Policy Dialogue also held a conference on the lessons of the crisis, soon after the crisis, the proceedings of which are available as Griffith-Jones *et al* (2010).

corporate governance and our broader legal frameworks. And underlying all of it was a failure of the standard models to pay much attention to financial structure.

A. The failures of standard monetary economics

Somehow, standard macro thought that the essence of the financial sector could be captured by a money demand equation which would determine interest rates. There was little concern about credit rationing, credit availability, or liquidity[7]—all of which turned out to be central in the crisis. Even when there was a banking sector, there was no attention to the structure of the financial system. A representative agent (firm) model would do. This was because there was a failure to grasp the importance of the intra-financial sector externalities, just as there was a failure to grasp the importance of macro-economic externalities more generally. The consequence was not only a failure to take actions that might have prevented the crisis and made its consequences less severe, less deep, with long lasting effects, but a belief in a large number of policy maxims—touted as based on sound economics, but really based on ideology and simplistic models taking inadequate account of market imperfections—which have now come to be questioned. These include:

> *Monetary policy should focus on having a low and stable rate of inflation; doing so is necessary and almost sufficient for strong economic growth.*
>
> *Self-regulation is better than government regulation; bankers know more about banks, and have better risk management skills than any poorly paid government bureaucrat.*
>
> *Diversification reduces risk; the more economically integrated capital markets, the more stable the economy.* Indeed, so confident were policymakers about the ability of diversification to manage risk is that even after it became clear that there had been a real estate bubble, and that the bubble had broken, the Chairman of the Fed proclaimed that the risks were fully contained.
>
> *Countries should not impose capital controls. Such controls interfere with efficiency and even lead to more instability.*

[7] The macro-economic implications of credit and equity rationing had been widely explored in the decades following Stiglitz and Weiss (1981, 1983) showing that such rationing and other financial market frictions would naturally occur in the presence of imperfect information. See, for instance, Greenwald, Stiglitz, and Weiss (1984), Greenwald and Stiglitz (2003), Kiyotaki and Moore (1997), Bernanke and Gertler (1989), and Stiglitz and Weiss (1992).

Countries should move from bank-finance to capital markets: securitization, by enabling risks to be spread better, leads to a more efficient and stable economy.

Each of these policy-prescriptions were part of the conventional wisdom; each supported by widely-used models. But the properties and policy-prescriptions of the models followed directly from the assumptions that went into the model. In effect, the models were designed to give these results. More general models[8], based on sound analytics and more realistic assumptions, explained why, in general, these policy prescriptions were wrong—in some cases, badly so, with potentially very adverse consequences. Herding behavior of central bankers and the economists who advised them resulted in their paying insufficient attention to these alternative voices.

B. Regulation

The central failures of pre-crisis regulation were epitomized by Greenspan's admission of the flaw in his reasoning: his confidence that banks would do such a good job in self-regulation, in risk management, that regulation would not be needed. But the central point of regulation is preventing one firm from imposing harms on others (or on the taxpayer). Self-regulation can't address these externalities, which is why self-regulation is an oxymoron. Moreover, anyone who was not a naïve devotee of free market ideology should have understood that prevalent incentives structure of bank officials (bonuses for successes, without claw backs for failures, and compensation based on short term performance) encourage short termism and excessive risk taking. They would have understood too how too-big-to fail banks, especially when they have relatively low capitalization, have an incentive to engage in excessive risk taking, at the expense of taxpayers (they keep the profits in good times, while the public bears the losses in bad.)

Financial structure matters

Well before the crisis, some economists—though not the "mainstream"—had come to realize that financial structure matters a great deal. Allen and Gale (2000) and Greenwald and Stiglitz (2003) had

[8] The DSGE models had about them an aura of generality; after all, they were *general equilibrium, stochastic,* and *dynamic.* But as we note here and elsewhere (Stiglitz, 2018, 2011) they employed some highly restrictive assumptions. They ignored much of what is important in macro-economics, including an analysis of financial markets, distribution effects, and out-of-equilibrium behavior. Typically, the models, to make them tractable, were based on very specific parameterizations, the implications of which could easily be rejected. The alternative models lacked generality in some dimensions (e.g. while they were dynamic, they had only a finite number of periods), but they were in fact more general in many other—I would suggest more important—dimensions.

analyzed the risks of bankruptcy cascades and how these risks could be affected by financial structure[9]; and Greenwald and Stiglitz had attempted to incorporate these analyses within a more general monetary theory.

In the aftermath of the crisis, we have come to realize that too-big-to fail is not the only problem: we have a too-correlated-to-fail and a too-interlinked-to fail financial system. The manner in which the failure of a single bank, Lehman Brothers, threatened to bring down the entire economy illustrates the risk of too-interconnected-to fail.

Major failures in post-crisis regulatory policy

While post-crisis regulation has abandoned belief in self-regulation and put in place some regulations designed to curtail bad behavior, it has not adequately addressed the problems in the financial sector that the crisis made so clear. There are four fundamental failures:

(a) Too little has been done about ensuring a systemically stable financial structure, including addressing the problems posed by too-big-to fail, too-interconnected-to fail, and too-correlated-to fail banks. It is not even clear whether the additional capital requirements, the signal achievement of improved regulation in the post-crisis world, go far enough. In the debate over capital requirements, bankers never adequately responded to the Modigliani-Miller analysis—which argued that increasing capital requirements only increased the cost of funds because it reduced the expected value of the government bail-out.[10] Research since the crisis has highlighted the high costs of the additional systemic complexity associated with derivatives and CDS's, making it difficult in some cases even to ascertain whether a financial system is systemically fragile.[11] These costs seem incommensurate with the benefits in additional risk dispersion. Indeed, they may even contribute to overall macro-economic volatility. While restraining the set of admissible contracts and limiting the size of banks (or imposing a

[9] See also Gai and Kapadia (2010), Haldane (2009), Haldane and May (2011).

[10] Subsequent literature, see Stiglitz 1969, 1974, has shown that the result was far more general that Modigliani and Miller had shown, but that the assumption of no bankruptcy was crucial— in the absence of bankruptcy, changing financial structure made no difference. For the implications for banks, and the broader issue of too big to fail, see Stiglitz (2009) and Admati and Hellwig (2014).

[11] Battiston *et al* (2012a, 2012b, 2016), Stiglitz (2010a, 2010b), Gallegati *et al* (2008) showed that more interconnected systems might be less stable. Roukny *et al* (2017) showed that that financial instruments might make it even more difficult to ascertain whether the system was stable or not. Guzman and Stiglitz (2016a,b), Brock *et al* (2008) and Caccioli (2009) showed that adding more financial instruments might make the economic system less stable—contrary to the view that these new instruments help manage risks, they actually help create risk.

progressive tax on their assets) might address problems of too big to fail and too intertwined to fail, addressing the problem of too-correlated to fail is more difficult. One way is to ensure a diversity of financial institutions (as Glass-Steagall did).[12]

More generally, the extra-ordinary difficulty of writing regulations to curb the abuses of banks, and their enormous ingenuity in circumvention has led to increasing support for structural policies, such as those limiting the size of banks and their range of activities, in addition to "behavioral policies," attempting to restrict bad behavior or incentivize good behavior.

In some countries, to prevent taxpayers from bearing the high costs of bail outs, bail-ins have been proposed; but these have met with limited success. It's hard to force banks to participate in a bail-in, especially if it is believed that the government will in any case engage in a bail-out. Bernard *et al (2017)* have shown that this provides another argument for regulating the overall structure of the financial system: government commitments not to bail-out are highly dependent on network structure.

(b) All the attention was focused on preventing the financial sector from imposing harms on the rest of society; little was done to ensure that the financial sector actually performed the functions that it was supposed to—such as providing credit to businesses to create jobs and make investments. And indeed, there was increasing evidence that little of the activity of the financial sector was directed in that way. (Kay (2015), Turner (2015)).

(c) Regulations have failed to do anything about the core problems of securitization—in the US, the government continues to underwrite the vast majorities of mortgages. The mortgage market still has excessively high transactions costs and fails to provide mortgages that addresses the important risks that individuals face.[13] This is partly because policymakers have failed to come to understand why

[12] This was one of the recommendations of the Commission of Experts on Reforms of the International Monetary and Financial System appointed by the President of the United Nations General Assembly in the wake of the global crisis. See *Stiglitz Report (2010).*

[13] There are proposals for new government programs to address these issues. See Stiglitz *et al* 2015. Part of the problem was that the banks and the credit rating agencies engaged in massive fraud, and our legal system has proven unable to hold them accountable. Part of the problem is that banks refused to comply with contractual obligations, and our legal system was extra-ordinarily slow in forcing compliance. Standard economic theory has perhaps paid too little attention to the importance of fraud and contract compliance. See Greenwald and Stiglitz (1992). Some have suggested that what happened in the US evidenced an absence of an adequate "rule of law." See "Justice for Some," in J. E. Stiglitz (2015a).

securitization failed: the failure was almost inevitable. The naïve belief in securitization and capital markets ignored the problems of moral hazard to which it gave rise. Information economics had provided a clear warning of the dangers, including those associated with the perverse incentives of rating agencies.[14]

(d) There has been a failure to address adequately the underlying problems in corporate governance—that contributed to the perverse incentive systems—and in our legal system, which has failed to hold accountable almost any of those culpable for the crisis. It is this failure, combined with the fact that so many bankers managed to walk away with mega-bonuses, which has led to disillusionment in our economic and political system, with widely held beliefs that it is "rigged" and unfair.

C. Monetary policy

The critical lesson here is that central banks need to focus on more than inflation. The single-minded focus on inflation distracted them from focusing on a far greater risk—that the banks would take actions leading to financial fragility. In Europe, it led to increases in interest rates, at a time when the central problem was unemployment. The notion that if only governments manage to keep inflation low and stable that the economy will perform well has been discredited.[15]

II. Open Economy Macro-economics: Cross border externalities matter

The crisis moved quickly from the United States, where it had originated, to the rest of the world. In the years before the crisis, standard wisdom was that risks should be diversified—including across borders; and that there should be no capital controls. But closer economic integration has a flip side: a problem in one country can quickly move across borders. There can be *contagion.* Remarkably, standard policy argued for the unlimited benefits of diversification and integration, never balancing these against the downside risks of contagion. A coherent model has to integrate both. Standard macro-models embedded assumptions which led to the conclusion that the more integration, the better. This was not the result of deep analysis: it was the result of the unthinking incorporation of unrealistic assumptions,

[14] See Stiglitz (1992). More generally, Grossman and Stiglitz (1980) had explained why capital markets are inherently informationally efficient. Subsequent work by Shillller, e.g. (2000) verified their analysis. See Financial Crisis Inquiry Commission (2011) for the role of these market failures in the crisis.

[15] For a review of lessons from the crisis for monetary policy see Akerlof *et al* (2014), including the chapter I wrote (Stiglitz, 2014) and Blanchard *et al* (2012).

failing to take into account, in particular, important non-convexities associated with bankruptcy, learning, and crises.

Since the crisis, research has highlighted that there may be an optimal degree of diversification and that an important instrument in limiting contagion—creating a more stable global architecture—may be capital controls.[16] These theoretical insights are now reflected in the new institutional view of the IMF.[17]

Within a country, managing macro-economic externalities is the responsibility of monetary and regulatory authorities. But there is no super-national government to manage cross-border externalities. Since the crisis, the Financial Stability Board has done an impressive job in attempting to coordinate global standards. Yet, there is no real mechanism for forcing the necessary cooperation, a fact which can have important implications with Trump in the White House.

In the absence of such cooperation, each country has to seek better control of its own economy, through the imposition, for instance, of capital controls[18] and by insisting that banks operate in the country through subsidiaries (which it can closely regulate, and the capital of which it can closely control) rather than branches.[19]

In the absence of cooperation, it is possible that some country could impose undue costs on others—or at least risk doing so. The international community may have to respond by "cutting off" the institutions from the financial system, or at least limiting the interdependence: not doing so means that the risk in one country can be transmitted to others. Moreover, the international community needs to devise incentives for all countries to cooperate and institutions to facilitate such cooperation, the subject of the next section.

III. Lessons for the Global Economic Framework

[16] See Stiglitz (2010a, 2010b) and Battiston *et al* (2012a, b).
[17] See IMF (2016).
[18] See Stiglitz (2015b), Blanchard (2016).
[19] *Stiglitz Report* (2010).

It is clear that the pre-crisis global framework was insufficient to prevent or contain the crisis. There needed to be more global cooperation, as we have already noted. The crisis gave rise to new fora for facilitating global cooperation, in particular the G-20. But as the Commission of Experts appointed by the President of the UN in the aftermath of the crisis observed, the G-20 lacks legitimacy and representativeness. What is needed is a more representative body, with more legitimacy, a *global economic coordination council,* operating under the auspices of the UN.[20]

The UN Commission highlighted other lacuna in the existing global economic architecture. There is no way of dealing with debt restructurings, which are inevitable; from time to time countries will have debts beyond their ability to manage. Court rulings in the US since the crisis have made matters worse, making it more difficult for countries to restructure. Internationally, there has been some progress: a vast majority of the members of the UN endorsed a set of principles to guide such restructuring. (Only 15 countries, including the US, voted against it.) Work is now underway to create a framework for debt restructuring consistent with these principles.[21]

The G-20 arose to respond to the global economic crisis, promoting a coordinated increase in aggregate demand. Since then, the global consensus over economic policy has broken down. Perhaps partly as a result, today, the world continues to face a deficiency in global aggregate demand. There are massive macro-economic imbalances—Germany's now is in excess of 9% of GDP. Such surpluses—with output exceeding consumption—contribute to a weakness of global demand. The UN Commission recommended the establishment of a global reserve system, with an equitable distribution of new reserves, in an amount corresponding to the shortage of aggregate demand, but with no grants for countries with consistently large surpluses.[22]

IV. Concluding Comments

A cataclysmic event like the global financial crisis inevitably leaves a legacy. The ensuing huge differences in growth rates between China—which by 2015 had, in PPP terms, emerged as the world's largest economy—and US and Europe changed the balance of economic power. But the West's most important asset, its soft power, based on confidence in its economic and political system, suffered too—and perhaps even more from the slow recovery and the politics of mistrust that subsequently emerged,

[20] See Stiglitz Report (2010)
[21] See Guzman and Stiglitz (2016) and in other papers in that volume.
[22] See Keynes (1943) and Greenwald and Stiglitz (2010a,b).

with the US under President Trump seeming to turn its back on the rules based system which it did so much to create.

The crisis and the New Politics—partly at least attributable to the mishandling of the crisis itself (with 91% of the gains in the first 3 years of the so-called recovery going to the top 1%[23]) is creating a new dynamic in the global economic system. Where it will end is still not clear, but this much is apparent: global governance will change, with the influence of the newly emerging economies, especially China, increasing greatly. The crisis laid bare the inadequacies in the rules we need for a stable and prosperous global economy, including managing the inevitable cross border externalities that arise in a more closely integrated global economy. But there has been only a little progress in creating these new rules, and now, the New Politics makes further progress unlikely; if anything, matters may get worse, with changes in the rules based not on principles of efficiency and equity but rather on the naked exercise of raw power in a world dominated by short term thinking of politicians and business leaders on all sides of the bargaining table.

The one silver lining in this rather dismal picture is this: economic science showed its metal. Well-developed theories, though long ignored by the mainstream of macro-economists, had explained why the economic framework that had evolved over the last thirty years would likely to deliver the kinds of outcomes that we have seen: an economy marked by slower growth, more instability, and greater inequality. They had explained too where it was that the mainstream models had gone astray.

These ideas now need to be used to reconstruct our economic framework, showing that with the right principles, rules, and regulations, a market economy can actually deliver sustainable and equitable prosperity.

[23] See Saez (2016).

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