Where Danger LURKS

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The recent financial crisis has taught us to pay attention to dark corners, where the economy can malfunction badly

UNTIL the 2008 global financial crisis, mainstream U.S. macroeconomics had taken an increasingly benign view of economic fluctuations in output and employment. The crisis has made it clear that this view was wrong and that there is a need for a deep reassessment.

The benign view reflected both factors internal to economics and an external economic environment that for years seemed indeed increasingly benign.

Start with internal factors. The techniques we use affect our thinking in deep and not always conscious ways. This was very much the case in macroeconomics in the decades preceding the crisis. The techniques were best suited to a worldview in which economic fluctuations occurred but were regular, and essentially self correcting. The problem is that we came to believe that this was indeed the way the world worked.

To understand how that view emerged, one has to go back to the so-called rational expectations revolution of the 1970s. The core idea—that the behavior of people and firms depends not only on current economic conditions but on what they expect will happen in the future—was not new. What was new was the development of techniques to solve models under the assumption that people and firms did the best they could in assessing the future. (A glimpse into why this was technically hard: current decisions by people and firms depend on their whole expected future. But their whole expected future itself depends in part on current decisions.)

These techniques however made sense only under a vision in which economic fluctuations were regular enough so that, by looking at the past, people and firms (and the econometricians who apply statistics to economics) could understand their nature and form expectations of the future, and simple enough so that small shocks had small effects and a shock twice as big as another had twice the effect on economic activity. The reason for this assumption, called linearity, was technical: models with nonlinearities—those in which a small shock, such as a decrease in housing prices, can sometimes have large effects, or in which the effect of a shock depends on the rest of the economic environment—were difficult, if not impossible, to solve under rational expectations.

Thinking about macroeconomics was largely shaped by those assumptions. We in the field did think of the economy as roughly linear, constantly subject to different shocks, constantly fluctuating, but naturally returning to its steady state over time. Instead of talking about fluctuations, we increasingly used the term "business cycle." Even when we later developed techniques to deal with nonlinearities, this generally benign view of fluctuations remained dominant.

This state of affairs, however, would not have developed (or at least not lasted for so long) without external factors playing a role. The state of the world, at least the economic world, provided little impetus for macroeconomists to question their worldview.

From the early 1980s on, most advanced economies experienced what has been dubbed the "Great Moderation," a steady decrease in the variability of output and its major components—such as consumption and investment. There were, and are still, disagreements about what caused this moderation. Central banks would like to take the credit for it, and it is indeed likely that some of the decline was due to better monetary policy, which resulted in lower and less variable inflation. Others have argued that luck, unusually small shocks hitting the economy, explained much of the decrease. Whatever caused the Great Moderation, for a quarter century the benign, linear view of fluctuations looked fine. (This was the mainstream view. Some researchers did not accept that premise. The late Frank Hahn, a well-known economist who

taught at Cambridge University, kept reminding me of his detestation of linear models, including mine, which he called "Mickey Mouse" models.)

Dark corners

That small shocks could sometimes have large effects and, as a result, that things could turn really bad, was not completely ignored by economists. But such an outcome was thought to be a thing of the past that would not happen again, or at least not in advanced economies thanks to their sound economic policies.

Bank runs—in which a small shock, or indeed, no shock at all, could lead depositors to panic and withdraw their funds from banks, with major adverse effects across the entire economy—were a staple topic of macroeconomics courses. But in those courses this was often presented as an illustration of how the introduction of bank deposit insurance had largely eliminated the problem. And, if the problem recurred nevertheless, the argument went, central banks could quickly provide liquidity (that is, lend cash) to banks against good collateral, allowing solvent banks to satisfy their depositors, tamping down any panic, and avoiding disastrous outcomes.

Sudden stops—episodes when capital flows to a country dry up and all investors try to get out at once—could not be ignored either. They still happened with great regularity in emerging market economies—in Latin America in the 1980s, Mexico in the mid-1990s, and Asia in the late 1990s. But they were thought to be an issue for emerging markets, not advanced economies (this is why I wrote "U.S." in the first paragraph of this article). As an example of the sometimes provincial character of mainstream U.S. macroeconomics, in a number of doctoral programs a student can specialize in macroeconomics without knowing what an exchange rate is, much less an emerging market economy.

In general, issues of liquidity—the potential mismatch between assets with long-term maturities and liabilities with shorter-term maturities—were not seen as central to macroeconomics. That such an asset-liability liquidity mismatch might be pervasive, affecting not only banks but other financial players and corporations as well, was not well understood. Important work on the role of liquidity was done in corporate finance, but its incorporation into macroeconomic analysis did not reach mainstream status.

The probability that central banks would want to decrease nominal interest rates below zero and be unable to do so (nominal interest rates cannot go below zero, because, if they did, people would hold cash rather than bonds—a constraint known in the jargon as the "zero lower bound") was seen as very small. With nominal interest rates at roughly 4 percent before the crisis—split between 2 percent to account for inflation and a 2 percent real, or after inflation, rate of return—most central bankers believed that they had plenty of room to maneuver in adjusting interest rates in response to adverse shocks. And, if more was needed, the argument went, the central bank could raise inflation expectations while keeping the nominal rate at zero, thus decreasing the real component of the interest rate.

Other nonlinearities were also recognized. For example, economists recognized that bank regulatory constraints, such as the minimum amount of capital (essentially a bank's net worth; that is, its ability to absorb losses) institutions had to hold, could force banks to react more sharply to decreases than to increases in their capital. The way credit constraints faced by firms and households led to increasingly precautionary behavior, as they came close to running down their credit lines, was worked out and used, for example, to study individual consumption behavior. But again, these nonlinearities were not seen as central to fluctuations.

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In short, the notion that small shocks could have large adverse effects, or could result in long and persistent slumps, was not perceived as a major issue. We all knew that there were "dark corners"—situations in which the economy could badly malfunction. But we thought we were far away from those corners, and could for the most part ignore them. Japan sat unhappily in that picture, an advanced economy stuck in a long slump with deflation. But its situation was often interpreted as the result of misguided policies rather than a harder-to-solve problem.

Blindsided by the crisis

The main lesson of the crisis is that we were much closer to those dark corners than we thought—and the corners were even darker than we had thought too.

The Great Moderation had fooled not only macroeconomists. Financial institutions and regulators also underestimated risks. The result was a financial structure that was increasingly exposed to potential shocks. In other words, the global economy operated closer and closer to the dark corners without economists, policymakers, and financial institutions realizing it.

When the U.S. housing boom turned to bust, a complex and opaque structure of financial claims led to worries about which institution was holding which claims and which institutions were solvent. This in turn led to major liquidity runs, not so much on banks, but on many nonbank financial institutions, such as investment banks—many of which over the years operated like banks but without the regulation and protections banks received. Standard bank deposit insurance just did not cover the needs.

Providing liquidity to the relevant institutions to enable them to meet creditor demands required the use of monetary

policy on a massive scale and often in new ways. Fortunately, massive and often innovative monetary policy was undertaken. But it was not enough to avoid a large drying up of credit and a sharp decline in demand and activity.

Fiscal policy, in the form of large increases in public spending, was used to offset declining private demand. But government debt levels rose quickly and policymakers and investors became worried. Perceived sovereign risk (the possibility that a government will default on its debts), which, for advanced economies, had been close to zero before the crisis—increased in a number of countries, making it harder to use fiscal policy to sustain demand and at the same time creating risks in the balance sheets of creditors, such as banks, that held the sovereign debt.

So-called diabolical loops developed between public and private debt: weak governments weakened banks that held government bonds in their portfolios; weakened banks needed more capital, which often had to come from public funds, weakening governments.

As central banks tried to maintain economic activity by reducing the policy interest rate (for example, the overnight federal funds rate in the United States), the zero lower bound was quickly reached, and we have been stuck there now for more than five years. Policymakers did not succeed in raising inflation expectations to enable them to further decrease effective real rates. The risk of deflation is still clearly present across the euro area, and in some euro countries it is a reality. Deflation increases the real value of public and private debt, which in turn makes repayment more onerous and forces debtors to reduce spending, and that in turn decreases economic activity—another diabolical loop.

In this environment, economic policy—especially monetary policy—has taken on an element of black magic. Some policies, such as, for example, the recent shift by the European Central Bank (ECB) to charge banks a tiny amount for deposits they maintain at the ECB (in other words, a very small negative interest rate) will have, on paper, very small mechanical effects. But if such policies are seen as representing the commitment of the central bank to do "whatever it takes"—as Mario Draghi, the head of the ECB, put it in a celebrated speech in 2012—to stimulate lending, they can have much larger effects. The size of this psychological effect, however, is extremely hard to predict or control.

For a long time to come, one of the priorities of macroeconomic policy will be to slowly but steadily return debt to less dangerous levels.

Where does this take us?

The crisis has one obvious policy implication: Authorities should make it one of the major objectives of policy—macroeconomic, financial regulatory, or macroprudential—to stay further away from the dark corners.

We are still too close to those corners. The crisis itself led to large accumulations of debt, both public and private. For the time being, the diabolical loops have receded, but it would not take much of an adverse shock for them to reappear. For a long time to come, one of the priorities of macroeconomic policy will be to slowly but steadily return debt to less dangerous levels, to move away from the dark corners.

More needs to be done, however.

If the financial system had been less opaque, if capital ratios had been higher, there might still have been a housing bust in the United States in 2007–08. But the effects would have been limited—a mild U.S. recession at the worst, rather than a global economic crisis.

Can the financial system be made more transparent and more robust? The answer is a qualified yes. Authorities have required increases in bank capital ratios—an essential line of defense against financial system meltdown. But banks are only part of a complex network of financial institutions and markets, and risks are far from gone. The reality of financial regulation is that new rules open new avenues for regulatory arbitrage, as institutions find loopholes in regulations. That in turn forces authorities to institute new regulations in an ongoing cat-and-mouse game (between a very adroit mouse and a less nimble cat). Staying away from dark corners will require continuous effort, not one-shot regulation.

Macroeconomic policy also has an essential role to play. If nominal rates had been higher before the crisis, monetary policy's margin to maneuver would have been larger. If inflation and nominal interest rates had been, say, 2 percentage points higher before the crisis, central banks would have been able to decrease real interest rates by 2 more

percentage points before hitting the zero lower bound on nominal interest rates. These additional 2 percentage points are not negligible. Their effects would have been roughly equivalent to the effects of the unconventional monetary policies that central banks pursued when the zero bound was reached—purchasing private sector assets and long-term government bonds to lower long-term interest rates rather than using the standard technique of manipulating a short-term policy rate. (Harvard Professor Kenneth S. Rogoff, former head of the IMF's Research Department, has suggested solutions other than higher inflation, such as the replacement of cash with electronic money, which could pay negative nominal interest. That would remove the zero bound constraint.)

Turning from policy to research, the message should be to let a hundred flowers bloom. Now that we are more aware of nonlinearities and the dangers they pose, we should explore them further theoretically and empirically—and in all sorts of models. This is happening already, and to judge from the flow of working papers since the beginning of the crisis, it is happening on a large scale. Finance and macroeconomics in particular are becoming much better integrated, which is very good news.

But this answer skirts a harder question: How should we modify our benchmark models—the so-called dynamic stochastic general equilibrium (DSGE) models that we use, for example, at the IMF to think about alternative scenarios and to quantify the effects of policy decisions? The easy and uncontroversial part of the answer is that the DSGE models should be expanded to better recognize the role of the financial system—and this is happening. But should these models be able to describe how the economy behaves in the dark corners?

Let me offer a pragmatic answer. If macroeconomic policy and financial regulation are set in such a way as to maintain a healthy distance from dark corners, then our models that portray normal times may still be largely appropriate. Another class of economic models, aimed at measuring systemic risk, can be used to give warning signals that we are getting too close to dark corners, and that steps must be taken to reduce risk and increase distance. Trying to create a model that integrates normal times and systemic risks may be beyond the profession's conceptual and technical reach at this stage.

The crisis has been immensely painful. But one of its silver linings has been to jolt macroeconomics and macroeconomic policy. The main policy lesson is a simple one: Stay away from dark corners. ■

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