THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

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Ten Years After the Global Financial Crisis: Causes, Outcomes, Lessons Learnt

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SRC Special Paper No 15

September 2018

Systemic Risk Centre

Special Paper Series

ISSN 2055-0375

This paper is published as part of the Systemic Risk Centre's Special Paper Series. The support of the Economic and Social Research Council (ESRC) in funding the SRC is gratefully acknowledged [grant number ES/K002309/1].

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Published by
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London WC2A 2AE

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An Interview of Nouriel Roubini and Brunello Rosa

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1. Introduction: Ten Years After The Global Financial Crisis

September 15th, 2008: financial services firm Lehman Brothers files for Chapter 11 bankruptcy protection, marking the largest default in U.S. history and the beginning of the Global Financial Crisis (GFC), the most severe episode of financial instability and economic contraction since the Great Depressions of the 1930s. From the end of 2006/early 2007 – when the first elements of the crisis started to emerge, until September 2008, the distress was mostly confined to the financial sector, with little impact on real economic activity. After the Lehman's collapse, the crisis becomes truly global: a number of economies enter a severe recession in 2009, from which they will emerge only a number of years later profoundly transformed. The consequences of 2008 GFC will go far beyond the financial industry and the real economy: new political movements emerge, and a world-wide retreat of globalization begins, in a process that is still ongoing and whose eventual outcome is still unclear.

September 15th, 2018: ten years after Lehman's collapse, we analyse once again what went wrong and what lessons have been learnt to prevent another crisis of similar proportions to emerge again. We discuss this with Nouriel Roubini, one of the few economists widely credited for having predicted that crisis and how it would have unfolded. And with Brunello Rosa, a scholar of Minsky's financial instability hypothesis and of financial fragility theories since the late 1990s, when they were still considered highly heterodox. Nouriel Roubini and Brunello Rosa have been closely working together for the last few years and are now business partners in their new venture.

Angela Antetomaso, a long-standing financial TV Anchor, who has worked at CNN, Bloomberg and currently at CNBC, interviews Nouriel and Brunello on occasion of the 10th anniversary of the Global Financial Crisis.

2. The Global Financial Crisis of 2008

Nouriel, what was your experience of the collapse of Lehman Brothers, what are your memories of that day, of that moment?

I was following the financial crisis in real time, day by day, and writing about it as it unfolded. I remember that day, watching TV and seeing the collapse of Lehman and the panic in financial markets. The interpretation of that day has often been that it was because we let Lehman collapse that the global financial crisis became severe. But to me that view has the causality of the situation reversed: we reached the Lehman collapse only after the subprime bust, the housing bust, the banks having had hundreds of billions of losses. Bear Stern went down, Fannie and Freddie Mac, were bust, AIG was bust - so it is not as if Lehman was the cause of what happened, rather Lehman was the peak of that more generalized crisis. Its crash was a critical moment in some ways, but a lot of the economic and financial damage had already occurred previously. Thinking that if only Lehman had been bailed out then everything would have been fine is incorrect; we were already in the middle of a crisis a year and a half before Lehman. Lehman was an important moment; everyone remembers that day it fell. Still, it was not the cause but rather the consequence of the crisis.

Brunello, what are your memories of that day?

As Nouriel said, we had already been following the situation very closely for quite some time. In fact, the first cracks in the financial system started to appear between the end of 2006 and early 2007; the first market correction related to subprime mortgages occurred in February 2007. Then in August 2007 there was the failure of Northern Rock, which was accompanied by the first physical bank run to occur in the last hundred years in the UK, quite an extraordinary event. So, we were alerted to the fact that the situation was bad and getting worse. When Bear Stern went bust that was another bad sign. Then when Fannie Mae and Freddie Mac were placed into receivership the week before Lehman went down, it was already clear that something big was going to happen. The failure of a very large and interconnected financial institution was an accident waiting to happen. It was Lehman that failed, but even if it had not done so a different institution might have failed instead. The point is: Lehman's collapse was a shock, but was not unexpected. Especially for those of us who were scholars of Minsky and his theories on financial fragility.

Nouriel, can you remind us how it all started, how you managed to predict the crisis, and how it developed?

I wrote a book in 2010 about the GFC, titled *Crisis Economics*[1]. The broader observation I made there was that while there are many differences between various financial crises, there are also some similarities. In all crises you can have asset bubbles, whether they be in Internet stocks, housing, new technologies, etc. You can have a build-up of leverage, which can occur in the private sector, as people borrow against rising asset prices, or in the public sector, as excessive government debt leads to a build-up in public liabilities. You can have a spell of complacency, in which things seem to be going well so that everybody (the private sector, corporations, financial institutions) becomes complacent and asset prices "bubbly." Regulators fall asleep at the wheel and there becomes a feedback loop between the growth of credit bubbles and asset bubbles. There is excessive leverage and excessive risk taking; finally, at some point, something cracks: economists refer to it as "a Minsky moment", because Minsky was one of the few non-mainstream economists who recognized the nature of financial crises and wrote about this phenomenon. You then have an unraveling from the asset and credit bubbles, both bubbles go from a boom to a bust, and then to a crash, wherein what had gone up starts to go down and there are lots of financial and economic consequences that lead to a crisis – and to a recession as well.

This is the broad framework. In the specific case of the global financial crisis, the beginning was the housing bubble in the United States, mostly for people who could not afford homes. These "subprime" mortgages were the center of the buildup of excessive leverage. Home prices were increasing, and it became a broader credit bubble. In fact it was not just in housing and credit, but also in other parts of the economy. And, of course, there was an international dimension of the crisis was partly driven by forms of contagion, through trade and financial links to the US. But there were also housing bubbles that had formed independently in other parts of the world; these have often been overlooked because of the attention given to the US. There were housing bubbles in Ireland, in Spain, in Iceland, in Dubai and the UK and when the US housing bust occurred. So, while there was some contagion, it was not just contagion but rather similar phenomena of asset and credit bubbles in many countries that were decisive. This was the international element of the crisis.

Of course, there were also characteristics that were specific to the GFC. We were in a period during which the Federal Reserve started to tighten monetary policy too little and too late, which helped to allow asset bubbles to be fed. There was a glut of global savings because of what China was doing in terms of its current account, and while the Fed was raising short-term interest rates, long-term interest rates were remaining lower than they had previously been. This was the bond conundrum (i.e.,"why are long-rates not going higher, when short-rates are?"). The Fed was not doing its job in terms of monetary policy or in dealing with asset bubbles.

There were other phenomena happening as well. There was, for example, the process of securitization; it started with mortgages, with how to rearrange them into MBS, and CDOs, and CDOs of CDOs. In this securitization chain everybody was making some money and charging fees: the banks and mortgage originators, those who were pricing the loans, the rating agencies, the bond insurers, the investment bankers. You were essentially transferring the credit risk down the line from mortgages to very complex instruments that had not been seen before, instruments that were mispriced, that nobody knew the fundamental risk of, and that everybody in securitization chain was attempting to take a cut from and then pass the risk further on. Eventually all these instruments looked like monsters. CDOs tranches looked "triple A" rated, but were not really "triple A" quality: the underlying assets were subprime mortgages, and were very risky. When the panic finally occurred, nobody knew who was solvent and who was insolvent. In this panic the market reaction led to a bust, then a crash. So, a lot of different things were happening at the same time.

[1] Nouriel Roubini, and Stephen Mihm (2011). Crisis Economics: A crash course in the future of finance. Penguin Books Ltd.

Can you tell us more about the effects of the financial crisis?

Sure. What happened was, first of all, that once the bust and the crash of asset prices occurred there was a positive feedback loop (with negative consequences) between the financial system and the real economy. What started as stress in the financial system and in the housing sector led to a banking crisis and recession, and then there was a negative feedback of these two elements in the US. And then the question was why the recession in the US became a global financial crisis. I would say there are many factors at work. One was that similar kinds of bubbles were occurring in Spain, in Ireland, in Iceland, in Dubai, and in other places. Therefore when the bust happened in the US, similar busts occurred in other parts of the world.

Secondly, of course, it is true when people say that when the US catches a cold much of the rest of the global economy gets sick. And the US was not sneezing; it was about to get pneumonia. So the contagion became severe. There are international trade links that are important, so when the US causes a recession and there is a shock, there is then a confidence effect wherein stock markets go down and there is a panic over asset prices in other countries.

There were also important financial links behind the US crisis' global contagion. When the process of securitization occurred, and these mortgages were repackaged into mortgages-backed securities and CDOs, these things were not just sold to US investors. A huge chunk was sold to foreign investors and foreign financial institutions, including many in Europe. As such, when the losses occurred in the US, they also occurred in Europe, impacting financial institutions outside of the US. When some of those institutions went bust, panic ensued.

Of course, the policy reactions at the beginning of this process were a little too late in coming. At first people did not even believe that it was a shock that would lead to a recession. The Fed had the wrong view that it was only a problem of housing and would be limited to a couple of hundred million dollars in losses. But when it became a trillion and then two trillion dollars in losses, then of course people reacted too late, and aggressively. Then the economic shock and the financial shock became more severe, and also spread internationally.

So it was a domino effect. How strongly linked was the crisis that emerged in Europe in 2009 to the 2007 subprime crisis in the US?

There were many different links. Among the European countries some that got in trouble had excesses in the private sector rather than the public sector. In Spain, Ireland, and Iceland, where they had major housing bubbles, the trigger of the crisis was excess in the private sector. Even in the core of the Eurozone, in France and Germany, many financial institutions had exposure to subprime and toxic instruments, and therefore you had a transmission to these countries through financials channels.

You also had a number of other European countries that had loose fiscal policies, were running very large budget deficits, and had large amounts of debt. Greece is the most extreme example here, but there were also many other countries that had fiscal imbalances, like Portugal, Italy and Cyprus. The trigger for these countries was initially that the recession caused deficit and debt levels to balloon, implying a potential for insolvency. In this part of Europe a lot of the public debt was held by banks. This created a positive feedback loop (with negative effects), wherein any bailout of the banks by the sovereign in these countries led to the sovereign becoming even more insolvent.

And of course, when you have a private sector problem in the first place, as in Ireland, Iceland or Spain, you need to have fiscal stimulus once the bust occurs, causing the deficit to go higher, and you must also backstop the banks, creating a bad feedback loop between the economy and financial system. Essentially, whether the problem starts in the public sector or in the private sector, a problem in one will become a problem in the other. The problems in both sectors will then feed on each other in a way that actually becomes very disruptive. That is part of the story for Europe.

What are the countries that you think suffered the most from the financial crisis: was it the US, Europe or the emerging markets?

Initially, emerging markets were spared from the global financial crisis. They had better tools to protect against the crisis. They had previously had their own crisis that cleaned up their own financial systems. But of course, given the export-oriented economies of many of these emerging markets, the recession in the US and Europe spilled over to them anyway. This spillover was delayed by the fact that commodity prices were rising during the middle of 2007, but after the collapse of Lehman you had global contagion: the recession in the US and Europe became a severe economic slowdown in emerging markets as well.

Ironically, while the crisis started in the US, the reaction to the crisis in the US in terms of monetary policy, fiscal policy, and backstopping the financial system was implemented much more quickly and radically than elsewhere, helping the US to recover from the crisis sooner. In contrast, the crisis in many ways intensified in the EU and the Eurozone, leading to a double dip recession that was more severe and took much longer to recover from than the US crisis. Part of the explanation for this is that there was much less fiscal stimulus in Europe, and the monetary policy response was less radical there until around 2015 when the ECB switched to a more unconventional monetary policy. Europe's approach to backstopping and recapitalizing the banking system also took much longer than was the case in the US.

Are the effects of the crisis still most visible in Europe?

In some ways the effects of the crisis have actually been global. In a typical economic model, a shock should not lead to a change of potential growth. If economic activity falls below the trend, then you simply have a recovery of activity towards the trend, to make up for the decline, so potential growth remains unchanged. In reality, however, there has also been a break in terms of potential growth; the crisis has led to permanent negative effects for the level of output and GDP growth, particularly in Europe and the Eurozone. Though traditionally economists believe that the business cycle does not affect longer-term growth trends, which depend rather on technology and on institutions, there is also an opposing view, based on the idea that business cycles actually are able to negatively affect growth trends. According to this view, a recession that persists for a long time runs the risk of causing investment to decline, thus reducing potential growth.

Indeed, a lengthy recession can cause people to lose valuable skills; it can lead to a depreciation of human capital. It can also lead to a stigma wherein employers take the view that "if you have been unemployed for five years maybe is your fault", and so are less likely to hire new workers even though those workers had been unemployed for so long only because of the recession. This can significantly prolong an economic downturn, and can affect potential growth in a way that economists technically refer to as "hysteresis." Today we see lingering effects of this kind more in Europe, but even in the case of the US the economy did not return to the same growth trajectory it had been on prior to the crisis.

Brunello, how was your view from Europe?

As I said before, to some extent the crisis had already arrived in Europe during the summer of 2007, with the collapse of Northern Rock. It later returned to Europe, amplified, when a large, supposedly prudent German financial institution, IKB, was among the first victims of the subprime crisis. At that point we understood how systemic this subprime crisis would be, even as regulators were still looking at the size of the subprime mortgage market and its exposure to banks. It was not yet clear to them that something much deeper than exposure to the subprime mortgage market was taking place.

But then, in 2009/2010 the Euro crisis begun, and Greece became the centre of attention. From that point on, the crisis took a completely different dimension: it was not simply a financial crisis, rather it became a systemic crisis, affecting sovereign entities and countries, and with them, countries' political systems. We had the bailouts of Greece, Portugal, Spain and Cyprus. The ECB also had to buy Italian bonds via the Securities Markets Program. The political systems of the affected countries changed a lot: populist parties started to emerge everywhere in Europe. Undoubtably the financial crisis greatly contributed to this political phenomenon.

3. Who Was Responsible For The Global Financial Crisis?

Nouriel, do you think the main responsibilities lie with the regulators, the central banks or the governments? Or maybe the markets? Who were the individuals or the main organizations responsible for the crisis?

You know, whenever there is a bubble I think that responsibility lies across the board. First of all, in the private sector, in the financial sector, there was an attitude of excessive risk taking, of excessive leverage. The way the banks and traders were rewarded was incentivizing behaviors that would lead risk to be socialized yet profits privatized. In the securitization chain everybody was making a buck and transferring the risk to somebody else, but of course we were also in a lax regulatory environment, in which the idea was that we should have light-touch regulation, a "*lassaiz-faire*" approach and so on. Both regulators and monetary policies authorities allowed it to happen. But, whenever there is a bubble, consumers are also happy; they were in effect using their homes as ATM machines, to borrow against their wealth in order to spend more. Politicians were happy because there was economic growth, and therefore voters were doing well. Except for a very small number of independent economists, few were willing to say, "the emperor has no clothes". It was not just myself; there was a small group of other people saying that there was an unsustainable asset and credit bubble. So, you can put more blame on some groups versus others, but when you are in a bubble the entire society, the entire political system, lives in that bubble.

Do you think there was a kind of "political coverage" for the banking system by that time?

The banking system has usually had a lot of political power in terms of lobbying, and there was a significant amount of deregulation occurring at the time. In the US, for example, there had traditionally been a separation between commercial and investment banking since the Great Depression and the Glass-Steagall Act. In the 1980s and 1990s those separations gradually were eliminated; the system moved to a model of universal banking, and therefore banks and financial institutions were always lobbying for an essentially more *laissez-faire* approach. So the view of Alan Greenspan, who was the chairman of the FED at that time, was "let's not interfere too much with the private sector, the private sector can regulate itself". Many others shared this view. But that was a mistake; the regulators were too asleep.

Brunello, before joining Nouriel, you worked in a central bank, and for an initial period worked in its financial stability directorate. What is your take on that?

Yes, I was at the Bank of England before joining Nouriel. I arrived there in 2009, when some of the emergency measures adopted to counter the effects of the financial crisis, such a QE, were still in full swing. The project I worked on in the financial stability directorate was to reconstruct the long-term time series of bank capital in the UK. The study showed that bank capital, together with liquidity buffers, had been reduced for decades, thereby dramatically reducing the natural shock absorbers that had existed in case of episodes of financial instability. Regulation aimed at making sure that banks held at least a certain amount of capital, such as Basel II, was so badly designed that it created the perverse incentive to offload as much as possible off of balance sheets and into special purpose vehicles (SPVs). These vehicles ended up being the vector of contagion for the GFC when the subprime crisis hit.

Within large institutions, it is sometimes hard to make points of view understood and widely shared. At a certain point, for example, it seemed the financial crisis was subsiding. Instead, it was just morphing, from affecting only financial institutions to affecting sovereign states as well. The first episode of this was when Dubai got into financial trouble in late 2009, and Abu Dhabi had to come to its rescue. Some people thought this event in the UAE was a very localized phenomenon. I tried to convince them that it was still the same financial crisis we had been fighting since 2007, now affecting sovereign entities as opposed to financial institutions. It was not until the Greek crisis exploded later in 2009 that this argument finally became accepted.

Nouriel, why do you think the majority of economists did not see the crisis coming? What you said makes a lot of sense, yet not everybody could see that.

For several reasons. Some economists work for the government and usually governments do not want to "cry wolf", as doing so may precipitate a crisis. Some economists work for private financial institutions and had conflicts of interests (in spite of "Chinese walls" meant to keep their analysis independent of their employers); they did not want to say there was a financial crisis or a recession coming if their own firms were underwriting bonds or other types of investments.

The real question could be why economists who work in academia, who were more independent, did not see it coming. I think there are several reasons. Traditional economic models are models of equilibrium. They do not understand the links between the real economy and finance very well. Money is just something that you add to the model, but there are no clear mechanisms by which financial shocks can have an economic impact. These are also models referring to general equilibrium, models in which even if a shock occurs, so long as the shock is not large and persistent the model's propagation mechanism will imply a reversion towards the equilibrium. Given that shocks tend to be attenuated, these models tend not to predict a positive feedback (with negative consequences) between the real economy and financial markets.

The framework that was being used was therefore probably an incorrect framework. There are disciplines of macroeconomics, international economics, asset economics, but there was no one real discipline of crisis economics. Plus, of course, some academic economists may also have their own conflicts of interest; they may have been economic advisors for governments and institutions.

Brunello, same question for you.

Well, I would second what Nouriel said, and I would add the following: I have always been attracted to the theories of financial fragility, which I became a scholar of. To me, the Asian financial crisis of 1997 was the definitive proof that those theories were correct. I was lucky enough to do my undergraduate studies at the University of Siena, where Hyman Minsky left a great legacy, so I was exposed to Minsky early on and remained fascinated with his ideas. Then we had the Mexican "Tequila" crisis of 1994-95, the Asian crisis of 1997, the Russian default of 1998, and of course the dot-com bubble bursting in 2000/2001. Every year seemed to provide confirmation of the Financial Instability Hypothesis. Few economists could see that the Fed's response to the burst dot-com bubble – cutting rates to 1%, keeping them there for about a year and then slowly and predictably increasing them – was in fact inflating the housing bubble that eventually burst in 2007.

The key point was this: economists and the press popularized Minsky's theory with the concept of the "Minsky moment," but this concept is inherently flawed, because the Financial Instability Hypothesis is a theory of the cycle as a whole; it cannot be reduced to the single moment in the cycle at which a bubble bursts. Indeed, the most interesting part of the theory is that when things go well, the party mentality goes on and financial positions become increasingly exposed, and so the fragility of the system increases. But it is in nobody's interest to interrupt the party when everybody is having a good time, which is the reason why the crisis (the "Minsky moment") eventually occurs. Now, at the time of the crisis, Minsky's views were considered highly heterodoxical. His theories would not be recognized as "scientific", as they were not supported enough by mathematical models. Minsky's "agents" would only make the mistakes that lead to the crisis by being affected by "myopia", not rationality. In a world of "rational agents" these mistakes could not possibly be made, and crises would not occur. The crisis proved all this criticism wrong, showing the mainstream view of the financial and economic system to have completely underestimated the role played by perverse incentives, bounded rationality, and asymmetric and incomplete information – all of which were factors that played a great role in the crisis.

Today, the economic profession seems to have finally acknowledged all those factors, and Minsky's theories are much more accepted than they used to be. But there is still some work to do to reform the economics profession. Applied/Business economists such as myself know that there is not yet a complete and consistent theory of the world that we can refer to: we resort only to a patchwork of theories that work locally but not for the economic system as a whole. This is very inconvenient, and remains an issue we need to address going forward.

4. The Policy Response: Too Much Monetary, Too Little Fiscal

Brunello, could you remind us what the policy response was to the crisis?

Sure. The very first policy response to Lehman's collapse was the TARP (Trouble Asset Relief Program) that the US Secretary to the Treasury Hank Paulson brought to Congress, where he asked for authorization to buy USD 700bn of troubled assets using public money. That plan was only two pages long – I was quite shocked to see how the head of the Treasury of the world's largest economy could ask Congress to be given such a huge sum with so little detailed a plan. But that was the sense of urgency in those days.

Among the first lines of defense adopted by many countries was monetary easing by central banks. In effect, central banks are the institutions that can most closely influence market sentiment and behavior, and can also act quickly. In addition, among the causes of the eventual turnaround in the housing market was the impact of the cumulative policy tightening that the Fed, the BOE and the ECB had been carrying out for some time. So, policy rate cuts were among the first policy actions taken. Together with these cuts, there was the unlimited provision of liquidity to the financial system via short term, and eventually long term (three months) and super long term (one year, then three or four years), repo facilities. When I was studying monetary economics at the university I was taught that when central banks start offering unlimited liquidity to the banking system, it means that the situation is serious. I will never forget when I read on the *Reuters* headlines that the ECB was going to offer unlimited liquidity to the Eurozone banks at the end of the week, on a Friday afternoon – I read that as the clearest signal that the situation had gone beyond typical market jitters. I remember the day of a coordinated rate cut between a number of central banks: the Fed, ECB, BOE, Riksbank, etc. At that point I realized I was living through events that would end up in history books.

When rates had been brought to zero and liquidity was provided in unlimited quantities, central banks started actively managing the asset side of their balance sheets: what Ben Bernanke called Credit Easing (CE) in a famous speech at the LSE. After that, large-scale asset purchases, or QE, begun. Up to that point, only the BOJ had done QE in recent history – for us strategists it had been seen as the unfortunate result of Japan's serious mismanagement of the post 1990s crisis, we could not imagine the Fed, BOE, or other central banks doing the same, but there we were. The first to buy mortgage securities was the Fed; to some extent we thought this was still CE rather than QE. Then the purchases of Treasuries begun, and it was clear we had entered into full QE territory. The first central bank to implement QE at this time was in fact the BOE – just weeks before the Fed did.

Finally, the G20 in London in 2009 was held. It was clear that without some form of fiscal stimulus, economic activity would have continued to contract throughout the world. Some countries made better use of this fiscal green light, in particular the US. Europe, led by Germany's fixation with austerity, chose a different path, which exacerbated the crisis and made it last much longer than necessary. It suffices to say that Greece lost 25% of its GDP, Italy more than 9%; it is estimated that while 4% of Italy's GDP was lost because of the effects of the crisis, an additional 5% was lost because of the effects of the policies that were adopted to counter the crisis, which were recessionary and deflationary.

Nouriel, do you think the tools that have been used since the financial crisis have been effective?

They have been effective in the sense that we could have ended up with a Great Depression 2.0. For the first several months following the Lehman bankruptcy, the collapse of world GDP, consumption, investment, exports and economic activity was actually quite similar in pace to the beginning of the Great Depression. But ultimately, though they misinterpreted the crisis at first, Ben Bernanke and many of his fellow policymakers throughout the world had studied the Great Depression and knew that during the Depression there was monetary tightening, not easing; there was no use of fiscal policy; the attitude at the time was to let firms and banks default: to liquidate, liquidate, liquidate. That helped the stock market crash of 1929 lead to the Great Depression, so the lesson was learned that you need massive monetary, easing massive fiscal easing, a backstopping not only of the financial system but also of the private sector, both of corporations and households, to make sure a large financial shock does not lead to a severe depression.

Of course, people have been complaining about the market distortion that quantitative easing can cause, and the moral hazard that comes from bailing out large firms, and rising income inequality. But if you look at the results, the countries that used these policies more aggressively, like the US, came out of recession sooner than those that did not What are the three differences from US and Europe? The US started unconventional monetary policy earlier and more aggressively than Europe; the US decided to have a massive fiscal stimulus, whereas you had fiscal austerity in Europe: and the US decided that in spite of moral hazard, the financial system should be backstopped and provided with capital and other liquidity. So, while there was a credit contraction in the US it was more limited than in Europe, and US financial institutions started to recover more quickly. The European response was more stressed; we postponed stress tests, for example, and fudged them several times. It took Europe a longer time to figure out it needed to fix its banks.

You said that we cannot rely only on monetary policy, but there must be a fiscal response to crises as well. To what extent do you think this has been done?

The fiscal response to the crisis differed between various parts of the world, the differences perhaps depending to some extent on how much fiscal capacity countries respectively possessed. In a country like Greece, where public debt was already above 100% of GDP, and where there was a hidden deficit equal to 15% of GDP, it was difficult to avoid a painful austerity program. But other countries had fiscal space; some of them used this space more, like the US or the UK, while others, like Germany and some of the better-behaved parts of Europe, used their fiscal space less. There was of course a question about what the response in Europe as a whole should have been, even regarding the countries that initially had less fiscal in which to maneuver. Perhaps the European Union and the ECB should have been more lenient, allowing some countries to undergo austerity in a more gradual manner. Maybe there should have been more sharing of funds within Europe, and a common fiscal policy response within Europe. Maybe countries that had more fiscal space, like Germany, should have used more of it in order to reduce the severity of the financial crisis and help the EZ peripheral countries that had much less space. So, in spite of differences in the amount of fiscal space European countries had, there is also the question of whether Europe's overall response to the crisis was appropriate.

Brunello, is it true that monetary policy was just a way of conducting foreign exchange policy in disguise?

At some point during the financial crisis it became very important to have a currency as weak as possible, because that was a way of reflating the economy. Inflation had collapsed, and a number of countries had even begun to experience some deflation, so of course having a weak currency would be helpful. Given the various arrangements at an international level, however, it was forbidden (so to speak) for a country to conduct direct FX interventions just to weaken its currency on purpose. But countries were given the option of using monetary policy to reflate their economies, and if these monetary policies were to have “unintended” consequences that included a weakening of their currency, that would be acceptable. This is the reason why a number of countries' central banks started increasing their balance sheets, and why central banks introduced other tools such as negative policy rates, negative deposit rates, etc. In the European case, the ECB went to negative rates - and some other central banks went into even more negative interest rates than the ECB did - and that led effectively to currency depreciation. Somebody called it FX wars by proxy of using central banks' balance sheets.

What is your take on this Nouriel?

I would agree with Brunello just said. I would only add the following point: not everybody can have a weaker currency. If my currency is weaker, somebody else's automatically has to be stronger; we don't trade with the moon or other planets, so in many ways currency and balance sheet relationships are zero-sum. Eventually, currency wars could lead to trade wars, which pose a serious risk. Of course, if everybody was trying to follow unconventional policies to boost economic activity in spite of the currency effect being a wash, then in that sense unconventional policies may have been positive regardless of their currency impact. But they were certainly a source of a trade tension, and of currency tensions too.

Nouriel, do you think central banks' independence has been put at risk?

People argue that because central banks had to start worrying not only about growth and inflation, but also about economic and financial instability - about backstopping banks, households, you name it - they have lost some of their independence as a result. They have entered into carrying out what some people refer to as "quasi-fiscal" operations that include non-traditional elements of central banking policy, and so, according to this argument, may have forfeited to some degree their traditional level of independence Another argument is that because we now have a large amount of deficit and debt, some people believe in the idea of fiscal dominance; the idea that once you are stuck with a lot of public and private debt and deficits, central banks cannot raise interest rates because doing so would lead to financial distress in the private and public sectors, and therefore the central bank has to accommodate loose fiscal policy and that is how it loses part of its independence. This is certainly a potential risk. Overall, though, if central banks had not acted unconventionally at a time when fiscal policy was constrained, the economic outcome would have been more severe.

Nouriel, there have also been a lot of regulatory changes, like the Dodd-Frank, the Volcker Rule, Solvency II, Mifid II, etc. Which of these regulatory changes do you think have been most effective?

A number of regulations affected banks and financial institutions which had too little capital, too much leveraging, too little liquidity, too many non-transparent financial instruments, and too much of an incentive towards excessive risk-taking. There should be a greater separation between traditional banking activity and more speculative activities like trading (the Volcker rule has constrained banks' behavior, even if we have not gone back to a complete separation between investment and commercial banking). Of course, relating to all these issues is the Dodd-Frank reform, and a variety of similar legislation in Europe. The financial system has become more resilient, albeit more gradually in the EU than the US, However there is also a concern that the banks have become too regulated and risk-averse now, perhaps leading some financial intermediation to move to non-bank institutions. Going forward, stress might come from the so-called shadow-banking system instead, or from capital markets. Traditional banks, though, are probably safer than in the past.

And which regulatory tools have been least effective?

Well, some people have argued that the regulatory pendulum swung too much from the laissez faire approach taken before the crisis to a more restrictive approach that increased banks' caution and so helped to create a credit crunch that may have then made the financial crisis more severe. My answer would be that if you want to make the banks act more prudently, you also have to make sure you do not increase the severity of the credit crunch by doing so. And, you need to recapitalize the banks in the meantime. Because the regulatory pendulum really can swing too quickly, which can be dangerous. In the US, for instance, there is now an attempt to loosen regulations imposed by Dodd-Frank, despite US asset prices already appearing to be frothy. Loosening regulations now could contribute to a credit cycle that leads to another crisis. We need to avoid alternating between overly restrictive and overly permissive regulatory regimes.

5. The Socio-Political Consequences Of the Global Financial Crisis

In recent years there have also been many changes within our society in general. Let's talk about political developments such as populism, Trump, Brexit. How many of these were a direct or indirect effect of the financial crisis?

The malaise of the working classes and middle classes that led to the rise of economic and populism may have partially predated the global financial crisis. The combination of factors such as globalization, trade, and migration and meant that there were winners and losers – the losers being those who did not have the skills or connections to thrive in a digitalized global economy. That said, at least before the global financial crisis those who were left behind could, keep up with the Joneses, so to speak. In the Anglo-Saxon countries this was accomplished primarily by way of borrowing, for example in order to increase home ownership. In a number of European countries, meanwhile, it was achieved by way of the government was providing many public services for free.

Of course, after the financial crisis this party was over. Those who were left behind could no longer borrow, and those dependent on public services were squeezed. Of course, the financial crisis also led to a period of slow growth and high unemployment in many countries, and to an increase in wealth inequality beyond even the high level of inequality that predated the crisis. So, while this inequality and its political consequences has been the result of long term trends such as globalization and technology, it has also become much more sever since the financial crisis. Politically, moreover, there has been the perception that we bailed out the rich during the crisis; a perception that those who behaved improperly – the traders, the bankers, etc. – did not have to face the consequences of their actions. The fact that policies such as quantitative easing have led to a reflation of asset prices has also contributed to this view.

You said that extremism is coming from both the left and the right. How much of this do you think comes from the financial crisis?

There are nuances in whether the populists are of the left or the right, but in some ways their economic views and policies are similar. In Italy, for instance, there is a new government comprised of two populistic parties that came together to form a governing coalition. They have radical differences: far-right populism in Italy has historically been opposed to incoming migration, whereas the left has been, at least in theory, more sympathetic to migrants. However, both the right-wing and left-wing populists share a view that there should be more government control over the economy, more economic nationalism, more redistribution of wealth of one sort or another. The traditional right versus left distinction has become less important than the distinction between populist parties and establishment parties.

Even within the US, for example, the Republican Party is now divided between the new populist supporters of Trump and the traditional "big business" wing of the party. The Democratic Party is split between those who voted for Sanders and those who represent the Clintonian strand of the party (i.e. those are open to migration and global economic integration). Similar divisions exist within in the UK and other countries. The emergence of populist parties posturing against mainstream parties on both the right and the left is occuring across the world. There is of course Trump in the US and the supporters of Brexit in the UK, but there are also a variety of authoritarian strongmen who have come to power by promoting an apparently populist agenda. Even in emerging markets, there is Putin in Russia, Erdogan in Turkey, Orban in Hungary, Kacziyzki in Poland, Maduro in Venezuela, Duterte in the Philippines, and so on. We are seeing a backlash against liberal democracy, and a backlash against supranational authorities such as the IMF, the World Bank, the WTO the UN, and the EU. People feel that their countries are losing their national sovereignty and no longer control their own economic policies or destinies. There are many elements here that go beyond Brexit and Trump.

How much are liberal democracies at risk from this rising extremism? Is democracy itself at risk?

In a sense you could say that liberal democracies are a better political system than any other, because any smart establishment party will realize that it needs to change its economic policies in order to give opportunities to those who would otherwise be left behind and vote for a populist alternative. After the first industrial revolution, for instance, labour was squeezed at first, but then the bourgeoisies in the UK and Italy and France realized they had to give rights to workers and allow them to form trade unions, receive pensions, minimum wages, health care, and the life. If you do not create mixed economic systems, with free markets but also welfare safety nets, there will be a risk of revolution; these revolutions did in fact occur in countries like Russia and China near the beginning of the twentieth century.

That said, we live in a world in which liberal democracies have sometimes failed to realize that there were many people being left behind within their societies. This causes public anger to arise; you get political results like Brexit and Trump and the Five-Star Movement. It may be that today liberal democracies are acting too late, and are struggling with too much political gridlock, to address the challenges they now face. But this does not mean that authoritarian systems would be better off. To the contrary, authoritarian systems have tended in the past to lead to economic disasters. We had just few exceptions to this rule; China for instance has an authoritarian regime and has, in recent decades, achieved rapid economic growth. But in general there is not a long history of success in authoritarian systems. Churchill's famous remark that, "democracy is the worst form of government, except for all the others", will probably continue to hold true going forward.

Brunello, do you think that liberal democracies are now equipped to counter the rise of populist parties?

Liberal democracies have plenty of instruments to deal with the phenomena we are seeing at the moment. The question is whether they are willing to use these tools or not. Income redistribution, from the richer to the poorer, would be one tool they could use. That would help to address at least part of the problem. Not the entire problem, because what has led to the rise of populist parties is a mix of phenomena, including migrations, the sense of loss of sovereignty and so on and so forth. But the fact that a lot of people felt worse off because of globalization, trade, and technological advancement means that the economic component was quite a large one in determining the rise of populist parties. So once you have solved the economic aspect, you have solved at least a great part of the issue.

Other things that need to be implemented would be policies that promote a better distribution of sovereignty between the local level, state level, and supranational level. This takes a lot of time to be arranged in an efficient manner, but you need to start somewhere. For example, at the level of the European Union and Eurozone, the debate is whether it will ever become a transfer union in which some of the implicit transfers from the periphery to the core are eventually reversed into explicit transfers from the core to the periphery. This is a debate that has been going on for a very long time; we have never reached a point in which there has been a breakthrough. The question now is whether the rise of these populist parties is effectively a wakeup call for people in the core, to understand that unless we solve this problem the situation is not going to get better.

Nouriel?

I agree with the points Brunello made. I would maybe also add the following points: first, protectionism might not be the proper solution to the problems that globalization leads to in the places where people are being left behind. The optimal policy, would be to provide everybody with the kind of skills, education, retraining that allows you to be successful in a globalized world. Second, protectionism may help some jobs but it increases the price level for everybody. So some workers are better off, but the average consumer is worse off. US experience sometimes suggests that every job that has been saved has a cost for society of up to a million dollars, i.e. a multiple of the country's average wage. If you impose unilaterally trade restriction you might also risk starting trade wars in retaliation. So, protectionism is not the best policy, and might not even be a manageable policy; it might be entirely self-defeating. But, of course, if we do not use protectionism or other restrictions we are going to have to figure out ways of either compensating or providing opportunities to those left behind, and that is going to be, politically, a meaningful challenge.

6. Lessons Learned (Or Not)

Nouriel, what lessons have been learned from the crisis?

Well, we are now more aware that excesses of leverage and asset bubbles can lead to severe financial and economic shocks. Since we have now had a global financial crisis lead to the worst recession since the Great Depression, we have learned that we have to be more careful in understanding the links between the financial system and the real economy, and more careful in monitoring the build-up of financial excess. We have learned more about how to properly regulate and supervise the financial system. We know you need to reduce risk taking, and we know you need to have more liquidity and sufficient capital.

We have also learned that when a financial crisis occurs you have to respond to it, because it could otherwise become a more permanent condition rather than a temporary one. And we have learned that conventional monetary policies can quickly give way to highly unconventional monetary policies, because if you reach a zero-interest bound and the economy is still depressed there becomes a risk of deflation, you need to implement policies like quantitative easing, credit-easing, forward-guidance, negative policy rates and so on. These unconventional tools have been used for a decade now; they are becoming conventional in some ways. They might have to be used again in the next recession.

We probably also learned the lesson that central banks became essentially the only game in town in terms of responding meaningfully to the crisis, in part because there was not much willingness on the part of the government to use fiscal policy. Many countries had more fiscal space than had been previously thought, but because fiscal policy was constrained for a variety of reasons, the reaction ended up being mainly on the monetary side. This became effective when monetary policies became unconventional, but probably the appropriate policy mix would have also involved the right mix of fiscal policies.

There are still debates over what the appropriate policy response is when a crisis occurs. One view says that banks are impaired, and that if they do not have capital they start to damagingly reduce the availability of credit. The other view says that when there is too much debt in the private sector households and firms decide to spend less, which causes the crisis to become severe. These two views have different implications, because if you believe that households are in trouble and you have to support them, one way of supporting them is to reduce their debts to make them more sustainable so that they can spend more. Whereas if you believe instead that the propagation of a shock occurs in the financial system, then if you allow a default on the mortgages because you are trying to help households, you end up making the financial condition of the banks even more severe, which means the banks might further reduce the availability of credit. So there was a debate during the financial crisis: do we bail out the debts of financial institutions to avoid a credit crunch, or do we let households with too much debt default to make sure they will be able to spend more?

What do you think about the "too big to fail" assumption?

One of the lessons we might have learned is that this perception of banks being "too big to fail" helps to create a moral hazard, wherein these institutions are able to behave in a way that involves excessive risk taking because they know they will be "bailed out" if and when a crisis occurs. Obviously, we want to reduce this moral hazard. Nevertheless, it is also true that once you are in the middle of a crisis, then punishing these "too big to fail" institutions in order to avoid moral hazard later on can be self-defeating. When we decided not to bailout Lehman Brothers, that was the point at which the financial crisis became really a global phenomenon, because it was that decision that led people to believe there would be a domino effect in which Lehman's failure would trigger the failure of other important financial institutions as well.

So maybe the lesson here is that once you are in the middle a crisis, then you perhaps have to essentially backstop large institutions in order to prevent the crisis from becoming even more severe; however once you are outside of the crisis, you must then create different types of systems in order to properly rectify banks' incentives. This might mean that large institutions may have to be broken up, or perhaps that their capital reserves and liquidity must be higher, or their size within the wider banking sector less systemic. Another option would be to find a way to ensure that if one of the large institutions fail, that failure will be orderly rather than disorderly. But in the middle of a financial storm, unfortunately, you have to backstop even the institutions that took excessive risk as a result of the moral hazard of knowing they would be bailed out in a crisis. Only when the storm is over do you have to try to create a new set of incentives that will prevent them from playing the "too big to fail" game again during the next economic and credit cycle.

Brunello, what lessons do you think have been learnt?

I would second what Nouriel said: a number of lessons have been learnt, including in the policy space. Consider, for example, what we discussed earlier regarding Minsky and his theory of the business cycle; that the fragility of the system increases in good times. Learning this lesson, regulators have now instructed banks to implement counter-cyclical capital buffers, which are required to be increased in good times in order to be run down in bad times, so that the bank and policy response is pro-cyclical. Or, to give another example, think about macro-prudential policies, which a number of central banks have now been asked to implement. These are all lessons learnt as a result the financial crisis.

7. The Future: Is Another Global Financial Crisis Around the Corner?

Brunello, do you think that in the current system there is a possibility that there is a risk that another crisis could emerge?

Of course. The system has been made a bit more resilient by the actions of central banks, regulators, and governments. Some of the private sector behaviors have become also some more prudent. But that does not mean a new crisis will not occur. A lot of instruments are now in frothy territory, some might even say bubbly, and therefore there is a risk of there being a correction in the price of those instruments. If that were to occur, a global financial crisis like the one we experienced starting from 2007-08, which eventually morphed into the Euro crisis in 2009, could definitely emerge. Just think about the amount of debt that has been issued to solve the previous crisis, a crisis that was already due to excessive leverage and debt issuance. If a new systemic risk materializes all that debt could become problematic; it could make a financial crisis possible, potentially even a crisis worse than last time. Indeed, history has shown that each financial crisis tends to be followed by one even more severe than the crisis that preceded it, as the cure that was adopted to solve the preceding crisis potentially sowed the seeds of the new one. I would not be surprised if this were to happen once again in the coming years.

Nouriel, do you think that another financial crisis of the same proportions can take place anytime in the near future?

Eventually there will be another US and global recession. Typically there is one every ten years, though there is no mechanism by which this pattern can be guaranteed to continue. Of course, the severity of any future recession will depend on the nature of the mistakes and shocks that take place prior to and during its occurrence. Today, both private and public debt are higher on average, in advance economies as well as in emerging markets, than they were before the global financial crisis. Though has been some deleveraging in the system (the corporate sector, however, is actually more highly leveraged now than before the crisis), part of what has made the system sustainable is that despite the higher debt levels the cost of servicing debt has been low, on both the short end and the long end. Therefore a key question for the future is: if inflation gradually rises and leads central banks to normalize interest rates, will the cost of servicing those debts remain sustainable, particularly in the more highly leveraged parts of the system?

Once you get a shock that leads to a recession, incomes fall, leading debt-to-income ratios to rise. If at the same time interest rates are higher, and the credit spread you have to pay rises as your high debts become even higher, that is where you can have distress. Do we have the policy bullets to respond to this, if it should happen? Last time we had some fiscal space and were willing and able to backstop the private sector and the financial system. Next time around, the fiscal space is going to be more limited in most countries, unconventional monetary policy tools may be used but there are constrains to them, and politically the willingness to bail out banks and other institutions might not exist because populists will be opposed to any significant bailouts. Indeed, if such political constraints were to end up making a recession even more severe, that severity could in turn further increase the intensity of the political backlash. A positive feedback loop (with negative effects) between the political system and the economy could therefore occur. That is the risk.

So where do you think the next financial risk could come from? In 2007 it started with a subprime crisis and then it spread from real estate to the rest of the financial sector. What might happen now, considering the new challenges and the new technologies we have today? For example what effect might cryptocurrencies have going forward?

I would say you need to think about the type of shock that could end up leading to another recession or financial crisis. In terms of credit, leverage, or asset bubble excesses, today is not like 2006 and 2007; we might now be in the fourth or fifth inning of the game, so to speak, whereas then we were in the eighth inning. However if some of the current excesses were to continue to grow for another few years, there is froth in a wide range of asset prices; there has been re-leveraging in areas such as US corporates, in overall debt ratios in China and other emerging markets, etc. then we could end up with another boom, bust, and crash. There could be a risk of this happening in the next three years or so.

A second scenario could be the risk of inflation picking up in the US, and the Fed being behind the curve in dealing with it - then having to tighten a lot as a result. This could lead to a recession, which, given the size of the US market, could become global. Indeed, the US is not the only economy large enough to create a shock leading to a global recession. It could be Europe that does so, if for example Italy becomes a slow-motion train wreck and decides to leave the Eurozone. Or it could be China, if China does not carry out reforms to reduce its leverage, debts, and over-capacity.

Another shock that could potentially happen is a large geopolitical shock in the Middle East. Such shocks have happened in the past: the Yom Kippur War in 1973, the Iranian revolution in 1979, and the Iraqi invasion of Kuwait in 1990 all led to spikes in the price of oil, and each spike was associated with a global recession and rising inflation. Suppose, for example, that Middle Eastern conflicts intensify or there is another war in Iran; the resulting shock could be large enough to trigger a global recession and financial crisis. It would have to be a shock big enough to go global, however. If only a smaller economy like Russia or Brazil goes bust, that would be unlikely to have a globally systemic effect.

Regarding cryptocurrencies and other crypto assets, these still make up a relatively small asset class. If they were to go bust the people who invested in them will lose their shirts, but it would be unlikely to have a systemic effect. I do not like crypto for other reasons, but I do not think it is a source of systemic risk.. I would not worry about it causing a crisis.

So, you do not think that cryptocurrencies could be a big source of risk in the future. But what about a cyberattack, should that be something to worry about?

Certainly, there is a growing concern that cyberattacks are the new form of warfare. Traditionally in a war you know who your enemies are, but cyberattacks are different because you often do not even know where the attacks are coming from. There is a risk that cyberwarfare could destroy the critical infrastructure of a country, both military and civilian. Since we live in a world where the Internet and computers are a key part of our economic system, cyber-attacks could also cause severe financial shocks. You can shut down the banking system with a cyberattack. So, yes, I do think cyberwarfare could perhaps become a significant risk, especially when compared to risks coming from crypto-currencies.

Brunello, do you think that central banks will use the instruments they used to counter the GFC again in the future?

Yes, now that they have been becoming a part of the central banks' toolkit. They have been used once and they can be used again. There had previously been a psychological barrier about using some of these instruments, especially in going to QE, to negative policy rates, to credit easing. Some of these might have been a bit difficult to even conceptualize using, or they might have faced significant political constraints. But when those constraints have been removed or overcome, these instruments become part of the central banks' toolkit. Think about the BOJ: it has been experimenting for the past twenty years with the instruments it has used. It was the first in modern-age central banking to use quantitative easing. The BOJ was not, however, the first to introduce the negative policy rates; that is something that the ECB did first. But negative rates was, among all of the new instruments that were used, perhaps the most difficult to be accepted, in particular by the banks it affected as well as by some policy makers. Think about the German case, for example.

But you know, now that the damage is done, so to speak, and central banks have won that battle, they can use these instruments when and if they are needed. The Federal Reserve, for example, never went into negative territory with interest rates. Next time around they might be forced to go there; indeed they said they might consider doing that, though they hope they will not have to, which is one of the reason why they are increasing interest rates now, to have a bit more room to cut later if needed. But still, you never know. Time will tell whether it will become necessary for the Fed to start going to negative rates too.

Nouriel, do you think there is a risk of returning to a laissez-faire regulatory approach?

At least in the United States, the attitude of the new US administration towards regulation is that there is too much of it. This could be risky, given that there is already some frothiness in asset prices, credit standards are becoming looser, and the non-bank financial and shadow-banking system is becoming frothier. No asset class is cheap today: equities are expensive, private equity is expensive, real estate is expensive, credit is expense and government bonds are expensive. A reduction of regulation could add to this frothiness that we are seeing in parts of the financial system.

Looking back at the past ten years since the crisis, would you say that the world is a safer place today? Is the financial system more secure?

In a sense you could be optimistic by saying that there is still global growth, globalization, and a huge amount of technological innovation that is going to increase productivity and lead to a better world. Billions of people have gone from starving to becoming middle class; globalization, technology, and economic reform have been good for 2.5 billion people in China and India, as well as for people in other emerging markets.

That is the optimistic view, but there is also a sense that these globalizing processes have been leading to an increase in economic inequality. In addition, technological innovation could soon become even more disruptive than trade or migration, in my view. Supposing, for instance, that Donald Trump really could manage to build a border wall, and then also imposes a 150% tariff that eliminates the US trade deficit and replaces US imports with increased domestic manufacturing. Do you think that US jobs would be safe seven then? They would not be safe, because technological innovations are going to disrupt jobs.

It is only a matter of time, for example, before autonomous cars and trucks are going to be replacing traditional vehicles. Yet in 48 out of 50 states in the US the number one job is truck driving: there are about five million US truckers. Lots of people are driving for Uber now too. All of these jobs are going to be at risk whether or not there are barriers against immigration and imports. Technological innovation is increasingly capital- intensive and labour-saving, and the labour that it will threaten will include both blue and white collar jobs, and both low and medium-skill jobs. Plus of course, in addition to this employment challenge we also still live in a world with too much private and public debt and financial excess, a world where growth is still mediocre and populism has been rising.

Brunello, do you think sovereign bonds could be a safe haven, or is there a bubble there?

The price of bonds have increased massively since central banks cut interest rates dramatically in order to save their economies from the effects of the global financial crisis and also to bring inflation back towards their target levels. This has exacerbated a long-term historical, some would say secular, trend in yields; a downward trend that has been occurring over decades beginning in the late 1970s/early 1980s. So, an already secular trend has been accelerated further by the actions of central banks. Now, does that mean that bonds are in a bubble territory and that this trend will reverse itself any time soon? Well, not necessarily. The rate increases implemented by some central banks, in particular by the Fed, might of course put the valuation of those bonds under some stress. Nevertheless, central banks are not going to increase rates back to the levels that they used to in the past. By the time interest rates become high enough, say, to control for the rise of inflation, we might again enter into a situation in which the central bank might need to start easing again - or at least start thinking about easing again. At that point, the valuation of those bonds will start increasing once more. So if the next financial crisis were to occur, it is more likely than not that sovereign bonds would still be looked at as one of the safest places to go. This is especially true of bonds issued by countries that have reserve currency status, such as the US and potentially also Germany, Japan, and to a lesser extent perhaps the UK.

Finally, do you think that Brexit could be a proxy cause for the next great financial crisis?

I don't think that Brexit per se could be a cause of a financial crisis, because it may be that the European Union is resilient enough to withstand the exit of one of its member countries without having that exit trigger a financial crisis or recession. But, there might be situations that develop as a result of Brexit that could cause damage, and who knows, potentially even a crisis. Maybe not a large crisis, maybe not a global one, but maybe quite a severe one, at least within Europe. We know that the Brexit arrangements that will follow the negotiations between Britain and the EU will most likely not include passporting financial institutions. So, quite a few of these institutions would have to move from Britain to continental Europe. Not just banks, but also asset managers, hedge funds, pension funds, central counterparties; all the plumbing of the financial system might have to be moved to continental Europe. There are also a number of contracts, especially in the derivative space, that have been written around UK law, that may need to be a written again. As part of this reorganization of the system, something can go wrong, quite badly if it is not well-managed. This is when disruption might happen, if it is accompanied perhaps by a policy mistake, or by countries starting to blame and shout at one another. When you have this kind of complex dynamic, you cannot rule out having severe consequences that lead to a banking crisis, which could then extend to other sectors of the financial system as well.

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