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It is an honor for me to be in this storied room to address you this morning. Today, even by Federal Reserve, IMF, and World Bank standards, you set a high bar for distinguished conference participants. Decisions you and your leadership make determine the health of our financial system and its ability to support the economic growth of the global economy and the well-being of its citizens.

Today, I will address risks and risk mitigants for our financial system, particularly global banks – the risks that I see in my daily work – all seen a bit through the prism of my prior experience as a bank regulator. My work now principally involves creating risk and compliance systems for financial institutions large and small around the world as well as helping to improve supervisory frameworks for some governments around the world. Today, I will also focus on technological challenges and opportunities that are a considerable part of my work and of course are shaping the future of finance. I would emphasize that my comments today are my own and not necessarily those of Promontory/IBM or any other company with which I am affiliated.

Rather than focusing on domestic or global macro-economic realities per se – however important they are – I'm going to approach this through a different lens – one that gives us a closer micro look at specific, "in-the-moment" components of the financial system.

The one macro comment that I do want to make is that the world economy and the financial system are more volatile now than ever before. In large part, this is a product of technological change and globalization, and this of course is inexorable. Efforts to turn it back or slow it down will prove fruitless and are equivalent to the proverbial King Canute trying to turn back the incoming tide. Moreover, this volatility will only increase for geopolitical and technological reasons. It is in this technologically driven world that financial entities must operate.

Let me turn now to a more micro focus.

I see three broad categories of risks the banking system today must focus on. None are surprising or new in and of themselves:

1. Compliance/conduct risk,
2. operational/technological risk, and
3. of course credit and traditional prudential risks.

But the potential interconnections, permutations and combinations, size and volatility of these risks today are indeed astounding. Understanding exactly which one or which combination will bite us as well as how to prevent or mitigate the harm has become more difficult in recent years.

Conduct risk is on the rise, but why? Some might say that this is because financiers are more dishonest today and cultures weaker – or some might say that the rise of conduct risk is merely a matter of financial institution size – but I doubt that this is at the heart of the problem. The apparent rise in the gravity and urgency of conduct risk is to a significant extent a product of social and other modern media. Tweets, blogs, Facebook, Instagram, one and all serve to magnify the severity and importance to the public and to the political system of misconduct instances by financial companies.

That is not to say the focus on misconduct is wrong or overblown. Mistreating widows and orphans is as unattractive today as it was before this social media age. Rather it is that conduct cases, which in the past might well have been ultimately remediated in the course of time by the bank or regulator, today escalate quickly into public and political outcry with an immediacy and virulence not experienced in the past. Indeed, we are moving from a somewhat slower-paced world into an ever more real-time, in the moment, world, where explosive disclosures can emerge into the public arena at any time. And this increase in speed of disclosure plus impact of disclosure is magnifying the risks associated with the misconduct.

Of course, to add insult to injury, the problem of compliance/conduct failures is exacerbated by the size of financial institutions as well as the increasing complexity of financial products, not to mention new products and the lack of financial literacy in many populations. But what jet-propels these problems is the new world of technology-driven media.

Accordingly, we can expect more global instances of headline-grabbing conduct missteps like the ones we have seen in the U.K., U.S., and Australia. And the appearance of these missteps going unchecked, or even inadequately checked, undercuts the public's faith and reliance in the financial system and in the regulatory mechanism.

Emphasizing traditional culture and organizational methods of mitigation such as good governance, tone from the top, codes of conduct, and good policies and procedures is part of the solution. But it is not enough.

The reality of large institutions is that some employee somewhere is likely to misunderstand the message or simply disregard it. Culture and organizational tools, of course, lessen the severity of these occurrences. Traditional methodologies of surveillance and prompt remediation do so as well. But these traditional tools will not solve this problem at a granular enough level, and certainly not quickly enough, to adequately dampen public outcry and forestall draconian supervisory responses. In our day and age, where a single financial institution may receive millions of internal and external complaints and warnings, using traditional methodologies to sift through these complaints and warnings, understand them, and then give senior management and boards insights into the patterns and true substance and seriousness of these complaints is daunting, too slow and too imperfect.

So to succeed in addressing conduct risk, financial institutions must meet this increased focus on more granular issues and consumer use of social media and other modern technologically driven communications modalities with their own investment in technology. Increasingly, ubiquitous and sophisticated technological systems are absolutely required, ultimately driven by advanced

robotics and artificial intelligence. Of course, the technology tools must work with and reinforce the important traditional emphasis on culture, governance, and good policies and procedures. In sum, mitigating conduct risk now and in the future requires a two-handed, not just a one-handed approach.

For some of the same environmental reasons, more traditional financial crimes – such as fraud, including money laundering crimes – are on the rise, and here, too, technological tools are an essential part of the solution. However, in the area of financial crime, all risk-mitigant systems, whether technological or not, must keep adapting and adapting even more quickly than with respect to other compliance challenges. Why? It is because in the financial crimes space, common criminals and/or state actors are working day and night to get around whatever systems a bank may use for surveillance, detection, and capture. In short, banks must increasingly use advanced technologies and evolve them constantly.

But, however much technology is needed in banks to solve their risk and compliance problems, technology as we all know itself can create governance, privacy, unintended discrimination, and other challenges. However daunting and profound the dangers are today vis-à-vis conduct and financial crimes, the dangers are dwarfed by the inherent risk of the technologies themselves, including cyber and resiliency/operational risks. We all rightly shudder at the very thought of system attacks and shutdowns and their potential for igniting panic and serious liquidity challenges. For me to say more on this would be like carrying coals to Newcastle. You no doubt take steps in this area every day and will increasingly be called on to do more. You are well aware, and it is important for the industry to be aware, that for finance and probably for the economy as a whole these cyber and resilience risks are among the most critical tail risk issues we face today, and these tail risks must be vigorously addressed.

Now, before I suggest some additional mitigants to the compliance and operational risks I just covered, I want to turn for a moment to more traditional prudential risks, especially credit risk.

When I first became U.S. Comptroller of the Currency years ago, one of my key supervisors in assessing banking risk at my agency said to me, "Mr. Comptroller, in the end, of all the risks the one that really matters is credit; it is credit, only credit that truly matters." Today, as I said above, that is not the case. But for banks and other financial firms, credit risk and metastasis of that risk through tools like securitization, derivatives, and other modalities of spreading credit risk, remain a severe risk, still at or near the top of the pack of financial risks. Assessing major risks that supervisors focus on still involves identifying deteriorating underwriting terms and weak credit administration, and interconnectedness of the credit markets, including with nonbank providers of credit. To paraphrase the Greek philosopher Heraclitus, much changes but much stays the same.

What has changed of course is the speed, volatility, interconnectivity, and scale of the financial system. Accordingly, governments must focus with even greater vigor on identifying credit bubbles – monitoring the interconnectedness of the credit markets, including nonbank providers of credit, and assessing real-time credit data. This issue received a lot of attention in the wake of the financial crisis, particularly for the banking system, with the identification of systemically important banks at both the global and domestic level and the implementation of data collection

on exposures. Indeed, the IMF, World Bank, and Federal Reserve were central to these important developments at the global level. Legislation in the U.S. buttressed these efforts in several ways, including creating the Financial Stability Oversight Council. But now we need to ask ourselves whether these tools are working well enough. I would posit that at least in the U.S., and likely in pockets elsewhere, there are trends of great concern that should be reassessed carefully for systemic risks as well as individual institution risk.

At the moment, from a credit risk standpoint, the categories I most focus on, at least domestically, are the following. I would venture to say, they have global analogues as well:

1. **Household Debt**: Household debt, is to my mind a bigger risk than some would expect because U.S. middle- and lower-income consumers have not benefited from the recovery as much as they should have, and they have smaller cushions against a downturn than is desirable. Accordingly, a spike in interest rates and/or downturn in job availability are combustible for many households.

2. **Leveraged Lending**: Currently, leveraged lending has weaker terms and involves greater leverage than we have seen in over a decade. To be sure, most of this debt is held outside the banking system. But if, there is an interest rate spike and/or a recession, the corporate borrowers are going to be severely stressed as are non-banks, and it is hard for me to imagine that these stresses will not bleed over into the banking system.

3. **Commercial Real Estate**: Commercial real estate seems frothy and subject to a sharp correction. And, in the wrong environment, funds that own real estate, pension funds, and insurers will struggle.

With respect to these emerging credit bubbles, how quickly to act is a conundrum, as it always is. But I can't help recalling my discussion with another senior examiner at the OCC about the delicate balance between acting too quickly or too slowly in dealing with credit problems. He always concluded with the admonition that the worst outcome is waiting until the bullet is in the body and the damage done.

As if this were not enough, on the prudential worry list, the amount of liquidity sloshing around the world looking for a finite number of good deals combined with the desire of governments for economic expansion is giving rise to excess, as it always does, but perhaps worse this time. The deterioration of prudence, reduced central bank flexibility, political volatility, and the speed of change, all baked in the 21st century, gives us a witch's brew of swirling dangers.

So what to do? Let me suggest seven mitigants:

1. As some supervisors are mandating, I would redouble bank efforts to modernize from a technological and non-technological perspective risk management and core operating systems, including board and senior management governance of the build-out of those systems. Technological modernization of these systems at banks should be mirrored by the technological modernization of supervisory systems.

2. We should encourage frequent board- and management-directed stress tests by the banks that reflect the changing kaleidoscope of risks they individually face. In the U.S., the government-driven approaches to stress testing certainly matter, but banks and other financials should always be self-aware in real time and test themselves, in real time, as well.

3. I suggest, as noted earlier, banks and supervisors need to increase data analysis of credit bubbles, including better data collection. When bubbles are identified, taking action to limit bubble expansion is important, though I know how hard it is to do and how controversial it is at the time action is taken.

4. Regulators and central banks have to be able to liquefy banks and the marketplace in times of crisis. In some countries, such as our own, post-crisis rules unnecessarily limit regulatory intervention. We must restore greater flexibility for central banks and ministries of finance/treasuries, though every democracy will put some limits on this authority.

5. We should bring under the tent of supervision and regulation the biggest shadow banks, at least, using as a core principle the following rule: same size, same activity, same regulation. This regulation should include consistent data reporting that would support aggregation and systemic analysis.

6. We should focus more attention on tail risks, which as you all know are the risks that in many cases can upend the financial system. Better identification and prevention is of course valuable, but, admittedly, very hard to accomplish. It is more important to have the regulatory and bank-driven systems organized to respond vigorously and without delay to rapidly fattening or exploding tails. In my experience through several crises over 40 years, a uniform thread is that those entities that acted quickly to cut off the crisis, however painful that may be, lost much less and survived. And those that did not respond quickly suffered the consequences.

7. Finally, there is a global post-crisis effort to rethink our regulatory framework. Did we go too far? This is an important effort. It should not in the end be a question of "de-regulation." It should be a question of ensuring we have the most effective and most efficient regulations, or as our regulators in the U.S. have wisely termed it, smart regulation.

   Individual financial enterprises are not safer if they focus on bureaucratic make-work, and neither are regulators better off. Too much wasted effort clouds the ability to focus on what matters most. And in our changing world, there is a tendency to add new regulations and requirements whenever a serious downturn, let alone a crisis, occurs, something that happens with some frequency.

   This tendency has existed for over 150 years and is not going to change. However, I would urge us to be judicious in terms of what is added to the already large pile of

regulations. Here I would encourage much more rigorous public sector, private sector, and importantly academic review of regulations with an eye towards not deregulating or reregulating, but rather selecting and creating what regulations work best and most efficiently for the purpose intended. I would also encourage continued efforts to have more consistency in rules and practices globally. Minimizing the cacophony of global differences can lower burden and increase efficacy of regulations.

This is a long list. The task is daunting. But knowing many in this room personally, and appreciating the qualifications of those I don't know, I am confident that the world's financial systems are safer because of your talent, energy, and intellect that is at work on the problems that face us.

Again, it has been an honor to address you today. Thank you and have a great conference.